

Ingredion Inc
Form 10-K
February 22, 2017
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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, 2016

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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes No

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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 large accelerated filer, an accelerated filer, a non-accelerated filer, or a small reporting company. See definitions of "large accelerated filer," "accelerated filer" and "small reporting company" in Rule 12b-2 of the Exchange Act. (Check one)

Large accelerated filer

Accelerated filer

Non-accelerated filer
(Do not check if a smaller reporting company)

Smaller reporting company

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 \$129.41 on June 30, 2016, and, for the purpose of this calculation only, the assumption that all of the Registrant's directors and executive officers are affiliates) was approximately \$9,305,000,000.

The number of shares outstanding of the Registrant's Common Stock, par value \$.01 per share, as of February 17, 2017, was 71,790,000.

Documents Incorporated by Reference:

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 2016 Annual Meeting of Stockholders which will be filed with the Securities and Exchange Commission within 120 days after December 31, 2016.

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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 and other vegetables and fruits 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.

On December 29, 2016, we completed our acquisition of TIC Gums Incorporated (“TIC Gums”), a privately held, U.S.-based company that provides advanced texture systems to the food and beverage industry for \$395 million, net of cash acquired. Consistent with our Strategic Blueprint for growth, this acquisition enhances our texture capabilities and formulation expertise and provides additional opportunities for us to provide solutions for natural, organic and clean-label demands of our customers. TIC Gums utilizes a variety of agriculturally derived ingredients, such as acacia gum and guar gum, to form the foundation for innovative texture systems and allow for clean-label reformulation. TIC Gums operates two production facilities, one in Belcamp, Maryland and one in Guangzhou, China. TIC Gums also maintains an R&D lab within these two production facilities.

On March 11, 2015, we completed our acquisition of Penford Corporation (“Penford”), a manufacturer of specialty starches that was headquartered in Centennial, Colorado. The total purchase consideration for Penford was \$332 million, which included the extinguishment of \$93 million in debt in conjunction with the acquisition. The acquisition of Penford provides us with, among other things, an expanded specialty ingredient product portfolio consisting of potato starch-based offerings. Penford had net sales of \$444 million for the fiscal year ended August 31, 2014 and operated six manufacturing facilities in the United States, all of which manufacture specialty starches.

On August 3, 2015, we completed our acquisition of Kerr Concentrates, Inc. (“Kerr”), a privately-held producer of natural fruit and vegetable concentrates for approximately \$102 million in cash. Kerr serves major food and beverage companies, flavor houses and ingredient producers from its manufacturing locations in Oregon and California. The acquisition of Kerr provides us with the opportunity to expand our product portfolio.

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

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America segment includes businesses in the United States, Canada and Mexico. Our South America segment includes businesses in Brazil, Colombia, Ecuador and the Southern Cone of South America, which includes Argentina, Chile, Peru and Uruguay. Our Asia Pacific segment includes businesses in South Korea, Thailand, Malaysia, China, Japan, Indonesia, the Philippines, Singapore, India, Australia and New Zealand. Our EMEA segment includes businesses in the United Kingdom, Germany, South Africa, Pakistan and Kenya.

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.

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

Our product line includes 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 (“HFCS”), caramel color, dextrose, polyols, maltodextrins and glucose and syrup solids.

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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, corn is 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 sweeteners, starches 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

We are principally engaged in the production and sale of starches and sweeteners for a wide range of industries, and we manage our business on a geographic regional basis. Our consolidated net sales were \$5.70 billion in 2016. Our operations are classified into four reportable business segments: North America, South America, Asia Pacific and EMEA (Europe, Middle East and Africa). In 2016, approximately 60 percent of our net sales were derived from operations in North America, while net sales from operations in South America represented 18 percent. Net sales from operations in Asia Pacific and EMEA represented approximately 12 percent and 10 percent, respectively, of our 2016 net sales. See Note 13 of the notes to the consolidated financial statements entitled “Segment Information” for additional financial information with respect to our reportable business segments.

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.

Our North America segment consists of operations in the US, Canada and Mexico. The region’s facilities include 21 plants producing a wide range of sweeteners, starches and fruit and vegetable concentrates.

We are the largest manufacturer of corn-based starches and sweeteners in South America, with sales in Brazil, Colombia and Ecuador and the Southern Cone of South America, which includes Argentina, Chile, Peru and Uruguay. Our South America segment includes 9 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.

Our Asia Pacific segment manufactures corn-based products in South Korea, Australia and China. 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 9 plants that produce modified, specialty, regular, waxy, tapioca and rice starches, dextrins, glucose, high maltose syrup, dextrose, HFCS and caramel color.

Our EMEA segment includes 5 plants that produce modified and specialty starches, glucose and dextrose in England, Germany and Pakistan.

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 the specialty starches through our finishing channels.

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

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Products

Starch Products. Our starch products represented approximately 46 percent, 44 percent and 43 percent of our net sales for 2016, 2015 and 2014, 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.

Sweetener Products. Our sweetener products represented approximately 37 percent, 40 percent and 39 percent of our net sales for 2016, 2015 and 2014, respectively.

Glucose Syrups: Glucose syrups are fundamental ingredients widely used in food products, such as baked goods, snack foods, beverages, canned fruits, condiments, candy and other sweets, dairy products, ice cream, jams and jellies, prepared mixes and table syrups. Glucose syrups offer functionality in addition to sweetness to processed foods. They add body and viscosity; help control freezing points, crystallization and browning; add humectancy (ability to add moisture) and flavor; and act as binders.

High Maltose Syrup: This special type of glucose syrup is primarily used as a fermentable sugar in brewing beers. High maltose syrups are also used in the production of confections, canning and some other food processing applications. Our high maltose syrups speed the fermentation process, allowing brewers to increase capacity without adding capital.

High Fructose Corn Syrup: High fructose corn syrup is used in a variety of consumer products including soft drinks, fruit-flavored beverages, baked goods, dairy products, confections and other food and beverage products. In addition to sweetness and ease of use, high fructose corn syrup provides body; humectancy; and aids in browning, freezing point and crystallization control.

Dextrose: Dextrose has a wide range of applications in the food and confection industries, in solutions for intravenous and other pharmaceutical applications, and numerous industrial applications like wallboard, biodegradable surface

agents and moisture control agents. Dextrose functionality in foods, beverages and confectionary includes sweetness control; body and viscosity; acting as a bulking, drying and anti-caking agent; serving as a carrier; providing freezing point and crystallization control; and aiding in fermentation. Dextrose is also a fermentation agent in the production of light beer. In pharmaceutical applications dextrose is used in IV solutions as well as an excipient suitable for direct compression in tableting.

Polyols: These products are sugar-free, reduced calorie sweeteners primarily derived from starch or sugar for the food, beverage, confectionery, industrial, personal and oral care, and nutritional supplement markets. In addition to sweetness, polyols inhibit crystallization; provide binding, humectancy and plasticity; add texture; extend shelf life; prevent moisture migration; and are an excipient suitable for tableting.

Maltodextrins and Glucose Syrup Solids: These products have a multitude of food applications, including formulations where liquid syrups cannot be used. Maltodextrins are resistant to browning, provide excellent solubility, have a low hygroscopicity (do not retain moisture), and are ideal for their carrier/bulking properties. Glucose syrup solids have a bland flavor, remain clear in solution, are easy to handle and provide bulking properties.

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Specialty Ingredients. We consider certain of our starch and sweetener products to be specialty ingredients. Specialty ingredients comprised approximately 26 percent of our net sales for 2016, up from 25 percent and 24 percent in 2015 and 2014, respectively. Our specialty ingredients are aligned with growing market and consumer trends such as health and wellness, clean-label, affordability, indulgence and sustainability. We plan to drive growth for our specialty ingredients portfolio by leveraging the following five growth platforms: Wholesome, Texture, Nutrition, Sweetness, and Biomaterial Solutions.

Wholesome — Clean and simple ingredients that consumers can identify and trust

Nutrition - Nutritional carbohydrates with benefits of digestive health and energy management

Texture - Precise texture solutions designed to optimize the consumer experience and build back texture when other components of food are replaced (e.g. fat, salt, etc).

Sweetness - Sweetening systems that provide affordable, natural, reduced calorie, and sugar-free solutions

Biomaterial Solutions - Nature-based materials for selected industrial segments and customers that answer demand for sustainable, non-synthetic ingredients

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. Biomaterial Solutions: Nature-based materials that help manufacturers become more sustainable by replacing synthetic materials in personal care, home care and other industrial segments.

Each growth platform addresses multiple consumer trends. To demonstrate how Ingredion is 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

Co-Products and others. Co-products and others accounted for 17 percent, 16 percent and 18 percent of our net sales for 2016, 2015 and 2014, respectively. 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.

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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 US 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., Tate & Lyle Ingredients Americas, Inc., and several others. Our operations in Mexico and Canada face competition from US imports and local producers including ALMEX, a Mexican joint venture between ADM and Tate & Lyle Ingredients Americas, Inc. In South America, Cargill has starch processing operations in Brazil and Argentina.

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. HFCS 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.

Customers

We supply a broad range of customers in over 60 industries worldwide. The following table provides the percentage of total net sales by industry for each of our segments for 2016:

Industries Served	Total Company		North America		South America		APAC		EMEA	
Food	52	%	50	%	46	%	65	%	58	%
Beverage	11	%	14	%	8	%	8	%	1	%
Animal Nutrition	10	%	10	%	16	%	6	%	8	%
Paper and Corrugating	11	%	12	%	8	%	14	%	4	%
Brewing	8	%	8	%	15	%	3	%	—	%
Other	8	%	6	%	7	%	4	%	29	%
Total	100	%	100	%	100	%	100	%	100	%

No customer accounted for 10 percent or more of our net sales in 2016, 2015 or 2014.

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 United States 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, and government policies (including those related to the production of ethanol), livestock feeding, shortages or surpluses of world grain supplies, and domestic and foreign government policies 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, rice, gum and sugar as raw material.

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

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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 are 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.

Research and Development

We have a global network of more than 350 scientists working in 27 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, as well as development of non-food applications, such as starch-based biopolymers. In 2013, we expanded our Bridgewater facility with the addition of a lab and sensory evaluation space dedicated to our sweeteners portfolio. 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. Research and development expense was approximately \$41 million in 2016, \$43 million in 2015 and \$37 million in 2014.

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 850 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 significant patents or trademarks that would have a material adverse impact on us or our results of operations if decided against us.

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Employees

As of December 31, 2016 we had approximately 11,000 employees, of which approximately 2,600 were located in the United States. Approximately 31 percent of US and 39 percent of our non-US 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 United States 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 2016. 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.

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 underground fuel storage tanks, 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 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 2016, we spent approximately \$11 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 spend approximately \$21 million and \$14 million for environmental facilities and programs in 2017 and 2018, respectively.

Other

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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
Ilene S. Gordon	63	Chairman of the Board, President and Chief Executive Officer since May 4, 2009. Ms. Gordon was President and Chief Executive Officer of Rio Tinto's Alcan Packaging, a multinational business unit engaged in flexible and specialty packaging, from October 2007 until she joined the Company on May 4, 2009. From December 2006 to October 2007, Ms. Gordon was a Senior Vice President of Alcan Inc. and President and Chief Executive Officer of Alcan Packaging. Alcan Packaging was acquired by Rio Tinto in October 2007. From 2004 until December 2006, Ms. Gordon served as President of Alcan Food Packaging Americas, a division of Alcan Inc. From 1999 until Alcan's December 2003 acquisition of Pechiney Group, Ms. Gordon was a Senior Vice President of Pechiney Group and President of Pechiney Plastic Packaging, Inc., a global flexible packaging business. Prior to joining Pechiney in June 1999, Ms. Gordon spent 17 years with Tenneco Inc., where she most recently served as Vice President and General Manager, heading up Tenneco's folding carton business. Ms. Gordon also serves as a director of International Paper Company, a global paper and packaging company, and Lockheed Martin Corporation, a global security and aerospace company. She served as a director of Arthur J. Gallagher & Co., an international insurance brokerage and risk management business, from 1999 to May 2013 and as a director of United Stationers Inc., now Essendant Inc., a wholesale distributor of business products and a provider of marketing and logistics services to resellers, from January 2000 to May 2009. Ms. Gordon also serves as Chairman of The Economic Club of Chicago and as a director of Northwestern Memorial Hospital, The Executives' Club of Chicago, and World Business Chicago. She is also a trustee of The MIT Corporation and a Vice Chair of The Conference Board. Ms. Gordon holds a Bachelor's degree in mathematics from the Massachusetts Institute of Technology (MIT) and a Master's degree in management from MIT's Sloan School of Management.

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- Christine M. Castellano 51 Senior Vice President, General Counsel, Corporate Secretary and Chief Compliance Officer since April 1, 2013. Prior to that Ms. Castellano served as Senior Vice President, General Counsel and Corporate Secretary from October 1, 2012 to March 31, 2013. Ms. Castellano previously served as Vice President International Law and Deputy General Counsel from April 28, 2011 to September 30, 2012, Associate General Counsel, South America and Europe from January 1, 2011 to April 27, 2011, and as Associate General International Counsel from 2004 to December 31, 2010. Prior to that, Ms. Castellano served as Counsel US and Canada from 2002 to 2004. Ms. Castellano joined CPC International, Inc., now Unilever Bestfoods (“CPC”), as Operations Attorney in September 1996 and held that position until 2002. CPC was a worldwide group of businesses, principally engaged in three major industry segments: consumer foods, baking and corn refining. Ingredion commenced operations as a spin-off of CPC’s corn refining business. Prior to joining CPC, Ms. Castellano was an income partner in the law firm McDermott Will & Emery from January 1, 1996 and had served as an associate in that firm from 1991 to December 31, 1996. She serves as a trustee of The John Marshall Law School and the Peggy Notebaert Nature Museum. She also serves as a member of the board of the Illinois Equal Justice Foundation. Ms. Castellano holds a Bachelor’s degree in political science from the University of Colorado and a Juris Doctor degree from the University of Michigan Law School.
- Anthony P. DeLio 61 Senior Vice President and Chief Innovation Officer since January 1, 2014. Prior to that 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 from January 1, 2009 to November 3, 2010, when Ingredion acquired National Starch. 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 Archer-Daniels-Midland Company (“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.

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- 60 Executive Vice President and Chief Financial Officer since January 6, 2014. Prior to that Mr. Fortnum served as Executive Vice President and President, North America from February 1, 2012 to January 5, 2014. Mr. Fortnum previously served as Executive Vice President and President, Global Beverage, Industrial and North America Sweetener Solutions from October 1, 2010 to January 31, 2012. Prior thereto, Mr. Fortnum served as Vice President from 1999 to September 30, 2010 and President of the North America Division from May 2004 to September 30, 2010. Mr. Fortnum joined CPC, a predecessor company to Ingredion, in 1984 and held positions of increasing responsibility including serving as President, US/Canadian Region of the Company from July 2003 to May 2004. Mr. Fortnum is a former Chairman of the Board of the Corn Refiners Association. Mr. Fortnum is a chartered accountant and holds a Bachelor’s degree in economics from the University of Toronto and completed the Senior Business Administration Course offered by McGill University.
- 62 Senior Vice President, Human Resources since October 1, 2010. Ms. Frisch previously served as Vice President, Human Resources, from May 1, 2010 to September 30, 2010. Prior to that, Ms. Frisch served as Vice President of Human Resources and Communications for the Food Americas and Global Pharmaceutical Packaging businesses of Rio Tinto’s Alcan Packaging, a multinational company engaged in flexible and specialty packaging, from January 2004 to March 30, 2010. Prior to being acquired by Alcan Packaging, Ms. Frisch served as Vice President of Human Resources for the flexible packaging business of Pechiney, S.A., an aluminum and packaging company with headquarters in Paris and Chicago, from January 2001 to January 2004. Previously, she served as Vice President of Human Resources for Culligan International Company and Vice President and Director of Human Resources for Alumax Mill Products, Inc., a division of Alumax Inc. Ms. Frisch holds a Bachelor of Arts degree in psychology from Ithaca College, Ithaca, NY, and a Master of Science degree in industrial relations from the University of Wisconsin in Madison.
- 48 Senior Vice President and President, Asia-Pacific and EMEA since January 1, 2016. Prior to that Mr. Kokke served as Senior Vice President and President, Asia-Pacific from September 16, 2014 to December 31, 2015. Mr. Kokke previously served as 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 in 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 Lodders Crocklaan Group. Mr. Kokke holds a Master’s degree in economics from the University of Amsterdam.

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Stephen K. Latreille	50	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 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.
Martin Sonntag	51	Senior Vice President, Strategy and Global Business Development since November 1, 2015. Prior to that Mr. Sonntag served as Vice President and General Manager, EMEA from February 1, 2014 to October 31, 2015. Prior thereto he served as an executive investment partner and portfolio manager at ADCURAM Group AG from April 2013 to January 2014. Previously, Mr. Sonntag served as General Manager of Dow Wolff Cellulosics GmbH from July 2007 to March 2013. From October 2004 to March 2007, he served as Global Business Director for Liquid Resins & Intermediates at The Dow Chemical Company. Mr. Sonntag served as Global Product Manager for Liquid Resins & Intermediates and Global Product Marketing Manager for Intermediates from 2003 to 2005 and Global Product Manager for Liquid Resins & Intermediates and Converted Epoxy Resins from 2000 to 2003. Previously, Mr. Sonntag, who joined Dow in Stade, Germany in 1989 as a Process Design Engineer, held a variety of engineering and management positions. Mr. Sonntag holds a Bachelor’s degree in chemical engineering from the Hamburg University of Technology and is a graduate of the INSEAD Advanced Management Program.

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- Robert J. Stefansic 55 Senior Vice President, Operational Excellence, Sustainability and Chief Supply Chain Officer since May 28, 2014. 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 degree in business administration from the University of South Carolina.
- James P. Zallie 55 Executive Vice President, Global Specialties and President, Americas since January 1, 2016. Mr. Zallie previously served as Executive Vice President, Global Specialties and President, North America and EMEA from January 6, 2014 to December 31, 2015. Prior to that Mr. Zallie served as Executive Vice President, Global Specialties and President, EMEA and Asia-Pacific from February 1, 2012 to January 5, 2014. Mr. Zallie previously served as 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 also serves 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. He is 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.

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.

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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 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 expense and cash flow.

In addition, the 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.

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/or 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 Argentina government, it took longer than it had previously taken to achieve pricing improvement in response to currency devaluations in that country. The anticipated strength in the US 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.

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.

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 amount

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of specialty corn. We also manufacture certain starch-based products from potatoes. Our current potato starch requirements constitute a material portion of the 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. With our acquisition of TIC Gums, we now sell products made from acacia gum, approximately half of which we purchase in the Sudan. If our raw materials are not available in sufficient quantities or quality, our results of operations could be negatively impacted.

Energy costs represent approximately 10 percent of our finished product costs. We use energy primarily to create steam in production processes and to dry products. We consume coal, natural gas, electricity, wood and fuel oil to generate energy. In Pakistan, the overall economy has been slowed by severe energy shortages which both negatively impact our ability to produce sweeteners and starches, and also negatively impact the demand from our customers due to their inability to produce their end products because of the shortage of reliable energy.

The market prices for our raw materials may vary considerably depending on supply and demand, world economies 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 American operations.

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.

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.

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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 United States, 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 HFCS. Competition in markets in which we compete is largely based on price, quality and product availability.

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 HFCS, 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.

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 the Company's products which may contain genetically modified corn could be delayed or impaired because of adverse public perception regarding the safety of the Company's products and the potential effects of these products on animals, human health and the environment.

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

Our 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, 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 or tax requirements, and other processes necessary to manage our business. 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 on a timely basis, we may encounter disruptions that could interrupt our ability to manage our operations and suffer damage to our reputation, which may adversely impact our revenues, operating results and financial condition.

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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.

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

Approximately 31 percent of our US and 39 percent of our non-US 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.

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

Approximately 52 percent of our 2016 sales were made to companies engaged in the food industry and approximately 11 percent each were made to companies in the beverage industry and companies in the paper and corrugating industry. Additionally, sales to the animal nutrition markets and the brewing industry represented approximately 10 percent and 8 percent of our 2016 net sales, respectively. If our food customers, beverage customers, brewing industry customers, paper and corrugating customers or animal feed customers were to substantially decrease their purchases, our business might be materially adversely affected.

Natural disasters, war, acts and threats of terrorism, pandemic 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 United States 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.

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. In the United States, the US Environmental Protection Agency ("EPA") has adopted regulations requiring the owners and operators of certain facilities to measure and report their greenhouse gas emission. The US EPA has also begun to regulate greenhouse gas emissions from certain stationary and mobile sources under the Clean Air Act. For example, the US EPA has proposed rules regarding the construction and operation of coal-fired boilers. California and Ontario are also moving forward with various programs to reduce greenhouse gases. Globally, a number of countries

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that are parties to the Kyoto Protocol have instituted or are considering climate change legislation and regulations. Most notable is the European Union Greenhouse Gas Emission Trading System. 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 may require the Company to make additional investments in its facilities and equipment.

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, 2016, consisting of \$784 million of goodwill and \$502 million of other intangible assets. Additionally, we have \$2.2 billion of long-lived assets at December 31, 2016.

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 and/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 October 1, 2016, it was more likely than not that the fair value of all of our reporting units was greater than their carrying value and no additional impairment charges were necessary (although the \$26 million of goodwill at our Brazil reporting unit continues to be closely monitored due to recent trends and increased volatility experienced in this reporting unit, such as continued slow economic growth, heightened competition and possible future negative economic growth). Additionally, significant risk and uncertainty exists around certain manufacturing assets in Argentina and Brazil that we are closely monitoring due to increased volatility experienced due to continued slow economic growth, heightened competition, and possible future negative economic growth.

Even though it was determined that there was no additional long-lived asset impairment as of October 1, 2016, 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 October 1, 2017.

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

We are subject to income taxes in the United States 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, including potential tax reform in the US to broaden the tax base, change the tax rate or alter the taxation of offshore earnings, changes in the valuation of deferred tax assets and liabilities and material adjustments from tax audits.

Significant changes in the tax laws of the US 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, if finalized and adopted by countries, would 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 US, 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.

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

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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 manufacturing 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 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 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.

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 (such as TIC Gums), 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.

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/or 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 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.

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Increased interest rates could increase our borrowing costs.

From time to time we may issue securities to finance acquisitions, capital expenditures, working capital and 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.

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 the 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 surplus funds to pay dividends.

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 London, Ontario, Canada San Juan del Rio, Queretaro, Mexico	Baradero, Argentina Chacabuco, Argentina Balsa Nova, Brazil	Lane Cove, Australia Guangzhou, China Shandong Province, China Shanghai, China Ichon, South Korea	Hamburg, Germany Cornwala, Pakistan Faisalabad, Pakistan
Guadalajara, Jalisco, Mexico Mexico City, Edo, Mexico	Cabo, Brazil Mogi-Guacu, Brazil	Inchon, South Korea Ban Kao Dien, Thailand	Mehran, Pakistan Goole, United Kingdom
Oxnard, California, U.S. (a) Stockton, California, U.S.	Rio de Janeiro, Brazil Barranquilla, Colombia Cali, Colombia Lima, Peru	Kalasin, Thailand Sikhiu, Thailand	
Idaho Falls, Idaho, U.S. Bedford Park, Illinois, U.S. Mapleton, Illinois, U.S. 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. North Charleston, South Carolina, U.S. Richland, Washington, U.S. Plover, Wisconsin, U.S.			

(a) Facility is leased.

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; Stockton, California; Bedford Park, Illinois; Winston-Salem, North Carolina; San Juan del Rio and Mexico City, Mexico; Cali, Colombia; Cornwalla, 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. We are constructing a co-generation facility at our plant in Cardinal, Ontario.

In recent years, we have made significant capital expenditures to update, expand and improve our facilities, spending \$284 million in 2016. We believe these capital expenditures will allow us to operate efficient facilities for the foreseeable future. We currently anticipate that capital expenditures for 2017 will approximate \$300-\$325 million.

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ITEM 3. LEGAL PROCEEDINGS

We are a party to a large number of labor claims relating to our Brazilian operations. We have reserved an aggregate of approximately \$5 million as of December 31, 2016 in respect of these claims. These labor claims primarily relate to dismissals, severance, health and safety, work schedules and salary adjustments.

We are currently subject to various other claims and suits arising in the ordinary course of business, including 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, even if unfavorable to us, 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 ("NYSE") under the ticker symbol "INGR." The number of holders of record of our common stock was 4,446 at January 31, 2017.

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.

The quarterly high and low market prices for our common stock and cash dividends declared per common share for 2015 and 2016 are shown below.

	1st QTR	2nd QTR	3rd QTR	4th QTR
2016				
High	\$ 108.00	\$ 129.42	\$ 140.00	\$ 137.62
Low	84.57	104.24	128.18	113.92
Per share dividends declared	\$ 0.45	\$ 0.45	\$ 0.50	\$ 0.50
2015				
High	\$ 86.80	\$ 83.00	\$ 93.87	\$ 99.64
Low	75.11	76.26	79.31	85.85
Per share dividends declared	\$ 0.42	\$ 0.42	\$ 0.45	\$ 0.45

Issuer Purchases of Equity Securities:

The following table summarizes information with respect to our purchases of our common stock during the fourth quarter of 2016.

(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, 2016	—	—	—	4,741 shares
November 1 – November 30, 2016	—	—	—	4,741 shares
December 1 – December 31, 2016	—	—	—	4,741 shares
Total	—	—	—	

On December 12, 2014, the Board of Directors authorized a new stock repurchase program permitting the Company to purchase up to 5 million of its outstanding common shares from January 1, 2015 through December 31, 2019. At December 31, 2016, we have 4.7 million shares available for repurchase under the stock repurchase program.

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ITEM 6. SELECTED FINANCIAL DATA

Selected financial data is provided below.

(in millions, except per share amounts)	2016 (a)	2015 (b)	2014	2013	2012
Summary of operations:					
Net sales	\$ 5,704	\$ 5,621	\$ 5,668	\$ 6,328	\$ 6,532
Net income attributable to Ingredion	485 (c)	402 (d)	355 (e)	396	428 (f)
Net earnings per common share of Ingredion:					
Basic	\$ 6.70 (c)	\$ 5.62 (d)	\$ 4.82 (e)	\$ 5.14	\$ 5.59 (f)
Diluted	\$ 6.55 (c)	\$ 5.51 (d)	\$ 4.74 (e)	\$ 5.05	\$ 5.47 (f)
Cash dividends declared per common share of Ingredion	\$ 1.90	\$ 1.74	\$ 1.68	\$ 1.56	\$ 0.92
Balance sheet data:					
Working capital	\$ 1,274	\$ 1,208	\$ 1,423	\$ 1,394	\$ 1,427
Property, plant and equipment-net	2,116	1,989	2,073	2,156	2,193
Total assets	5,782	5,074	5,085	5,353	5,583
Long-term debt	1,850	1,819	1,798	1,710	1,715
Total debt	1,956	1,838	1,821	1,803	1,791
Total equity (g)	\$ 2,595	\$ 2,180	\$ 2,207	\$ 2,429	\$ 2,459
Shares outstanding, year end	72.4	71.6	71.3	74.3	77.0
Additional data:					
Depreciation and amortization	\$ 196	\$ 194	\$ 195	\$ 194	\$ 211
Capital expenditures	284	280	276	298	313

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

(b) Includes Penford from March 11, 2015 forward and Kerr from August 3, 2015 forward.

(c) Includes after-tax restructuring charges of \$15 million (\$0.20 per diluted common share) 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 and after-tax costs of \$2 million (\$0.03 per diluted common share) associated with the integration of acquired operations. Additionally, includes a charge of \$27 million (\$0.36 per diluted common share) associated with an income tax matter.

(d) Includes after-tax charges for impaired assets and restructuring costs of \$18 million (\$0.25 per diluted common share), after-tax costs of \$7 million (\$0.10 per diluted common share) relating to the acquisition and integration of both Penford and Kerr, after-tax costs of \$6 million (\$0.09 per diluted common share) 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 (\$0.06 per diluted common share) relating to a litigation settlement and an after-tax gain from the sale of a plant of \$9 million (\$0.12 per diluted common share).

- (e) Includes a \$33 million impairment charge (\$0.44 per diluted common share) to write-off goodwill at our Southern Cone of South America reporting unit and after-tax costs of \$1.7 million (\$0.02 per diluted common share) related to the then-pending Penford acquisition.
- (f) Includes a \$13 million benefit from the reversal of a valuation allowance that had been recorded against net deferred tax assets of our Korean subsidiary (\$0.16 per diluted common share), after-tax charges for impaired assets and restructuring costs of \$23 million (\$0.29 per diluted common share), an after-tax gain from a change in a North American benefit plan of \$3 million (\$0.04 per diluted common share), after-tax costs of \$3 million (\$0.03 per diluted common share) relating to the integration of National Starch and an after-tax gain from the sale of land of \$2 million (\$0.02 per diluted common share).
- (g) 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 ingredients 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, animal feed, paper and corrugating, and brewing industries, among others.

Our Strategic Blueprint continues to guide our decision-making and strategic choices with an emphasis on value-added ingredients for our customers. The foundation of our Strategic Blueprint is operational excellence, which includes our focus on safety, quality and continuous improvement. We see growth opportunities in three areas. First is organic growth as we work to expand our current business. Second, we are focused on broadening our ingredient portfolio of 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/or 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").

We had a strong year in 2016 as net sales, operating income, net income and diluted earnings per common share grew from 2015. This growth was driven principally by significantly improved operating results in our North America segment. Operating income also grew in our Asia Pacific and EMEA segments, which was partially offset by lower results in our South America segment. In North America, our largest segment, operating income for 2016 rose 27 percent principally driven by improved product price/mix and operating efficiencies in the segment. South America operating income declined 12 percent in 2016 reflecting the difficult macroeconomic environment in the region. Asia Pacific operating income grew 4 percent as volume growth and good cost control more than offset the impact of reduced product selling prices and local currency weakness in the segment. Operating income in EMEA increased 14 percent driven by volume growth and lower raw material and energy costs, which more than offset the impact of local

currency weakness in the segment.

Our operating cash flow rose to \$771 million in 2016 from \$686 million in 2015, and we continued to advance our Strategic Blueprint by investing in our business, growing our product portfolio and rewarding shareholders.

On December 29, 2016, we acquired TIC Gums Incorporated (“TIC Gums”), a US-based company that provides advanced texture systems to the food and beverage industry. Consistent with our Strategic Blueprint for growth, this acquisition enhances our texture capabilities and formulation expertise and provides additional opportunities for us to provide solutions for natural, organic and clean-label demands of our customers. TIC Gums utilizes a variety of agriculturally derived ingredients, such as acacia gum and guar gum, to form the foundation for innovative texture systems and allow for clean-label reformulation. TIC Gums operates two production facilities, one in Belcamp, Maryland and one in Guangzhou, China. TIC Gums also maintains an R&D lab in each of these facilities. We funded the \$395 million acquisition with cash on hand and short-term borrowings.

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On November 29, 2016, we completed our acquisition of Shandong Huanong Specialty Corn Development Co., Ltd. (“Shandong Huanong”) in China for \$12 million in cash. The acquisition of Shandong Huanong, located in Shandong Province, adds a second manufacturing facility to our operations in China. It produces starch raw material for our plant in Shanghai, which makes value-added ingredients for the food industry. The transaction represents another step in executing our Strategic Blueprint for growth. We expect it to enhance our capacity in the Asia-Pacific segment with a vertically integrated manufacturing base for specialty ingredients. The acquisition did not have a material impact on our financial condition, results of operations or cash flows.

On August 17, 2016, we announced that we entered into a definitive agreement to acquire the rice starch and rice flour business from Sun Flour Industry Co, Ltd. based in Banglen, Thailand. This pending acquisition supports our global strategy to increase our specialty ingredients business and has been approved by our board of directors. This transaction should enhance our global supply chain and leverage other capital investments that we have made in Thailand to grow our specialty ingredients and service customers around the world. The acquisition is subject to approval by Thailand government authorities as well as to other customary closing conditions. The acquisition is not expected to have a material impact on our financial condition, results of operations or cash flows.

We also refinanced \$350 million of term loan debt and entered into a new \$1 billion revolving credit facility in 2016. Additionally, we increased our quarterly cash dividend by 11 percent to \$0.50 per share of common stock.

Looking ahead, we anticipate that our operating income and net income will grow in 2017 compared to 2016. In North America, we expect operating income to increase driven by improved product mix and margins. In South America, we expect another challenging year. We believe that operating income will increase from 2016 despite continued slow economic growth and local foreign currency weakness. We intend to continue to maintain a high degree of focus on cost and network optimization during 2017 as we manage through the difficult macroeconomic environment in this segment. In the longer-term, we believe that the underlying business fundamentals for our South American segment are positive for the future and we believe that we are well-positioned to take advantage of an economic recovery when it materializes. We expect operating income growth in Asia Pacific and EMEA in 2017, despite anticipated currency headwinds associated with a stronger US dollar. We anticipate that this improvement will be driven primarily from growth in our specialty ingredient product portfolio and effective cost control.

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/or 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 US dollars at the applicable average exchange rates for the period. Fluctuations in foreign currency exchange rates affect the US dollar amounts of our foreign subsidiaries’ revenues and expenses. The impact of foreign currency exchange rate

changes, where significant, is provided below.

We acquired Penford Corporation (“Penford”) and Kerr Concentrates, Inc. (“Kerr”) on March 11, 2015 and August 3, 2015, respectively. The results of the acquired businesses are included in our consolidated financial results within the North America reporting segment from the respective acquisition dates forward. While we identify significant 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.

2016 Compared to 2015

Net Income attributable to Ingredion. Net income attributable to Ingredion for 2016 increased to \$485 million, or \$6.55 per diluted common share, from \$402 million, or \$5.51 per diluted common share in 2015. Our results for 2016 include a \$27 million charge (\$0.36 per diluted common share) for an income tax settlement (see Note 9 to the Consolidated Financial Statements for additional information), after-tax restructuring costs of \$15 million (\$0.20 per diluted common

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share) consisting of employee severance-related 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. Additionally, our results for 2016 include after-tax costs of \$2 million (\$0.03 per diluted common share) associated with the integration of acquired operations. Our results for 2015 included after-tax charges of \$11 million (\$0.15 per diluted common share) for impaired assets and restructuring costs in Brazil and Canada, after-tax restructuring charges of \$7 million (\$0.10 per diluted common share) for employee severance-related costs associated with the Penford acquisition, after-tax costs of \$7 million (\$0.10 per diluted common share) associated with the acquisition and integration of both Penford and Kerr, after-tax costs of \$6 million (\$0.09 per diluted common share) 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 (\$0.06 per diluted common share) relating to a litigation settlement and an after-tax gain of \$9 million (\$0.12 per diluted common share) from the sale of our Port Colborne plant. Without the income tax settlement charge, the restructuring, impairment and acquisition-related charges, the gain from the plant sale and the litigation settlement costs, our net income and diluted earnings per share would have grown 23 percent and 21 percent, respectively, from 2015. These increases primarily reflect significantly improved operating income in North America and, to a lesser extent, in Asia Pacific and EMEA, as compared to 2015.

Net Sales. Net sales for 2016 increased to \$5.70 billion from \$5.62 billion in 2015.

A summary of net sales by reportable business segment is shown below:

(in millions)	2016	2015	Increase (Decrease)	% Change	
North America	\$ 3,447	\$ 3,345	\$ 102	3	%
South America	1,010	1,013	(3)	(0)	%
Asia Pacific	709	733	(24)	(3)	%
EMEA	538	530	8	2	%
Total	\$ 5,704	\$ 5,621	\$ 83	1	%

The increase in net sales reflects price/product mix improvement of 5 percent partially offset by unfavorable currency translation of 4 percent due to the stronger US dollar. Volume was flat. Organic volume declined approximately 2 percent primarily reflecting the impact of the Port Colborne plant sale.

Net sales in North America for 2016 increased 3 percent reflecting price/product mix improvement of 4 percent, partially offset by a 1 percent volume decline. Organic volume declined 4 percent driven primarily by the impact of the Port Colborne plant sale. In South America, net sales for 2016 were flat as unfavorable currency translation of 17 percent and a 5 percent volume reduction offset price/product mix improvement of 22 percent. In Asia Pacific, net sales for 2016 decreased 3 percent as volume growth of 4 percent was more than offset by a 5 percent price/product mix decline due to the pass through of lower raw material costs in pricing to our customers and unfavorable currency

translation of 2 percent. EMEA net sales for 2016 increased 2 percent as volume growth of 6 percent more than offset unfavorable currency translation of 3 percent attributable to weaker local currencies and a 1 percent price/product mix reduction resulting from the pass through of lower corn costs in pricing to our customers.

Cost of Sales. Cost of sales for 2016 decreased 2 percent to \$4.30 billion from \$4.38 billion in 2015. This reduction primarily reflects the effects of currency translation. Gross corn costs per ton for 2016 increased approximately 3 percent from 2015, driven by higher market prices for corn. Currency translation caused cost of sales for 2016 to decrease approximately 5 percent from 2015, reflecting the impact of the stronger US dollar. Our gross profit margin for 2016 was 25 percent, compared to 22 percent in 2015. This increase primarily reflects significantly improved gross profit margins in North America and, to a lesser extent, in Asia Pacific and EMEA.

Selling, General and Administrative Expenses. Selling, general and administrative (“SG&A”) expenses for 2016 increased to \$579 million from \$555 million in 2015. The increase primarily reflects higher compensation-related costs and incremental operating expenses of acquired operations. Favorable translation effects associated with the stronger US dollar partially offset these increases. Currency translation associated with weaker foreign currencies reduced SG&A expenses for 2016 by approximately 4 percent from 2015. SG&A expenses represented 41 percent of gross profit in 2016,

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as compared to 45 percent of gross profit in 2015. The decline reflects our continued focus on cost control and gross profit growth.

Other Income-net. Other income-net of \$4 million for 2016 increased from \$1 million in 2015.

A summary of other income-net is as follows:

	Year Ended	
	December 31,	
Other Income (Expense) (in millions)	2016	2015
Gain from sale of plant	\$ —	\$ 10
Litigation settlement	—	(7)
Expense associated with tax indemnification	—	(4)
Other	4	2
Totals	\$ 4	\$ 1

Operating Income. A summary of operating income is shown below:

(in millions)	2016	2015	Favorable (Unfavorable) Variance	Favorable (Unfavorable) % Change	
North America	\$ 610	\$ 479	\$ 131	27	%
South America	89	101	(12)	(12)	%
Asia Pacific	111	107	4	4	%
EMEA	106	93	13	14	%
Corporate expenses	(86)	(75)	(11)	(15)	%
Restructuring/impairment charges	(19)	(28)	9	32	%
Acquisition/integration costs	(3)	(10)	7	70	%
Gain from sale of plant	—	10	(10)	NM	
Charge for fair value markup of acquired inventory	—	(10)	10	NM	
Litigation settlement	—	(7)	7	NM	
Operating income	\$ 808	\$ 660	\$ 148	22	%

Operating income for 2016 increased to \$808 million from \$660 million in 2015. Operating income for 2016 includes restructuring charges of \$19 million consisting of \$11 million of employee-related severance and other costs due to the execution of global IT outsourcing contracts, \$6 million of employee-related severance costs associated with our optimization initiatives in North America and South America, and \$2 million of costs attributable to the 2015 Port

Colborne plant sale. Additionally, the 2016 results include \$3 million of costs associated with our integration of acquired operations. Operating income for 2015 included a \$10 million gain from the sale of our Port Colborne plant, \$12 million of charges for impaired assets and restructuring costs associated with our plant closings in Brazil, a restructuring charge of \$12 million for estimated severance-related costs associated with the Penford acquisition, costs of \$7 million relating to a litigation settlement, a \$4 million restructuring charge for estimated severance-related expenses and other costs associated with the sale of the Port Colborne plant, and \$10 million of other costs associated with the acquisitions and integration of the Penford and Kerr businesses. Additionally, the 2015 results included \$10 million of costs associated with the sale of Penford and Kerr inventory that was marked up to fair value at the acquisition date in accordance with business combination accounting rules. Without the restructuring / impairment charges, acquisition-related expenses, litigation settlement costs and gain from the plant sale, operating income for 2016 would have grown 18 percent from 2015. This increase primarily reflects operating income growth in North America and, to a lesser extent, in EMEA and Asia Pacific. Unfavorable currency translation attributable to the stronger US dollar negatively impacted operating income by approximately \$17 million as compared to 2015. Our product pricing actions helped to mitigate the unfavorable impact of currency translation.

North America operating income increased 27 percent to \$610 million from \$479 million in 2015. Earnings contributed by the acquired operations represented approximately 2 percentage points of the increase. The remaining organic operating income improvement of 25 percent for 2016 was driven principally by improved product price/mix and

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operating efficiencies in the segment. Our North American results included business interruption insurance recoveries of \$7 million in both 2016 and 2015 relating to the reimbursement of costs in those years. Translation effects associated with a weaker Canadian dollar negatively impacted operating income by approximately \$4 million in the segment. South America operating income decreased 12 percent to \$89 million from \$101 million in 2015. The decrease reflects lower earnings in the Southern Cone region of South America, which more than offset earnings growth in the rest of the segment. Improved product selling prices were not enough to offset higher local production costs, reduced volume attributable to the difficult macroeconomic environment (particularly in the Southern Cone) and unfavorable impacts of currency devaluations. Translation effects associated with weaker South American currencies (particularly the Colombian Peso and Brazilian Real) negatively impacted operating income by approximately \$6 million. We anticipate that our business in South America will continue to be challenged by difficult economic conditions and we continue to assess various strategic options to better optimize our business and improve performance in South America. Implementation of certain of these options could result in future asset impairment charges in the segment. Asia Pacific operating income increased 4 percent to \$111 million from \$107 million in 2015. Volume growth and good cost control more than offset the impact of reduced product selling prices and local currency weakness in the segment. Translation effects associated with weaker Asia Pacific currencies negatively impacted operating income by approximately \$3 million in the segment. EMEA operating income grew 14 percent to \$106 million from \$93 million in 2015. The increase was driven by volume growth and lower raw material and energy costs, which more than offset the impact of local currency weakness in the segment. Translation effects primarily associated with the weaker British Pound Sterling and Pakistan Rupee had an unfavorable impact of approximately \$4 million on operating income in the segment. An increase in corporate expenses primarily reflects increased variable compensation and continued investments in our administrative processes.

Financing Costs-net. Financing costs-net increased to \$66 million in 2016 from \$61 million in 2015. The increase primarily reflects reduced interest income due to lower average cash balances and short-term investment rates and an increase in interest expense driven by higher weighted average borrowing costs that more than offset the impact of reduced average debt balances. A decline in foreign currency transaction losses partially offset these increases.

Provision for Income Taxes. Our effective tax rate was 33.1 percent in 2016, as compared to 31.2 percent in 2015.

We have been pursuing relief from double taxation under the US and Canadian tax treaty for the years 2004-2013. During the 4th quarter of 2016, a tentative agreement was reached between the US and Canada for the specific issues being contested. We established a net reserve of \$24 million or 3.2 percentage points on the effective tax rate in 2016. In addition, as a result of the settlement, for the years 2014-2016, we have established a net reserve for \$7 million or 1.0 percentage points on the effective tax rate in 2016. Of this amount, \$4 million pertains to 2016.

We use the US dollar as the functional currency for our subsidiaries in Mexico. Because of the continued decline in the value of the Mexican peso versus the US dollar, our tax provision for 2016 and 2015 was increased by \$18 million or 2.4 percentage points and \$17 million, or 2.9 percentage points, respectively. A primary cause was foreign currency translation gains for local income tax purposes on net US dollar monetary assets held in Mexico for which there is no corresponding gain in our pre-tax income.

During 2016 we recorded a valuation allowance on the net deferred tax assets of a foreign subsidiary in the amount of \$7 million or 1.0 percentage points on the effective tax rate in 2016. In addition, we accrued taxes on unremitted earnings of foreign subsidiaries in the amount of \$3.7 million or 0.5 percentage points on the effective rate in 2016.

The above items were partially offset in 2016 by \$2 million, or 0.3 percentage points of net favorable reversals of previously unrecognized tax benefits. In addition, foreign tax credits increased in the amount of \$22 million or 3.0 percentage points. Finally, in the second quarter of 2016, we elected to early adopt ASU No. 2016-09, related to stock compensation. The new guidance requires excess tax benefits and tax deficiencies to be recorded in the provision for income taxes when stock options are exercised or restricted shares and performance shares vest. Our 2016 tax provision includes a tax benefit of \$12 million, or 1.6 percentage points, related to the adoption of this standard.

Based on the final settlement of an audit matter, in 2015 we reversed \$4 million of the \$7 million income tax expense and other income that was recorded in 2014. As a result, our effective income tax rate for 2015 was reduced by 0.7

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percentage points. Substantial portions of the sale of Port Colborne, Canada, assets resulted in favorable tax treatment that reduced the effective tax rate by approximately 0.4 percentage points. Additionally, the 2015 tax provision includes \$2 million of net favorable reversals of previously unrecognized tax benefits due to the lapsing of the statute of limitations, which reduced the effective tax rate by 0.3 percentage points.

Without the impact of the items described above, our effective tax rates for 2016 and 2015 would have been approximately 30 percent and 29.7 percent, respectively.

We have significant operations in the US, Canada, Mexico and Pakistan where the statutory tax rates, including local income taxes are approximately 37 percent, 25 percent, 30 percent and 31 percent in 2016, respectively. In addition, our subsidiary in Brazil has a statutory tax rate of 34 percent, before local incentives that vary each year.

Net Income Attributable to Non-controlling Interests. Net income attributable to non-controlling interests was \$11 million in 2016, up from \$10 million in 2015. The increase primarily reflects improved net income at our non-wholly-owned operation in Pakistan.

Comprehensive Income. We recorded comprehensive income of \$505 million in 2016, as compared with \$82 million in 2015. The increase in comprehensive income primarily reflects a \$331 million favorable variance in the foreign currency translation adjustment and our net income growth. The favorable variance in the foreign currency translation adjustment reflects a moderate strengthening in end of period foreign currencies relative to the US dollar, as compared to the year-ago period when end of period foreign currencies had substantially weakened.

2015 Compared to 2014

Net Income attributable to Ingredion. Net income attributable to Ingredion for 2015 increased to \$402 million, or \$5.51 per diluted common share, from \$355 million, or \$4.74 per diluted common share in 2014. Our results for 2015 include after-tax charges of \$11 million (\$0.15 per diluted common share) for impaired assets and restructuring costs in Brazil and Canada, after-tax restructuring charges of \$7 million (\$0.10 per diluted common share) for employee severance-related costs associated with the Penford acquisition, after-tax costs of \$7 million (\$0.10 per diluted common share) associated with the acquisition and integration of both Penford and Kerr, after-tax costs of \$6 million (\$0.09 per diluted common share) 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 (\$0.06 per diluted common share) relating to a litigation settlement and an after-tax gain of \$9 million (\$0.12 per diluted common share) from the sale of our Port Colborne plant. Our results for 2014 include an impairment charge of \$33 million (\$0.44 per diluted common share) to write-off goodwill at our Southern Cone of South America reporting unit (see Note 5 of the notes to the consolidated financial statements for additional information) and after-tax costs of \$2 million (\$0.02 per diluted common share) related to our then-pending acquisition of Penford. Without the

gain from the plant sale, the litigation settlement costs and the impairment, restructuring and acquisition-related charges, our net income and diluted earnings per share would have grown 10 percent and 13 percent, respectively, from 2014. These increases primarily reflect significantly improved operating income in North America for 2015, as compared to 2014. Our improved diluted earnings per common share for 2015 also reflects the favorable impact of our share repurchases.

Net Sales. Net sales for 2015 decreased to \$5.62 billion from \$5.67 billion in 2014.

A summary of net sales by reportable business segment is shown below:

(in millions)	2015	2014	Increase (Decrease)	% Change	
North America	\$ 3,345	\$ 3,093	\$ 252	8	%
South America	1,013	1,203	(190)	(16)	%
Asia Pacific	733	794	(61)	(8)	%
EMEA	530	578	(48)	(8)	%
Total	\$ 5,621	\$ 5,668	\$ (47)	(1)	%

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The businesses acquired from Penford and Kerr contributed \$328 million of net sales in 2015. The decrease in net sales primarily reflects unfavorable currency translation of 9 percent due to the stronger US dollar, which more than offset volume growth of 7 percent that was driven mainly by the operations of the acquired businesses and price/product mix improvement of 1 percent. The pass through of lower raw material costs (primarily corn) in our product pricing is reflected in the modest price/product mix improvement. Of the 7 percent volume increase, 1 percent represented organic volume growth.

Net sales in North America increased 8 percent, primarily reflecting volume growth of 12 percent driven largely by the addition of the acquired businesses, which more than offset a 2 percent price/product mix decline driven principally by lower raw material costs and unfavorable currency translation of 2 percent attributable to a weaker Canadian dollar. Organic volume grew 1 percent. Net sales in South America declined 16 percent, as a 26 percent decline attributable to weaker foreign currencies more than offset price/product mix improvement of 10 percent. Volume in the segment was flat. Asia Pacific net sales decreased 8 percent, as unfavorable currency translation of 7 percent and a 3 percent price/product mix decline, more than offset volume growth of 2 percent. EMEA net sales fell 8 percent, reflecting unfavorable currency translation of 9 percent, primarily attributable to the weaker Euro and British Pound Sterling. Volume grew 1 percent. Price/product mix in the segment was flat.

Cost of Sales. Cost of sales for 2015 decreased 4 percent to \$4.38 billion from \$4.55 billion in 2014. This reduction primarily reflects lower raw material costs and the effects of currency translation. Gross corn costs per ton for 2015 decreased approximately 13 percent from 2014, driven by lower market prices for corn. Currency translation caused cost of sales for 2015 to decrease approximately 10 percent from 2014, reflecting the impact of the stronger US dollar. Our gross profit margin for 2015 was 22 percent, compared to 20 percent in 2014. Despite reduced selling prices driven by lower corn costs, we have generally maintained per unit gross profit levels in US dollars, resulting in the improved gross profit margin percentages.

Selling, General and Administrative Expenses. Selling, general and administrative (“SG&A”) expenses for 2015 increased to \$555 million from \$525 million in 2014. The increase primarily reflects incremental operating expenses of the acquired businesses as well as other costs associated with the acquisition and integration of those businesses. Favorable translation effects associated with the stronger US dollar more than offset higher compensation-related and various other costs. Currency translation associated with weaker foreign currencies reduced SG&A expenses for 2015 by approximately 8 percent from 2014. SG&A expenses represented 45 percent of gross profit in 2015, as compared to 47 percent of gross profit in 2014.

Other Income-net. Other income-net of \$1 million for 2015 decreased from other income-net of \$24 million in 2014. The decrease for 2015 primarily reflects \$7 million of costs relating to a litigation settlement and an \$11 million unfavorable swing from \$7 million of income in 2014 to \$4 million of expense in 2015 associated with a tax indemnification agreement relating to a subsidiary acquired from Akzo Nobel N.V. (“Akzo”) in 2010. In 2014, we recognized a charge to our income tax provision for an expected unfavorable income tax audit result at this subsidiary related to a pre-acquisition period for which we are indemnified by Akzo. The costs incurred by the acquired subsidiary were recorded in our provision for income taxes while the reimbursement from Akzo under the indemnification agreement was recorded as other income. In 2015, based upon the final settlement of the matter, we

determined that the unfavorable income tax audit amount should be reduced from \$7 million to \$3 million. Accordingly, in 2015, we recognized a \$4 million income tax benefit and a charge to other income-net of \$4 million to reduce our receivable from Akzo associated with the indemnification agreement. The impact on our net income for 2015 and 2014 is zero. Other income-net for 2015 also included a \$10 million gain from the sale of the Port Colborne plant.

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A summary of other income-net is as follows:

Other Income (Expense) (in millions)	Year Ended December 31,	
	2015	2014
Gain from sale of plant	\$ 10	\$ —
Litigation settlement	(7)	—
Income (expense) associated with tax indemnification	(4)	7
Gain from sale of investment	—	5
Gain from sale of idled plant	—	3
Other	2	9
Totals	\$ 1	\$ 24

Operating Income. A summary of operating income is shown below:

(in millions)	2015	2014	Favorable (Unfavorable) Variance	Favorable (Unfavorable) % Change	
North America	\$ 479	\$ 375	\$ 104	28	%
South America	101	108	(7)	(6)	%
Asia Pacific	107	103	4	4	%
EMEA	93	95	(2)	(2)	%
Corporate expenses	(75)	(65)	(10)	(15)	%
Impairment/restructuring charges	(28)	(33)	5	15	%
Gain from sale of plant	10	—	10	NM	
Acquisition/integration costs	(10)	(2)	(8)	NM	
Charge for fair value markup of acquired inventory	(10)	—	(10)	NM	
Litigation settlement	(7)	—	(7)	NM	
Operating income	\$ 660	\$ 581	\$ 79	14	%

Operating income for 2015 increased to \$660 million from \$581 million in 2014. Operating income for 2015 included a \$10 million gain from the sale of our Port Colborne plant, \$12 million of charges for impaired assets and restructuring costs associated with our plant closings in Brazil, a restructuring charge of \$12 million for estimated severance-related costs associated with the Penford acquisition, costs of \$7 million relating to a litigation settlement, a \$4 million restructuring charge for estimated severance-related expenses and other costs associated with the sale of the Port Colborne plant, and \$10 million of other costs associated with the acquisitions and integration of the Penford and Kerr businesses. Additionally, the 2015 results included \$10 million of costs associated with the sale of Penford and Kerr inventory that was marked up to fair value at the acquisition date in accordance with business combination accounting rules. Operating income for 2014 included a \$33 million charge to write-off impaired goodwill at our Southern Cone of South America reporting unit and \$2 million of costs associated with our then-pending acquisition

of Penford. Without the gain from the plant sale, the litigation settlement costs and the restructuring, impairment and acquisition-related charges, operating income for 2015 would have grown 14 percent from 2014. This increase primarily reflects significantly improved operating income in North America compared to the weaker results of 2014. Unfavorable currency translation attributable to the stronger US dollar negatively impacted operating income by approximately \$68 million as compared to 2014. Our product pricing actions helped to mitigate the unfavorable impact of currency translation.

North America operating income increased 28 percent to \$479 million from \$375 million in 2014. Earnings contributed by the acquired operations represented approximately 6 percentage points of the increase. The remaining organic operating income improvement of 22 percent for 2015 primarily reflects more normal weather conditions, organic volume growth and lower corn, energy and other manufacturing costs. Our North American results for 2015 also included \$7 million of business interruption insurance recoveries related to the prior year's weather. Our 2014 results

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were negatively impacted by harsh winter weather conditions that caused high energy, transportation and production costs. Translation effects associated with a weaker Canadian dollar unfavorably impacted operating income by approximately \$13 million in the segment. South America operating income decreased 6 percent to \$101 million from \$108 million in 2014. The decline primarily reflects weaker results in Brazil driven principally by local currency weakness. Improved selling prices for our products helped to partially offset the unfavorable impacts of currency devaluation and higher local production costs in the segment. Translation effects associated with weaker South American currencies (particularly the Brazilian Real, Colombian Peso and the Argentine Peso) negatively impacted operating income by approximately \$36 million. We currently anticipate that our business in South America will continue to be challenged by difficult economic conditions in 2016. Asia Pacific operating income grew 4 percent to \$107 million from \$103 million in 2014. Volume growth and lower raw material costs helped to mitigate the impact of local currency weakness in the segment. Translation effects associated with weaker Asia Pacific currencies negatively impacted operating income by approximately \$9 million in the segment. EMEA operating income declined 2 percent to \$93 million from \$95 million in 2014. This decrease primarily reflects the impact of currency translation. Cost reductions and improved sales volumes helped to partially offset this unfavorable impact. Additionally, the prior year results included a \$3 million gain from the sale of an idled plant in Kenya. Translation effects primarily associated with the weaker Euro and British Pound Sterling had an unfavorable impact of \$10 million on operating income in the segment. An increase in corporate expenses was driven by an adjustment with respect to the previously-mentioned Akzo tax indemnification that unfavorably impacted operating income by \$11 million for 2015, as compared to 2014.

Financing Costs-net. Financing costs-net was \$61 million in 2015, consistent with 2014. Lower interest expense and higher interest income were offset by a \$5 million increase in foreign currency transaction losses. The reduction in interest expense reflects lower average interest rates driven by the effect of our interest rate swaps and our low-rate term loan borrowing that we arranged in 2015, which more than offset the impact of higher average borrowings. The increase in interest income was driven primarily by higher average cash balances. The increase in foreign currency transaction losses primarily reflects the impact of the December devaluation of the Argentine peso. Hedge costs spiked in December and prevented hedges from offsetting the impact of the devaluation, negatively affecting Argentine peso denominated assets.

Provision for Income Taxes. Our effective tax rate was 31.2 percent in 2015, as compared to 30.2 percent in 2014. We use the US dollar as the functional currency for our subsidiaries in Mexico. Because of the continued decline in the value of the Mexican peso versus the US dollar, our tax provision for 2015 was increased by \$17 million, or 2.9 percentage points. A primary cause was associated with foreign currency transaction gains for local income tax purposes on net US dollar monetary assets held in Mexico for which there is no corresponding gain in our pre-tax income. Based on the final settlement of an audit matter, in 2015 we reversed \$4 million of the \$7 million income tax expense and other income that was recorded in 2014 (see also discussion of Other Income-net presented earlier in this section). As a result, our effective income tax rate for 2015 was reduced by 0.7 percentage points. Substantial portions of the sale of Port Colborne, Canada, assets resulted in favorable tax treatment that reduced the effective tax rate by approximately 0.4 percentage points. Additionally, the 2015 tax provision included \$2 million of net favorable reversals of previously unrecognized tax benefits due to the lapsing of the statute of limitations, which reduced the effective tax rate by 0.3 percentage points.

In the fourth quarter of 2014 we determined that goodwill in our Southern Cone subsidiaries was impaired and recorded a charge of \$33 million without a tax benefit, which increased the 2014 effective tax rate by 1.8 percentage points. We use the US dollar as the functional currency for our subsidiaries in Mexico. Because of the decline in the value of the Mexican peso versus the US dollar, primarily late in 2014, the Mexican tax provision was increased by approximately \$7 million, or 1.3 percentage points in our effective tax rate, primarily associated with foreign currency transaction gains for local income tax purposes on net US dollar monetary assets held in Mexico for which there is no corresponding gain in our pre-tax income. The tax provision also includes approximately \$7 million for an unfavorable audit result at a National Starch subsidiary related to a pre-acquisition period for which we are indemnified by Akzo. Additionally, the 2014 tax provision includes \$12 million of net favorable reversals of previously unrecognized tax benefits due to the lapsing of the statute of limitations.

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Without the impact of the items described above, our effective tax rates for 2015 and 2014 would have been approximately 29.7 percent and 28.1 percent, respectively. See Note 9 of the notes to the consolidated financial statements for additional information.

We have significant operations in the US, Canada, Mexico and Thailand where the statutory tax rates, including local income taxes are approximately 37 percent, 25 percent, 30 percent and 20 percent in 2015, respectively. In addition, our subsidiary in Brazil has a statutory tax rate of 34 percent, before local incentives that vary each year.

Net Income Attributable to Non-controlling Interests. Net income attributable to non-controlling interests was \$10 million in 2015, up from \$8 million in 2014. The increase primarily reflects improved net income at our non-wholly-owned operation in Pakistan.

Comprehensive Income. We recorded comprehensive income of \$82 million in 2015, as compared with \$156 million in 2014. The decrease in comprehensive income primarily reflects a \$112 million unfavorable variance in the currency translation adjustment, which more than offset our net income growth. The unfavorable variance in the currency translation adjustment reflects a greater weakening in end of period foreign currencies relative to the US dollar, as compared to a year ago.

LIQUIDITY AND CAPITAL RESOURCES

At December 31, 2016, our total assets were \$5.78 billion, as compared to \$5.07 billion at December 31, 2015. The increase was driven principally by our net income growth and the impact of the TIC Gums acquisition. Total equity increased to \$2.60 billion at December 31, 2016, from \$2.18 billion at December 31, 2015. This increase primarily reflects our earnings growth and, to a lesser extent, the issuance of common stock associated with the exercise of stock options.

On October 11, 2016, we entered into a new 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 Notes to the Consolidated Financial Statements.

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.

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. 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. We met all covenant requirements as of December 31, 2016. At December 31, 2016, there were no borrowings outstanding under our Revolving Credit Agreement, as compared to \$111 million outstanding at December 31, 2015 under our previously-existing \$1 billion revolving credit facility. In addition, we have a number of short-term credit facilities consisting of operating lines of credit outside of the United States.

On September 22, 2016, we issued 3.20 percent Senior Notes due October 1, 2026 in an aggregate principal amount of \$500 million. The net proceeds from the sale of the notes of approximately \$497 million were used to repay \$350 million of term loan debt, to repay \$52 million of borrowings under our previously existing \$1 billion revolving credit facility and for general corporate purposes. See also Note 7 of the Notes to the Consolidated financial statements.

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On July 10, 2015, we entered into a Term Loan Credit Agreement to establish an 18-month, \$350 million multi-currency senior unsecured term loan credit facility. All borrowings under the term loan facility incurred interest at a variable annual rate based on the LIBOR or base rate, at our election, subject to the terms and conditions thereof, plus, in each case, an applicable margin. Proceeds of \$350 million from the Term Loan Credit Agreement were used to repay borrowings outstanding under our previously-existing \$1 billion revolving credit facility. The \$350 million of term loan borrowings were repaid in September 2016 with proceeds from our 3.20 percent Senior Notes offering discussed above.

On November 2, 2015, we repaid our \$350 million of 3.2 percent senior notes at the maturity date with proceeds from our previously-existing \$1 billion revolving credit facility and cash on hand.

At December 31, 2016, we had total debt outstanding of \$1.96 billion, compared to \$1.84 billion at December 31, 2015. At December 31, 2016 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	398
1.8% senior notes due September 25, 2017	299
6.625% senior notes due April 15, 2037	254
6.0% senior notes due April 15, 2017	200
5.62% senior notes due March 25, 2020	200
Revolving credit facility maturing October 11, 2021	—
Fair value adjustment related to hedged fixed rate debt instruments	3
Long-term debt	\$ 1,850
Short-term borrowings of subsidiaries	106
Total debt	\$ 1,956

As noted above, we have \$200 million of 6.0 percent Senior Notes that mature on April 15, 2017 and \$300 million (face amount) of 1.8 percent Senior Notes that mature on September 25, 2017. These borrowings are included in long-term debt in our Consolidated Balance Sheet as we have the ability and intent to refinance them on a long-term basis prior to the maturity dates.

Ingredion Incorporated, as the parent company, guarantees certain obligations of its consolidated subsidiaries. At December 31, 2016, such guarantees aggregated \$121 million. Management believes 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 \$443 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 4.0 percent and 3.4 percent for 2016 and 2015, respectively.

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Net Cash Flows

A summary of operating cash flows is shown below:

(in millions)	2016	2015
Net income	\$ 496	\$ 412
Depreciation and amortization	196	194
Write-off of impaired assets	—	10
Charge for fair value mark-up of acquired inventory	—	10
Gain on sale of plant	—	(10)
Deferred income taxes	(5)	(6)
Changes in working capital	(8)	(24)
Other	92	100
Cash provided by operations	\$ 771	\$ 686

Cash provided by operations was \$771 million in 2016, as compared with \$686 million in 2015. The increase in operating cash flow primarily reflects our net income growth.

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 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 commodity.

Listed below are our primary investing and financing activities for 2016:

	Sources (Uses) of Cash (in millions)
Payments for acquisitions (net of cash acquired of \$4)	\$ (407)
Capital expenditures	(284)

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Payments on debt	(874)
Proceeds from borrowings	1,000
Dividends paid (including to non-controlling interests)	(141)

On December 9, 2016, our board of directors declared a quarterly cash dividend of \$0.50 per share of common stock. This dividend was paid on January 25, 2017 to stockholders of record at the close of business on December 31, 2016.

We currently anticipate that capital expenditures for 2017 will approximate \$300 million to \$325 million.

On December 29, 2016, we acquired TIC Gums, a US-based company that provides advanced texture systems to the food and beverage industry. Consistent with our Strategic Blueprint for growth, this acquisition enhances our texture capabilities and formulation expertise and provides additional opportunities for us to provide solutions for natural, organic and clean-label demands of our customers. TIC Gums utilizes a variety of agriculturally derived ingredients, such as acacia gum and guar gum, to form the foundation for innovative texture systems and allow for clean-label reformulation. TIC Gums operates two production facilities, one in Belcamp, Maryland and one in Guangzhou, China. TIC Gums also maintains an R&D lab in each of these facilities. We funded the \$395 million acquisition with cash and short-term borrowings.

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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/or financing activities for the foreseeable future.

We have not provided federal and state income taxes 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 United States to satisfy domestic liquidity needs arising in the ordinary course of business, including liquidity needs associated with our domestic debt service requirements. Approximately \$399 million of our total cash and cash equivalents and short-term investments of \$522 million at December 31, 2016, was held by our operations outside of the United States. We expect that available cash balances and credit facilities in the United States, 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.

Hedging

We are exposed to market risk stemming from changes in commodity prices, 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 futures, options and swap contracts, forward currency contracts and options, interest rate swap agreements and treasury lock agreements. 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 the 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 twelve to twenty-four months, in order to hedge price risk associated with fluctuations in market prices. Effective with the acquisition of Penford, we now produce and sell ethanol. We now enter into futures contracts to hedge price risk associated with fluctuations in market prices of ethanol. Our derivative instruments are recognized at fair value and have effectively reduced our exposure to changes in market prices for these commodities. 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, 2016, our accumulated other comprehensive loss account ("AOCI") related to these derivative instruments was not significant. It is anticipated that

most of the losses will be reclassified into earnings during the next twelve months. We expect the losses to be offset by changes in the underlying commodities cost.

Foreign Currency Exchange Risk:

Due to our global operations, including 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 operation results are translated to US 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, 2016, we had foreign currency forward sales contracts with an aggregate notional amount of \$432 million and foreign currency forward purchase contracts with an aggregate notional amount of \$227 million that hedged transactional exposures. The fair value of these derivative instruments is an asset of \$5 million at December 31, 2016.

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We also have foreign currency derivative instruments that hedge certain foreign currency transactional exposures and are designated as cash-flow hedges. The amount included in AOCI relating to these hedges at December 31, 2016 was not significant.

We have significant operations in Argentina. We utilize the official exchange rate published by the Argentine government for re-measurement purposes. Due to exchange controls put in place by the Argentine government, a parallel market exists for exchanging Argentine pesos to US dollars at rates less favorable than the official rate, although the difference in rates has recently decreased significantly.

Interest Rate Risk:

We occasionally use interest rate swaps and Treasury Lock agreements (“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 at December 31, 2016 or 2015.

We have interest rate swap agreements that effectively convert the interest rates on our 6.0 percent \$200 million senior notes due April 15, 2017, our 1.8 percent \$300 million senior notes due September 25, 2017 and on \$200 million of our \$400 million 4.625 percent senior notes due November 1, 2020, to variable rates. These swap agreements call 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 US dollar LIBOR rate plus a spread. We have designated these interest rate swap agreements as hedges of the changes in fair value of the underlying debt obligations attributable to changes in interest rates and account for them as fair-value hedges. The fair value of these interest rate swap agreements was \$3 million at December 31, 2016 and is reflected in the Consolidated Balance Sheet within Other assets, with an offsetting amount recorded in Long-term debt to adjust the carrying amount of the hedged debt obligations.

At December 31, 2016, our accumulated other comprehensive loss account included \$4 million of losses (net of tax of \$2 million) related to settled Treasury Lock agreements. 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 tax) will be reclassified into earnings during the next twelve months.

Contractual Obligations and Off Balance Sheet Arrangements

The table below summarizes our significant contractual obligations as of December 31, 2016. Information included in the table is cross-referenced to the notes to the consolidated financial statements elsewhere in this report, as

applicable.

(in millions)	Note reference	Payments due by period				
		Total	Less than 1 year	2 – 3 years	4 – 5 years	More than 5 years
Contractual Obligations	7	\$ 1,850	\$ 500	\$ —	\$ 600	\$ 750
Long-term debt	7	630	80	125	89	336
Interest on long-term debt	8	223	45	77	51	50
Operating lease obligations	10	119	7	8	8	96
Pension and other postretirement obligations		1,114	270	324	268	252
Purchase obligations (a)		\$ 3,936	\$ 902	\$ 534	\$ 1,016	\$ 1,484
Total (b)						

(a) The purchase obligations relate principally to power supply and raw material sourcing agreements, including take or pay contracts, which help to provide us with adequate power and raw material supply at certain of our facilities, and IT service agreements.

(b) The above table does not reflect unrecognized income tax benefits of \$86 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.

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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 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 “Return on Capital Employed” (“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 Generally Accepted Accounting Principles (“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 generally accepted accounting principles.

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.

Our calculations of these key financial metrics for 2016 with comparisons to the prior year are as follows:

Return on Capital Employed (dollars in millions)	2016	2015
Total equity *	\$ 2,180	\$ 2,207
Add:		
Cumulative translation adjustment *	1,025	701
Share-based payments subject to redemption*	24	22
Total debt *	1,838	1,821
Less:		
Cash and cash equivalents *	(434)	(580)
Capital employed * (a)	\$ 4,633	\$ 4,171
Operating income	\$ 808	\$ 660

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Adjusted for:		
Impairment/restructuring charges	19	28
Acquisition /integration costs	3	10
Charge for fair value mark-up of acquired inventory	—	10
Litigation settlement	—	7
Gain on sale of plant	—	(10)
Adjusted operating income	\$ 830	\$ 705
Income taxes (at effective tax rates of 29.4% in 2016 and 31.8% in 2015)**	(244)	(224)
Adjusted operating income, net of tax (b)	\$ 586	\$ 481
Return on Capital Employed (b/a)	12.6 %	11.5 %

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

** The effective income tax rate for 2016 and 2015 excludes the impacts of impairment/restructuring charges, acquisition and integration related costs, a litigation settlement cost and a gain on the sale of a plant. Including

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these items, the Company's effective income tax rate for 2016 and 2015 was 33.1 percent and 31.2 percent, respectively. Listed below is a schedule that reconciles our effective income tax rate under US GAAP to the adjusted income tax rate.

(dollars in millions)	Income before		Provision for		Effective Income	
	Income Taxes (a)		Income Taxes (b)		Tax Rate (b÷a)	
	2016	2015	2016	2015	2016	2015
As reported	\$ 742	\$ 599	\$ 246	\$ 187	33.1 %	31.2 %
Add back (deduct):						
Income tax settlement	—	—	(27)	—		
Impairment/restructuring charges	19	28	5	10		
Acquisition/integration costs	3	10	1	3		
Charge for fair value mark-up of acquired inventory	—	10	—	4		
Litigation settlement cost	—	7	—	2		
Gain on sale of plant	—	(10)	—	(1)		
Adjusted-non-GAAP	\$ 764	\$ 644	\$ 225	\$ 205	29.4 %	31.8 %

Net Debt to Adjusted EBITDA ratio (dollars in millions)	2016	2015
Short-term debt	\$ 106	\$ 19
Long-term debt	1,850	1,819
Less: Cash and cash equivalents	(512)	(434)
Short-term investments	(4)	(6)
Total net debt (a)	\$ 1,440	\$ 1,398
Net income attributable to Ingredion	\$ 485	\$ 402
Add back:		
Impairment/restructuring charges	19	28
Acquisition /integration costs	3	10
Charge for fair value mark-up of acquired inventory	—	10
Litigation settlement	—	7
Gain on sale of plant	—	(10)
Net income attributable to non-controlling interest	11	10
Provision for income taxes	246	187
Financing costs, net of interest income of \$10 and \$14, respectively	66	61
Depreciation and amortization	196	194
Adjusted EBITDA (b)	\$ 1,026	\$ 899
Net Debt to Adjusted EBITDA ratio (a ÷ b)	1.4	1.6

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Net Debt to Capitalization percentage (dollars in millions)	2016	2015
Short-term debt	\$ 106	\$ 19
Long-term debt	1,850	1,819
Less: Cash and cash equivalents	(512)	(434)
Short-term investments	(4)	(6)
Total net debt (a)	\$ 1,440	\$ 1,398
Deferred income tax liabilities	\$ 171	\$ 139
Share-based payments subject to redemption	30	24
Total equity	2,595	2,180
Total capital	\$ 2,796	\$ 2,343
Total net debt and capital (b)	\$ 4,236	\$ 3,741
Net Debt to Capitalization percentage (a/b)	34.0 %	37.4 %

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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. At December 31, 2016, we had achieved all of our established objectives. 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 achieve 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 the Company’s original investment costs. Our ROCE for 2016 improved to 12.6 percent from 11.5 percent in 2015, reflecting our operating income growth in 2016.

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 1.4 at December 31, 2016, down from 1.6 last year and remains below our target. The decline primarily reflects our earnings growth.

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. At December 31, 2016, our Net Debt to Capitalization percentage was 34.0 percent, down from 37.4 percent a year ago, primarily reflecting a higher capital base driven by the impact of our 2016 net income.

Critical Accounting Policies and Estimates

Our consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America. 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 acquisitions in 2016 of Shandong Huanong Specialty Corn Development Co., Ltd. and TIC Gums Incorporated and in 2015 of Penford Corporation and Kerr Concentrates, Inc. were 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.

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Property, Plant and Equipment and Definite-Lived Intangible Assets

We have substantial investments in property, plant and equipment and definite-lived intangible assets. For property, plant and equipment, 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 value of property, plant and equipment and definite-lived intangible assets at December 31, 2016 was \$2.1 billion and \$301 million, respectively.

In assessing the recoverability of the carrying value of property, plant and equipment 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 property, plant and equipment 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 significant impairment charges for property, plant, and equipment or definite-lived intangible assets were recorded in 2016. However, significant risk and uncertainty exists concerning certain manufacturing assets in Argentina and Brazil that we are closely monitoring due to increased volatility experienced due to continued slow economic growth, heightened competition, and possible future negative economic growth.

In 2015, we announced plans to consolidate our manufacturing network in Brazil. Plants in Trombudo Central and Conchal have been closed and production has been moved to plants in Balsa Nova and Mogi Guaçu, respectively. In 2015, we recorded total pre-tax restructuring-related charges of \$12 million related to these plant closures, which included a \$10 million charge for impaired assets.

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 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 additional long-lived asset impairment as of December 31, 2016, 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. We continue to closely monitor certain assets in our South America business due to the volatility and challenging economic environment in the segment.

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 entity 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, 2016 was \$784 million and \$201 million, respectively, compared to \$601 million and \$144 million a year ago. The increase in both goodwill and indefinite-lived intangible asset is mainly due to the acquisition of TIC Gums in 2016, which were identified in purchase accounting and are open to change as the

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Company finalizes purchase accounting for the acquisition. See Note 3 of the notes to the consolidated financial statements for additional information related to our acquisition of TIC Gums.

We perform our goodwill and indefinite-lived intangible asset impairment tests annually as of October 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 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 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, 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 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 October 1, 2016, it was more likely than not that the fair value of our reporting units was greater than their carrying value (although the \$26 million of goodwill at our Brazil reporting unit continues to be closely monitored due to recent trends and increased volatility experienced in this reporting unit, such as continued slow economic growth, heightened competition and possible future negative economic growth).

In performing the qualitative annual impairment assessment for other indefinite-lived intangible assets, we considered various factors in determining if it was more likely than not that the fair value of these indefinite-lived intangible assets was greater than their carrying value. 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 October 1, 2016, we concluded that it was more likely than not that the fair value of these indefinite-lived intangible assets was greater than their carrying value.

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 \$21 million and \$12 million at December 31, 2016 and 2015, respectively. Of the \$9 million increase in the valuation allowance from 2015 to 2016, \$7 million is attributable to a valuation allowance recorded on the net deferred tax assets (including net operating losses) of Argentina.

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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 benefit. 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 have been pursuing relief from double taxation under the US and Canadian tax treaty for the years 2004-2013. During the 4th quarter of 2016, a tentative agreement was reached between the US and Canada for the specific issues being contested. We have established a net reserve of \$24 million including interest, recorded as a \$70 million liability and \$46 million benefit. In addition, as a result of the settlement, for the years 2014-2016, we established a net reserve of \$7 million, recorded as \$21 million liability and \$14 million benefit. Our liability for unrecognized tax benefits, excluding interest and penalties at December 31, 2016 and 2015 was \$86 million and \$12 million, respectively. The \$74 million increase from 2015 to 2016 is primarily attributable to the US Canada process referenced above, offset by other reversals in the period.

No taxes have been provided on approximately \$2.7 billion of undistributed foreign earnings that are planned to be 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 and withholding taxes may apply, which could materially affect our future effective tax rate and cash flows.

Retirement Benefits

The Company and its subsidiaries sponsor noncontributory defined benefit pension plans (qualified and non-qualified) covering a substantial portion of employees in the United States and Canada, and certain employees in other foreign countries. We also provide healthcare and life insurance benefits for retired employees in the United States, 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 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 \$8 million in 2016 and \$6 million in 2015.

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. In 2016, we changed the method used to estimate the service and interest cost components of net periodic benefit cost for our certain of our defined benefit pension and postretirement benefit plans. Historically, we 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, we have elected to use a full yield curve approach in the estimation of these

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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. We have made this change to improve the correlation between projected benefit cash flows and the corresponding yield curve spot rates and to provide a more precise measurement of service and interest costs. This change does not affect the measurement of our total benefit obligations as the change in the service cost and interest cost is completely offset in the actuarial (gain) loss reported. The weighted average discount rate used to determine our obligations under US pension plans for December 31, 2016 and 2015 was 4.30 percent and 4.54 percent, respectively. The weighted average discount rate used to determine our obligations under non-US pension plans for December 31, 2016 and 2015 was 4.34 percent and 4.57 percent, respectively. The weighted average discount rate used to determine our obligations under our postretirement plans for December 31, 2016 and 2015 was 5.42 percent and 5.30 percent, respectively.

A one-percentage point decrease in the discount rates at December 31, 2016 would have increased the accumulated benefit obligation and projected benefit obligation by the following amounts (millions):

US Pension Plans

Accumulated benefit obligation	\$ 45
Projected benefit obligation	\$ 46

Non-US Pension Plans

Accumulated benefit obligation	\$ 29
Projected benefit obligation	\$ 32

Postretirement Plans

Accumulated benefit obligation	\$ 8
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We changed our investment approach and related asset allocation for the US 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 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 passively-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 2017 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 5.75 percent for US plans and approximately 4.76 percent for Canadian plans. In developing the expected long-term rate of return assumption on plan assets, which consist mainly of US and Canadian equity and debt 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 2017 net periodic pension cost for the US and Canada plans by less than \$1 million each.

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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, 2016, the health care cost trend rate assumptions for the next year for the US, Canada and Brazil plans were 6.90 percent, 6.90 percent and 8.66 percent, respectively.

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, 2016 are as follows:

	2016
One-percentage point increase in trend rates:	
Increase in service cost and interest cost components	\$ 0.6
Increase in year-end benefit obligations	\$ 7.0
One-percentage point decrease in trend rates:	
Decrease in service cost and interest cost components	\$ 0.5
Decrease in year-end benefit obligations	\$ 6.0

See Note 10 of the notes to the consolidated financial statements for more information related to our benefit plans.

New Accounting Standards

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 introduces a new 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. This ASU also 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 has also issued additional ASUs to provide further updates and clarification to the 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. We plan to adopt the standard as of the effective date. The standard will allow various transition approaches upon adoption. We plan to use the modified retrospective approach for the transition to the new standard. Based on the analysis performed by the Company to date, our preliminary assessment is that the adoption of this guidance in the Update will not have a material impact on the Company’s revenue recognition timing or amounts, however, that assessment could change as we complete our analysis. We anticipate that our assessment will be complete by the third quarter of 2017.

In July 2015, the FASB issued ASU No. 2015-11, Inventory (Topic 330): Simplifying the Measurement of Inventory. This Update requires an entity to measure inventory at the lower of cost and net realizable value, removing the consideration of current replacement cost. It is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2016, with early adoption permitted. We do not expect that the adoption of the guidance in this Update will have a material impact on our Consolidated Financial Statements.

In January 2016, the FASB issued ASU No. 2016-01, Financial Instruments-Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities. This Update requires, among other things, that equity investments having readily determinable fair values be measured at fair value with changes recognized in net income rather than other comprehensive income. Equity investments that are accounted for under the equity method of accounting or result in consolidation of an investee are not included within the scope of this Update. The amendments in this Update are effective for fiscal years beginning after December 15, 2017, including interim periods within those fiscal years. The amendments in this Update are to be applied using a cumulative-effect adjustment to the balance sheet as of the beginning of the year of adoption. We do not expect that the adoption of the guidance in this Update will have a material impact on our Consolidated Financial Statements.

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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. This Update is effective for annual periods beginning after December 15, 2018, with early adoption permitted. We currently plan to adopt the standard as of the effective date. Adoption will require a modified retrospective transition. We expect the adoption of the guidance in this Update to have a material impact on our Consolidated Balance Sheet as operating leases will be recognized both as assets and liabilities on the balance sheet. We are in the process of quantifying the magnitude of these changes and assessing the implementation strategy for accounting for these changes.

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. We do not expect the Update to have a material impact on our Consolidated Financial Statements.

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, 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," "opportunity," "potential" 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, stockholders 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, continuation or worsening of the current economic, currency and political conditions in South America and economic 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

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and beverage, paper, 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; operating difficulties; availability of raw materials, including potato starch, tapioca, acacia gum, guar gum and the specific varieties of corn upon which 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 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. Factors relating to the acquisition of TIC Gums that could cause actual results and developments to differ from expectations include: the anticipated benefits of the acquisition, including synergies, may not be realized; and the integration of TIC Gum's operations with those of Ingredion may be materially delayed or may be more costly or difficult than expected.

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 or 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, 2016, approximately 59 percent or \$1.15 billion of our borrowings are fixed-rate debt and 41 percent or approximately \$806 million of our 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, 2016. A hypothetical increase of 1 percentage point in the weighted average floating interest rate would increase our annual interest expense by approximately \$8 million. See Note 7 of the notes to the consolidated financial statements entitled “Financing Arrangements” for further information.

At December 31, 2016 and 2015, the carrying and fair values of long-term debt were as follows:

(in millions)	2016		2015	
	Carrying amount	Fair value	Carrying amount	Fair value
3.2% senior notes, due October 1, 2026	\$ 496	\$ 482	\$ —	\$ —
4.625% senior notes, due November 1, 2020	398	428	398	420
1.8% senior notes, due September 25, 2017	299	301	299	300
6.625% senior notes, due April 15, 2037	254	299	254	302
6.0% senior notes, due April 15, 2017	200	202	200	211
5.62% senior notes, due March 25, 2020	200	217	200	218
U.S. revolving credit facility due October 11, 2021	—	—	—	—
U.S. revolving credit facility replaced October 2016	—	—	111	111
Term loan repaid September 2016	—	—	350	350
Fair value adjustment related to hedged fixed rate debt instruments	3	—	7	—
Total long-term debt	\$ 1,850	\$ 1,929	\$ 1,819	\$ 1,912

A hypothetical change of 1 percentage point in interest rates would change the fair value of our fixed rate debt at December 31, 2016 by approximately \$100 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 interest rate swap agreements that effectively convert the interest rates on our 6.0 percent \$200 million senior notes due April 15, 2017, our 1.8 percent \$300 million senior notes due September 25, 2017 and on \$200 million of our \$400 million 4.625 percent senior notes due November 1, 2020, to variable rates. These swap agreements call 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 US dollar LIBOR rate plus a spread. We have designated these interest rate swap agreements as hedges of the changes in fair value of the underlying debt obligations attributable to changes in interest rates and account for

them as fair-value hedges. The fair value of these interest rate swap agreements approximated \$3 million at December 31, 2016 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 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.

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Energy costs represent approximately 10 percent of our operating costs. 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 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 twelve to twenty-four months, primarily in our North American operations.

At December 31, 2016, we had outstanding futures and option contracts that hedged the forecasted purchase of approximately 122 million bushels of corn and 41 million pounds of soybean oil. 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. We also had outstanding swap and option contracts that hedged the forecasted purchase of approximately 20 million mmbtu's of natural gas at December 31, 2016. Additionally at December 31, 2016, we had outstanding ethanol futures contracts that hedged the forecasted sale of approximately 10 million gallons of ethanol. Based on our overall commodity hedge position at December 31, 2016, 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 \$34 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 US 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, 2016, we estimate that a hypothetical 10 percent decline in the value of the US dollar would have resulted in a transactional foreign exchange gain of approximately \$2 million. At December 31, 2016, our accumulated other comprehensive loss account included in the equity section of our Consolidated Balance Sheet includes a cumulative translation loss of approximately \$1.0 billion. The aggregate net assets of our foreign subsidiaries where the local currency is the functional currency approximated \$1.3 billion at December 31, 2016. A hypothetical 10 percent decline in the value of the US 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 \$147 million.

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ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders

Ingredion Incorporated:

We have audited the accompanying consolidated balance sheets of Ingredion Incorporated and subsidiaries (the Company) as of December 31, 2016 and 2015, and 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, 2016. We also have audited the Company's internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). 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 these consolidated financial statements and an opinion on the Company's internal control over financial reporting based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the consolidated financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. 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.

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 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.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Ingredion Incorporated and subsidiaries as of December 31, 2016 and 2015, and the results of their operations and their cash flows for each of the years in the three-year period ended December 31, 2016, 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, 2016, based on criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

The Company acquired Shandong Huanong Specialty Corn Development Co., LTD. (“Shandong”) and TIC Gums Incorporated (“TIC Gums”) during 2016, and management excluded from its assessment of the effectiveness of the Company’s internal control over financial reporting as of December 31, 2016, Shandong’s and TIC Gums’ internal control over financial reporting associated with total assets of \$435 million and total net sales of \$0.3 million included in the consolidated financial statements of the Company as of and for the year ended December 31, 2016. Our audit of internal control over financial reporting of the Company also excluded an evaluation of the internal control over financial reporting of Shandong and TIC Gums.

/s/ KPMG LLP
Chicago, Illinois
February 22, 2017

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INGREDION INCORPORATED

Consolidated Statements of Income

Years Ended December 31, (in millions, except per share amounts)	2016	2015	2014
Net sales before shipping and handling costs	\$ 6,022	\$ 5,958	\$ 5,998
Less - shipping and handling costs	318	337	330
Net sales	5,704	5,621	5,668
Cost of sales	4,302	4,379	4,553
Gross profit	1,402	1,242	1,115
Selling, general and administrative expenses	579	555	525
Other (income) - net	(4)	(1)	(24)
Restructuring/impairment charges	19	28	33
	594	582	534
Operating income	808	660	581
Financing costs-net	66	61	61
Income before income taxes	742	599	520
Provision for income taxes	246	187	157
Net income	496	412	363
Less - Net income attributable to non-controlling interests	11	10	8
Net income attributable to Ingredion	\$ 485	\$ 402	\$ 355
Weighted average common shares outstanding:			
Basic	72.3	71.6	73.6
Diluted	74.1	73.0	74.9
Earnings per common share of Ingredion:			
Basic	\$ 6.70	\$ 5.62	\$ 4.82
Diluted	6.55	5.51	4.74

See notes to the consolidated financial statements.

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INGREDION INCORPORATED

Consolidated Statements of Comprehensive Income

Years Ended December 31, (in millions)	2016	2015	2014
Net income	\$ 496	\$ 412	\$ 363
Other comprehensive income (loss):			
Losses on cash-flow hedges, net of income tax effect of \$6, \$19 and \$12, respectively	(11)	(42)	(29)
Amount of losses on cash-flow hedges reclassified to earnings, net of income tax effect of \$16, \$14 and \$23, respectively	33	32	50
Actuarial gain (loss) on pension and other postretirement obligations, settlements and plan amendments, net of income tax effect of \$4, \$5 and \$5, respectively	(10)	13	(12)
Losses related to pension and other postretirement obligations reclassified to earnings, net of income tax effect of \$-, \$- and \$1, respectively	1	1	4
Unrealized gain on investments, net of income tax effect	1	—	—
Currency translation adjustment	7	(324)	(212)
Comprehensive income	\$ 517	\$ 92	\$ 164
Less: Comprehensive income attributable to non-controlling interests	12	10	8
Comprehensive income attributable to Ingredion	\$ 505	\$ 82	\$ 156

See notes to the consolidated financial statements.

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INGREDION INCORPORATED

Consolidated Balance Sheets

As of December 31, (In millions, except share and per share amounts)	2016	2015
Assets		
Current assets:		
Cash and cash equivalents	\$ 512	\$ 434
Short-term investments	4	6
Accounts receivable — net	923	775
Inventories	789	715
Prepaid expenses	24	20
Total current assets	2,252	1,950
Property, plant and equipment, at cost		
Land	183	171
Buildings	704	643
Machinery and equipment	4,055	3,817
	4,942	4,631
Less: accumulated depreciation	(2,826)	(2,642)
Property, plant and equipment - net	2,116	1,989
Goodwill	784	601
Other intangible assets - net of accumulated amortization of \$106 and \$82, respectively	502	410
Deferred income tax assets	7	7
Other assets	121	117
Total assets	\$ 5,782	\$ 5,074
Liabilities and equity		
Current liabilities:		
Short-term borrowings	\$ 106	\$ 19
Accounts payable	440	423
Accrued liabilities	432	300
Total current liabilities	978	742
Non-current liabilities	158	170
Long-term debt	1,850	1,819
Deferred income tax liabilities	171	139
Share-based payments subject to redemption	30	24
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, 2016 and December 31, 2015, respectively	1	1

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Additional paid-in capital	1,149	1,160
Less - Treasury stock (common stock: 5,396,526 and 6,194,510 shares at December 31, 2016 and December 31, 2015, respectively) at cost	(413)	(467)
Accumulated other comprehensive loss	(1,071)	(1,102)
Retained earnings	2,899	2,552
Total Ingredion stockholders' equity	2,565	2,144
Non-controlling interests	30	36
Total equity	2,595	2,180
Total liabilities and equity	\$ 5,782	\$ 5,074

See notes to the consolidated financial statements.

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INGREDION INCORPORATED

Consolidated Statements of Equity and Redeemable Equity

(in millions)	Total Equity				Share-based		
	Common Stock	Additional Paid-In Capital	Treasury Stock	Accumulated Other Comprehensive Income (Loss)	Retained Earnings	Non-Controlling Interests	Payments Subject Redemption
Balance, December 31, 2013	\$ 1	\$ 1,166	\$ (225)	\$ (583)	\$ 2,045	\$ 25	\$ 24
Net income attributable to Ingredion					355		
Net income attributable to non-controlling interests						8	
Dividends declared					(125)	(3)	
Repurchases of common stock		(3)	(301)				
Issuance of common stock on exercise of stock options		(17)	37				
Stock option expense		7					
Other share-based compensation		5	8				(2)
Excess tax benefit on share-based compensation		6					
Other comprehensive loss				(199)			
Balance, December 31, 2014	\$ 1	\$ 1,164	\$ (481)	\$ (782)	\$ 2,275	\$ 30	\$ 22
Net income attributable to Ingredion					402		
Net income attributable to non-controlling interests						10	
Dividends declared					(125)	(4)	
Repurchases of common stock		(7)	(34)				
Issuance of common stock on exercise of stock options		(14)	35				
Stock option expense		7					
Other share-based compensation		2	13				2
Excess tax benefit on share-based compensation		8					
Other comprehensive loss				(320)			
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)	
Repurchases of common stock		(8)					
Issuance of common stock on exercise of stock options		(14)	43				
Stock option expense		9					

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Other share-based compensation		2		11				6
Other comprehensive income					31		(10)	
Balance, December 31, 2016	\$ 1	\$ 1,149	\$ (413)	\$ (1,071)	\$ 2,899	\$ 30	\$ 30	

See notes to the consolidated financial statements

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INGREDION INCORPORATED

Consolidated Statements of Cash Flows

Years Ended December 31, (in millions)	2016	2015	2014
Cash provided by operating activities:			
Net income	\$ 496	\$ 412	\$ 363
Non-cash charges to net income:			
Depreciation and amortization	196	194	195
Deferred income taxes	(5)	(6)	(11)
Write-off of impaired assets	—	10	33
Gain on sale of plant	—	(10)	—
Charge for fair value mark-up of acquired inventory	—	10	—
Other	101	96	68
Changes in working capital:			
Accounts receivable and prepaid expenses	(131)	(29)	(15)
Inventories	(19)	9	(6)
Accounts payable and accrued liabilities	127	30	66
Margin accounts	15	(34)	39
Other	(9)	4	(1)
Cash provided by operating activities	771	686	731
Cash used for investing activities:			
Payments for acquisitions, net of cash acquired of \$4, \$16, and \$-, respectively	(407)	(434)	—
Capital expenditures	(284)	(280)	(276)
Investment in non-consolidated affiliate	(2)	—	—
Short-term investments	1	27	(34)
Proceeds from disposal of plants and properties	3	38	5
Proceeds from sale of investment	—	—	11
Cash used for investing activities	(689)	(649)	(294)
Cash provided by (used for) financing activities:			
Proceeds from borrowings	1,000	1,388	231
Payments on debt	(874)	(1,366)	(213)
Debt issuance costs	(6)	—	—
Repurchases of common stock	(8)	(41)	(304)
Issuance of common stock	29	21	20
Dividends paid (including to non-controlling interests)	(141)	(126)	(128)
Excess tax benefit on share-based compensation	—	8	6
Cash used for financing activities	—	(116)	(388)
Effects of foreign exchange rate changes on cash	(4)	(67)	(43)

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Increase (decrease) in cash and cash equivalents	78	(146)	6
Cash and cash equivalents, beginning of period	434	580	574
Cash and cash equivalents, end of period	\$ 512	\$ 434	\$ 580

See notes to the consolidated financial statements.

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NOTES TO THE 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 sweetener, 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 accounting principles generally accepted in the United States of America 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 US dollar, are translated at current exchange rates with the related translation adjustments reported in equity as a component of accumulated other comprehensive income (loss). The US dollar is the functional currency for the Company’s Mexico subsidiary. Income statement accounts are translated at the average exchange rate during the period. However, significant nonrecurring items related to a specific event are recognized at the exchange rate on the date of the significant event. For foreign subsidiaries where the US 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/losses relating to assets and liabilities that are denominated in a currency other than the functional currency. For 2016, 2015 and 2014, the Company incurred foreign currency transaction losses of \$3 million, \$6 million and \$1 million, respectively. The Company's accumulated other comprehensive loss included in equity on the Consolidated Balance Sheets includes cumulative translation losses of approximately \$1 billion at both December 31, 2016 and 2015.

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.

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

Investments -- 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 \$2 million in SweeGen Inc. which it accounts for under the cost method. In 2014, the Company sold an investment that it had accounted for under the cost method. The Company received \$11 million in cash and recorded a pre-tax gain of \$5 million from the sale. 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. The Company did not have any investments accounted

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for under the equity method at December 31, 2016 or 2015. 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 comprehensive income. The Company would recognize a loss on its investments when there is a loss in value of an investment that is other than temporary. Investments are included in Other assets in the Consolidated Balance Sheets and are not significant.

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 2 to 25 years for all other assets. Where permitted by law, accelerated depreciation methods are used for tax purposes. 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 United States, the impairment analysis for long-lived assets occurs before the goodwill impairment assessment described below.

Goodwill and other intangible assets -- Goodwill (\$784 million and \$601 million at December 31, 2016 and 2015, 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 \$502 million and \$410 million at December 31, 2016 and 2015, respectively. The carrying amount of goodwill by reportable business segment at December 31, 2016 and 2015 was as follows:

(in millions)	North America	South America	Asia Pacific	EMEA	Total
Balance at December 31, 2013	\$ 278	\$ 78	\$ 97	\$ 82	\$ 535
Impairment charges	—	(33)	—	—	(33)
Currency translation	—	(13)	(4)	(7)	(24)
Balance at December 31, 2014	\$ 278	\$ 32	\$ 93	\$ 75	\$ 478
Acquisitions	148	—	—	—	148
Disposal	(2)	—	—	—	(2)
Currency translation	—	(10)	(7)	(6)	(23)
Balance at December 31, 2015	\$ 424	\$ 22	\$ 86	\$ 69	\$ 601
Acquisitions	186	—	—	—	186

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Currency translation	—	4	(1)	(6)	(3)
Balance at December 31, 2016	\$ 610	\$ 26	\$ 85	\$ 63	\$ 784
Goodwill before impairment charges	\$ 425	\$ 55	\$ 207	\$ 69	\$ 756
Accumulated impairment charges	(1)	(33)	(121)	—	(155)
Balance at December 31, 2015	\$ 424	\$ 22	\$ 86	\$ 69	\$ 601
Goodwill before impairment charges	\$ 611	\$ 59	\$ 206	\$ 63	\$ 939
Accumulated impairment charges	(1)	(33)	(121)	—	(155)
Balance at December 31, 2016	\$ 610	\$ 26	\$ 85	\$ 63	\$ 784

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

(in millions)	As of December 31, 2016				As of December 31, 2015			
	Gross	Accumulated Amortization	Net	Weighted Average Useful Life (years)	Gross	Accumulated Amortization	Net	Weighted Average Useful Life (years)
Trademarks/tradenames	\$ 143	\$ —	\$ 143	—	\$ 144	\$ —	\$ 144	—
Customer relationships	227	(42)	185	20	235	(32)	203	25
Technology	100	(57)	43	10	99	(45)	54	10
TIC Gums intangible assets (preliminary)	117	—	117	Various	—	—	—	—
Other	21	(7)	14	16	14	(5)	9	8
Total other intangible assets	\$ 608	\$ (106)	\$ 502	17	\$ 492	\$ (82)	\$ 410	19

On December 29, 2016, the Company completed its acquisition of TIC Gums Incorporated ("TIC Gums"). A preliminary allocation of the purchase price to the assets acquired and liabilities assumed was made based on available information and incorporating management's best estimates. The table above includes the preliminary allocation of both definite-lived and indefinite intangible assets. See Note 3 of the notes to the consolidated financial statements for additional information.

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 \$25 million in 2016, \$22 million in 2015, and \$14 million in 2014.

Based on acquisitions completed through December 31, 2016 including the preliminary purchase price allocations for TIC Gums and Shandong Huanong Specialty Corn Development Co., Ltd., intangible asset amortization expense for the next five years is shown below. The amortization is subject to change based on finalization of the purchase accounting for both acquisitions.

(in millions)	Amortization Expense
Year	
2017	\$ 30
2018	29
2019	29

2020	27
2021	18

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 October 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 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, 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 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 October 1, 2016, it was more likely than not that the fair value of its reporting units was greater than their carrying value (although the \$26 million of

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goodwill at the Company's Brazil reporting unit continues to be closely monitored due to recent trends and increased volatility experienced in this reporting unit, such as continued slow economic growth, heightened competition and possible future negative economic growth).

The results of the Company's impairment testing in the fourth quarter of 2014 indicated that the estimated fair value of the Company's Southern Cone of South America reporting unit was less than its carrying amount. Therefore, the Company recorded a non-cash impairment charge of \$33 million to write-off the remaining balance of goodwill for this reporting unit in 2014.

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. After assessing the qualitative factors, 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 this qualitative assessment, the Company concluded that as of October 1, 2016, 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 recognizes operating revenues at the time title to the goods and all risks of ownership transfer to the customer. This transfer is considered complete when a sales agreement is in place, delivery has occurred, pricing is fixed or determinable and collection is reasonably assured. In the case of consigned inventories, the title passes and the transfer of ownership risk occurs when the goods are used by the customer. Taxes assessed by governmental authorities and collected from customers are accounted for on a net basis and excluded from revenues.

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. 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 treasury lock agreements to lock the benchmark rate for an anticipated fixed-rate borrowing. 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 Sheet, 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.

Changes in the fair value of floating-to-fixed interest rate swaps, treasury 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 treasury locks are reclassified from accumulated other comprehensive income (“AOCI”) to the Consolidated Statement of Income over the life of the

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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 Statement 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 Sheet 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.

Stock-based compensation -- The Company has a stock incentive plan that provides for stock-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 stock-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 is computed by dividing net income attributable to Ingredion by the weighted average number of shares outstanding, which totaled 72.3 million for 2016, 71.6 million for 2015 and 73.6 million for 2014. Diluted earnings per share (EPS) is 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 74.1 million, 73.0 million and 74.9 million for 2016, 2015 and 2014, respectively. In 2016, the number of share-based awards of common stock excluded from the calculation of weighted average number of shares outstanding for the diluted EPS because their effects were not dilutive was not material. In 2015 and 2014, approximately 0.3 million and 0.1 million share-based awards of common stock, respectively, were excluded 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.

Recently adopted accounting standards -- In March 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2016-09, Compensation – Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting, a new standard that changes the accounting for certain aspects of share-based payments to employees. The new guidance requires excess tax benefits and tax deficiencies to be recorded in the income statement when the awards vest or are settled. In addition, cash flows related to excess tax benefits will no longer be separately classified as a financing activity apart from other income tax cash flows. The standard also allows us to repurchase more of an employee's shares for tax withholding purposes without triggering liability accounting, clarifies

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that all cash payments made on an employee's behalf for withheld shares should be presented as a financing activity on our cash flows statement, and provides an accounting policy election to account for forfeitures as they occur. The new standard is effective for us beginning January 1, 2017, with early adoption permitted.

The Company elected to early adopt the new guidance in the second quarter of fiscal year 2016. The primary impact of adoption was the recognition of excess tax benefits in the Company's provision for income taxes rather than paid-in capital for all periods in fiscal year 2016. The change in tax withholding guidance had no impact to retained earnings as of January 1, 2016, and therefore no cumulative effect was required to be recorded. The Company has elected to continue to estimate forfeitures expected to occur to determine the amount of compensation cost to be recognized in each period.

The Company elected to apply the presentation requirements for cash flows related to excess tax benefits prospectively, which resulted in an increase in cash provided by operating activities and a decrease in cash provided by financing activities for the year ended December 31, 2016. No changes in presentation will be made for prior years presented. The presentation requirements for cash flows related to employee taxes paid for withheld shares had no impact to any of the periods presented in the Company's consolidated cash flows statements since such cash flows have historically been presented as a financing activity.

Adoption of the new standard resulted in the recognition of excess tax benefits in the Company's provision for income taxes rather than additional paid-in-capital of \$12 million for the year ended December 31, 2016, as well as an increase of 0.4 million diluted weighted average common shares outstanding for this period. The adoption of the new standard impacted the Company's previously reported results for the first quarter of 2016 as follows:

(in millions, except share and per share amounts)	Three Months Ended March 31, 2016	
	As reported	As adjusted
Consolidated Statement of Income:		
Provision for income taxes	\$ 56	\$ 53
Net income	\$ 130	\$ 133
Net income attributable to Ingredion	\$ 127	\$ 130
Basic earnings per common share of Ingredion	\$ 1.77	\$ 1.81
Diluted earnings per common share of Ingredion	\$ 1.73	\$ 1.77
Diluted weighted average common shares outstanding	73.3	73.6
Consolidated Statement of Cash Flows:		
Cash provided by operating activities	\$ 96	\$ 99
Cash provided by financing activities	\$ 9	\$ 6
Consolidated Balance Sheet:		

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Additional paid-in capital	\$ 1,154	\$ 1,151
Retained earnings	\$ 2,647	\$ 2,650

NOTE 3 – Acquisitions

On August 3, 2015, the Company completed its acquisition of Kerr Concentrates, Inc. (“Kerr”), a privately held producer of natural fruit and vegetable concentrates for \$102 million in cash. Kerr serves major food and beverage companies, flavor houses and ingredient producers from its manufacturing locations in Oregon and California. The acquisition of Kerr provided the Company with the opportunity to expand its product portfolio. The Company finalized the purchase price allocation during the first quarter of 2016, which did not have a significant impact on previously estimated amounts.

On December 29, 2016, the Company completed its acquisition of TIC Gums Incorporated (“TIC Gums”), a privately held, U.S.-based company that provides advanced texture systems to the food and beverage industry for \$395 million, net of cash acquired. A preliminary allocation of the purchase price to the assets acquired and liabilities assumed was made based on available information and incorporating management’s best estimates. The assets acquired and liabilities assumed in the transactions are generally recorded at their estimated acquisition date fair values, while transaction costs associated with the acquisition were expensed as incurred. All of the recorded assets and liabilities, including working capital, PP&E, goodwill and intangibles, are open to change as the Company is still in process of performing purchase accounting. The

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Company funded the acquisition with proceeds from borrowings under its revolving credit agreement. The results of the acquired operations will be included in the Company's consolidated results from the respective acquisition dates forward within the North America and Asia Pacific business segments.

Goodwill represents the amount by which the purchase price exceeds the estimated fair value of the net assets acquired. The goodwill of \$186 million and \$27 million for TIC Gums and Kerr, respectively, result from synergies and other operational benefits expected to be derived from the acquisitions. The goodwill related to each acquisition is tax deductible due to the structure of the acquisitions.

The following table summarizes the finalized purchase price allocation for the acquisition of Kerr and preliminary purchase price allocation for the acquisition of TIC Gums as of August 3, 2015 and December 29, 2016, respectively:

(in millions)	Final Kerr	Preliminary TIC Gums
Working capital (excluding cash)	\$ 37	\$ 50
Property, plant and equipment	8	42
Other assets	1	—
Identifiable intangible assets	29	117
Goodwill	27	186
Total purchase price	\$ 102	\$ 395

The identifiable intangible assets for the acquisition of Kerr included items such as customer relationships, proprietary technology, trade names, and noncompetition agreements. The fair values of these intangible assets were determined to be Level 3 under the fair value hierarchy. Level 3 inputs are unobservable inputs for an asset or liability. Unobservable inputs are 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 an asset or liability at the measurement date. The following table presents the fair values, valuation techniques, and estimated remaining useful life at the acquisition date for these Level 3 measurements (dollars in millions):

	Fair Value	Valuation Technique	Estimated Useful Life
Customer Relationships	\$ 24	Multi-period excess earnings method	15 years
Trade Names	\$ 4	Relief-from-royalty method	11 years
Noncompetition Agreements	\$ 1	Income Approach	3 years

The fair value of customer relationships, trade names and noncompetition agreements were determined through the valuation techniques described above using various judgmental assumptions such as discount rates, royalty rates, and customer attrition rates, as applicable. The fair values of property, plant and equipment associated with the acquisitions were determined to be Level 3 under the fair value hierarchy. Property, plant and equipment values were

estimated using either the cost or market approach.

On November 29, 2016, the Company completed its acquisition of Shandong Huanong Specialty Corn Development Co., Ltd. (“Shandong Huanong”) in China for \$12 million in cash. The acquisition of Shandong Huanong, located in Shandong Province, adds a second manufacturing facility to our operations in China. It produces starch raw material for our plant in Shanghai, which makes value-added ingredients for the food industry. The acquisition added \$7 million to intangible assets, with \$5 million allocated to net tangible assets. The purchase accounting is still open to finalize the valuation of the intangibles.

Pro-forma results of operations for the acquisitions made in 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 \$3 million of pre-tax acquisition and integration costs for 2016 associated with its recent acquisitions. In 2015, the Company incurred \$10 million of pre-tax acquisition and integration costs associated with the 2015 acquisitions.

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NOTE 4 – Sale of Canadian Plant

On December 15, 2015, the Company sold its manufacturing assets in Port Colborne, Ontario, Canada for \$35 million in cash. The Company recorded a pre-tax gain of \$10 million on the sale, net of the write-off of goodwill of \$2 million associated with the business. The Company also recorded pre-tax restructuring charges of \$4 million in 2015 associated with the sale of the plant as described below. Additionally, in 2016 the Company recorded pre-tax restructuring charges of \$2 million related to the Port Colborne plant sale.

NOTE 5 – Restructuring and Impairment Charges

In 2016, the Company recorded \$19 million of restructuring charges consisting of \$11 million of employee-related severance and other costs due to the execution of global information technology (“IT”) outsourcing contracts, \$6 million of employee-related severance costs associated with the Company’s optimization initiatives in North America and South America, and \$2 million of costs attributable to the 2015 Port Colborne plant sale. The Company expects to incur approximately \$1 million of costs associated with the IT outsourcing project in 2017.

On September 8, 2015, the Company announced that it planned to consolidate its manufacturing network in Brazil. Production at plants in Trombudo Central and Conchal has ceased and has been moved to plants in Balsa Nova and Mogi Guaçu, respectively. The Company recorded total pre-tax restructuring-related charges of \$12 million related to these plant closures in 2015, consisting of a \$10 million charge for impaired assets and \$2 million of employee severance-related costs.

The Company also recorded pre-tax restructuring charges of \$4 million in 2015, of which \$2 million was for estimated employee severance-related costs, associated with the Port Colborne plant sale.

Additionally in 2015, the Company recorded a pre-tax restructuring charge of \$12 million for employee severance-related costs associated with the Penford acquisition.

A summary of the Company’s severance accrual at December 31, 2016 is as follows (in millions):

Balance in severance accrual at December 31, 2015	\$ 10
Restructuring charge for employee severance costs:	

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IT transformation	6
North America and South America employee-related severance	6
Payments made to terminated employees	(15)
Balance in severance accrual at December 31, 2016	\$ 7

The severance accrual at December 31, 2016 is expected to be paid within the next twelve months.

The Company assesses goodwill and other indefinite-lived intangible assets for impairment annually (or more frequently if impairment indicators arise) as of October 1 of each year. No goodwill impairment was recognized in either the fourth quarter of 2016 or 2015 related to the Company's annual impairment testing. The results of the Company's impairment testing in the fourth quarter of 2014 indicated that the estimated fair value of the Company's Southern Cone of South America reporting unit was less than its carrying amount. Therefore, the Company recorded a non-cash impairment charge of \$33 million in the fourth quarter of 2014 to write-off the remaining balance of goodwill for this reporting unit.

NOTE 6 – Financial Instruments, Derivatives and Hedging Activities

The Company is exposed to market risk stemming from changes in commodity prices (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 futures, options and swap contracts, foreign currency forward contracts, swaps and options, and interest rate swaps.

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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 twelve to twenty-four 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 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. Effective with the acquisition of Penford, the Company now produces and sells ethanol. The Company now enters into futures contracts to hedge price risk associated with fluctuations in market prices 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.

At December 31, 2016, the amount included in AOCI relating to these commodities-related derivative instruments designated as cash-flow hedges was not significant. At December 31, 2015, AOCI included \$21 million of losses (net of tax of \$10 million), pertaining to commodities-related derivative instruments designated as cash-flow hedges.

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 Treasury Lock agreements ("T-Locks") and interest rate swaps. The Company periodically enters into T-Locks to fix the benchmark component of the interest rate to be established for certain planned fixed-rate debt issuances. 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 net gain or loss recognized in earnings during 2016, 2015 and 2014 was not significant. The Company also, from time to time, enters into interest rate swap agreements that effectively convert the interest rate on certain fixed-rate debt to a variable rate. These swaps call for the Company to receive interest at a fixed rate and to pay interest at a variable rate, thereby creating the equivalent of variable-rate debt. The Company designates these interest rate swap agreements as hedges of the changes in fair value of the underlying debt obligation attributable to changes in interest rates and accounts for them 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 (that is, the change in fair value) of the hedged debt instrument that is attributable to changes in interest rates (that is, the hedged risk) which is also recognized in earnings. The Company did not have any T-Locks outstanding at December 31, 2016 or 2015. At December 31, 2016 and 2015, AOCI included \$4 million of losses (net of income taxes of \$2 million) and \$5 million of losses (net of income taxes of \$2 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.

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In September 2014, the Company entered into interest rate swap agreements that effectively convert the interest rates on its 6.0 percent \$200 million senior notes due April 15, 2017, its 1.8 percent \$300 million senior notes due September 25, 2017 and on \$200 million of its \$400 million 4.625 percent senior notes due November 1, 2020, to variable rates. These swap agreements call 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 US dollar LIBOR rate plus a spread. The Company has designated these interest rate swap agreements as hedges of the changes in fair value of the underlying debt obligations attributable to changes in interest rates and accounts for them as fair-value hedges. The fair value of these interest rate swap agreements was \$3 million and \$7 million at December 31, 2016 and 2015, respectively, 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 the hedged debt obligations.

Foreign currency hedging: Due to the Company's global operations, including 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 US 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. At December 31, 2016, the Company had foreign currency forward sales contracts with an aggregate notional amount of \$432 million and foreign currency forward purchase contracts with an aggregate notional amount of \$227 million that hedged transactional exposures. At December 31, 2015, the Company had foreign currency forward sales contracts with an aggregate notional amount of \$606 million and foreign currency forward purchase contracts with an aggregate notional amount of \$287 million that hedged transactional exposures. The fair values of these derivative instruments were assets of \$5 million and \$10 million at December 31, 2016 and 2015, respectively.

The Company also has foreign currency derivative instruments that hedge certain foreign currency transactional exposures and are designated as cash-flow hedges. The amounts included in AOCI relating to these hedges at both December 31, 2016 and 2015 were not significant.

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 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 Condensed Consolidated Balance sheets, are reflected below:

Derivatives designated as hedging instruments: (in millions)	Fair Value of Derivative Instruments					
	Balance Sheet Location	Fair Value		Balance Sheet Location	Fair Value	
		At December 31, 2016	At December 31, 2015		At December 31, 2016	At December 31, 2015
Commodity and foreign currency	Accounts receivable-net	\$ 31	\$ 18	Accounts payable and accrued liabilities	\$ 25	\$ 38
Commodity, foreign currency, and interest rate contracts	Other assets	8	14	Non-current liabilities	2	4
Total		\$ 39	\$ 32		\$ 27	\$ 42

At December 31, 2016, the Company had outstanding futures and option contracts that hedged the forecasted purchase of approximately 122 million bushels of corn and 41 million pounds of soybean oil. 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. The Company also had outstanding swap and option contracts that hedged the forecasted purchase of approximately 20 million mmbtu's of natural gas at December 31, 2016.

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Additionally at December 31, 2016, the Company had outstanding ethanol futures contracts that hedged the forecasted sale of approximately 10 million gallons of ethanol.

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

Derivatives in Cash-Flow Hedging Relationships Commodity and foreign currency contracts	Amount of Losses Recognized in OCI			Location of Losses Reclassified from AOCI into Income	Amount of Losses Reclassified from AOCI into Income		
	Year Ended December 31, 2016	Year Ended December 31, 2015	Year Ended December 31, 2014		Year Ended December 31, 2016	Year Ended December 31, 2015	Year Ended December 31, 2014
Interest rate contracts		—	—	Financing costs, net	(2)	(3)	(3)
Total	\$ (17)	\$ (61)	\$ (41)		\$ (49)	\$ (46)	\$ (73)
				Gross profit	\$ (47)	\$ (43)	\$ (70)

At December 31, 2016, AOCI included approximately \$1 million of losses (net of tax), on commodities-related derivative instruments designated as cash-flow hedges that are expected to be reclassified into earnings during the next twelve 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 cost. Additionally at December 31, 2016, AOCI included \$1 million of losses (net of tax) on settled T-Locks and \$1 million of losses (net of tax) related to foreign currency hedges, which are expected to be reclassified into earnings during the next twelve months. Cash-flow hedges discontinued during 2016 or 2015 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, 2016				As of December 31, 2015			
	Total	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3
Available for sale securities	\$ 7	\$ 7	\$ —	\$ —	\$ 6	\$ 6	\$ —	\$ —
Derivative assets	39	6	33	—	32	2	30	—
Derivative liabilities	27	11	16	—	42	21	21	—
Long-term debt	1,929	—	1,929	—	1,912	—	1,912	—

Level 1 inputs consist of quoted prices (unadjusted) in active markets for identical assets or liabilities. 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. 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.

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, 2016 and 2015.

(in millions)	2016 Carrying amount	Fair value	2015 Carrying amount	Fair value
3.2% senior notes due October 1, 2026	\$ 496	\$ 482	\$ —	\$ —
4.625% senior notes due November 1, 2020	398	428	398	420
1.8% senior notes due September 25, 2017	299	301	299	300
6.625% senior notes due April 15, 2037	254	299	254	302
6.0% senior notes due April 15, 2017	200	202	200	211
5.62% senior notes due March 25, 2020	200	217	200	218
U.S. revolving credit facility replaced October 2016	—	—	111	111
Term loan repaid September 2016	—	—	350	350
Fair value adjustment related to hedged fixed rate debt instruments	3	—	7	—
Total long-term debt	\$ 1,850	\$ 1,929	\$ 1,819	\$ 1,912

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NOTE 7 – Financing Arrangements

The Company had total debt outstanding of \$1.96 billion and \$1.84 billion at December 31, 2016 and 2015, respectively. Short-term borrowings at December 31, 2016 and 2015 consist primarily of amounts outstanding under various unsecured local country operating lines of credit.

Short-term borrowings consist of the following at December 31:

(in millions)	2016	2015
Short-term borrowings in various currencies (at rates ranging from 1% to 7% for 2016 and 2% to 6% for 2015)	\$ 106	\$ 19

On September 22, 2016, the Company issued 3.2 percent Senior Notes due October 1, 2026 in an aggregate principal amount of \$500 million. These notes are unsecured obligations of the Company and rank equally with all of the Company's other existing and future unsecured, senior indebtedness. Interest on the notes is required to be paid semi-annually in arrears on April 1 and October 1 of each year, commencing April 1, 2017. The Company may redeem these notes at its option, at any time in whole or from time to time in part, at the redemption prices set forth in the supplemental indenture pursuant to which these notes were issued. The net proceeds from the sale of the notes of approximately \$497 million were used to repay the \$350 million due under the Company's Term Loan Credit Agreement, plus accrued interest, to repay \$52 million of borrowings under the Company's previously existing \$1 billion revolving credit facility and for general corporate purposes.

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 our previously existing \$1 billion senior unsecured revolving credit facility that would have matured on October 22, 2017.

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.

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.

At December 31, 2016, there were no borrowings outstanding under the Revolving Credit Agreement. In addition to borrowing availability under its Revolving Credit Agreement, the Company has approximately \$443 million of unused operating lines of credit in the various foreign countries in which it operates.

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

(in millions)	2016	2015
3.2% senior notes due October 1, 2026	\$ 496	\$ —
4.625% senior notes due November 1, 2020	398	398
1.8% senior notes due September 25, 2017	299	299
6.625% senior notes due April 15, 2037	254	254
6.0% senior notes due April 15, 2017	200	200
5.62% senior notes due March 25, 2020	200	200
U.S. revolving credit facility replaced October 2016	—	111
Term loan repaid September 2016	—	350
Fair value adjustment related to hedged fixed rate debt instrument	3	7
Total	\$ 1,850	\$ 1,819
Less: current maturities	—	—
Long-term debt	\$ 1,850	\$ 1,819

In the fourth quarter of 2015, the Company early adopted the provisions of ASU No. 2015-03, Interest-Imputation of Interest (Subtopic 835-30), which requires that debt issuance costs associated with a recognized debt liability be presented in the balance sheet as a direct reduction from the carrying amount of that debt in the balance sheet. Accordingly, at December 31, 2016 and 2015, debt issuance costs of \$8 million and \$5 million, respectively, that otherwise would have been reported as Other assets are classified as reductions of the carrying values of the related debt obligations. Deferred costs associated with the Company's Revolving Credit Agreement remain in Other assets.

The Company's long-term debt matures as follows: \$500 million in 2017, \$600 million in 2020, \$500 million in 2026, and \$250 million in 2037. The Company's long-term debt at December 31, 2016 includes \$200 million of 6.0 percent Senior Notes that mature on April 15, 2017 and \$300 million of 1.8 percent Senior Notes that mature on September 25, 2017. These borrowings are included in long-term debt at December 31, 2016 as the Company had the ability and intent to refinance the notes on a long-term basis prior to the respective maturity dates.

Ingredion Incorporated guarantees certain obligations of its consolidated subsidiaries. The amount of the obligations guaranteed aggregated \$121 million and \$204 million at December 31, 2016 and 2015, respectively.

NOTE 8 – Leases

The Company leases rail cars, certain machinery and equipment, and office space under various operating leases. Rental expense under operating leases was \$53 million, \$52 million and \$47 million in 2016, 2015 and 2014,

respectively. Minimum lease payments due on non-cancellable leases existing at December 31, 2016 are shown below:

(in millions)	
Year	Minimum Lease Payments
2017	\$ 45
2018	41
2019	36
2020	28
2021	23
Balance thereafter	50

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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)	2016	2015	2014
Income before income taxes:			
United States	\$ 176	\$ 109	\$ 83
Foreign	566	490	437
Total	\$ 742	\$ 599	\$ 520
Provision for income taxes:			
Current tax expense			
US federal	\$ 95	\$ 26	\$ 8
State and local	8	3	1
Foreign	148	164	159
Total current	\$ 251	\$ 193	\$ 168
Deferred tax expense (benefit)			
US federal	\$ 13	\$ (8)	\$ (16)
State and local	1	(1)	(2)
Foreign	(19)	3	7
Total deferred	\$ (5)	\$ (6)	\$ (11)
Total provision for income taxes	\$ 246	\$ 187	\$ 157

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 at December 31, 2016, and 2015 are summarized as follows:

(in millions)	2016	2015
Deferred tax assets attributable to:		
Employee benefit accruals	\$ 39	\$ 34
Pensions and postretirement plans	30	30
Derivative contracts	3	14
Net operating loss carryforwards	18	13
Foreign tax credit carryforwards	4	3
Other	24	38
Gross deferred tax assets	\$ 118	\$ 132
Valuation allowance	(21)	(12)
Net deferred tax assets	\$ 97	\$ 120
Deferred tax liabilities attributable to:		
Property, plant and equipment	\$ 206	\$ 193
Identified intangibles	55	59

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Gross deferred tax liabilities	\$ 261	\$ 252
Net deferred tax liabilities	\$ 164	\$ 132

Of the \$18 million of tax-effected net operating loss carryforwards at December 31, 2016, approximately \$8 million are for state 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. At December 31, 2016, the Company maintains valuation allowances of \$8 million for state loss carryforwards, \$2 million for state credits and \$9 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 on foreign subsidiaries net deferred tax assets of \$2 million.

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A reconciliation of the US federal statutory tax rate to the Company's effective tax rate follows:

	2016	2015	2014
Provision for tax at US statutory rate	35.00 %	35.00 %	35.00 %
Tax rate difference on foreign income	(5.51)	(5.75)	(6.26)
State and local taxes — net	0.33	0.28	0.13
Nondeductible goodwill impairment — Southern Cone	—	—	2.18
Tax impact of fluctuations in Mexican Pesos to US Dollar	2.40	2.87	1.30
Net tax impact of US foreign tax credits	(2.33)	0.93	(0.31)
Net tax impact of US / Canada settlement	3.17	—	—
Other items — net	0.06	(2.11)	(1.85)
Provision at effective tax rate	33.12 %	31.22 %	30.19 %

The Company has significant operations in Canada, Mexico and Pakistan where the statutory tax rates are 25 percent, 30 percent and 31 percent in 2016, 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 Company uses the US dollar as the functional currency for its subsidiaries in Mexico. Because of the decline in the value of the Mexican peso versus the US dollar in 2016 and 2015, the Mexican tax provision includes increased tax expense of approximately \$18 million or 2.4 percentage points on the effective tax rate in 2016, and \$17 million or 2.87 percentage points on the effective tax rate in 2015. These impacts are largely associated with foreign currency translation gains for local tax purposes on net US dollar monetary assets held in Mexico for which there is no corresponding gain in pre-tax income.

The Company has been pursuing relief from double taxation under the US and Canadian tax treaty for the years 2004 through 2013. During the fourth quarter of 2016, a tentative agreement was reached between the US and Canada for the specific issues being contested. The Company has established a net reserve of \$24 million, or 3.17 percentage points on the effective tax rate in 2016. In addition, as a result of the settlement, for the years 2014-2016, the Company has established a net reserve for \$7 million, or 0.97 percentage points, on the effective tax rate in 2016. Of this amount, \$4 million pertains to 2016.

During 2015, an audit was settled at a National Starch subsidiary related to a pre-acquisition period for which we are indemnified by Akzo Nobel N.V. ("Akzo"). In the third quarter of 2014, the Company recognized increased tax expense to reserve approximately \$7 million (\$5 million of tax and \$2 million of interest) or 1.3 percentage points in the effective tax rate for the audit. In the third quarter of 2015 the reserve was reduced by approximately \$4 million (\$3 million of tax and \$1 million of interest) which resulted in a decrease of 0.7 percentage points in the 2015 effective tax rate. These impacts are included in the rate reconciliation as "Other". The \$7 million of tax expense and \$4 million of reduced tax expense were recorded in the tax provision of the subsidiary, while the reimbursement from Akzo under the indemnity is recorded as other income, which results in no impact in net income for all periods.

Provisions are made for estimated US and foreign income taxes, less credits that may be available, on distributions from foreign subsidiaries to the extent dividends are anticipated. No provision has been made for income taxes on approximately \$2.7 billion of undistributed earnings of foreign subsidiaries at December 31, 2016, as such amounts are considered permanently reinvested. It is not practicable to estimate the additional income taxes, including applicable withholding taxes and credits that would be due upon the repatriation of these earnings.

A reconciliation of the beginning and ending amounts of unrecognized tax benefits, excluding interest and penalties, for 2016 and 2015 is as follows:

(in millions)	2016	2015
Balance at January 1	\$ 12	\$ 23
Additions for tax positions related to prior years	72	—
Reductions for tax positions related to prior years	(9)	(10)
Additions based on tax positions related to the current year	12	1
Reductions related to a lapse in the statute of limitations	(1)	(2)
Balance at December 31	\$ 86	\$ 12

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Of the \$86 million of unrecognized tax benefits at December 31, 2016, \$29 million represents the amount that, if recognized, could affect the effective tax rate in future periods. The remaining \$57 million includes an offset of \$52 million for an income tax receivable and \$4 million of federal benefit that would be created as part of the Canada and US process described previously.

The Company accounts for interest and penalties related to income tax matters within the provision for income taxes. The Company has accrued \$9 million of interest expense related to the unrecognized tax benefits as of December 31, 2016. The accrued interest expense was \$4 million as of December 31, 2015.

The Company is subject to US federal income tax as well as income tax in multiple state and non-US jurisdictions. The US federal tax returns are subject to audit for the years 2013 to 2016. In general, the Company's foreign subsidiaries remain subject to audit for years 2010 and later.

It is also reasonably possible that the total amount of unrecognized tax benefits including interest and penalties will increase or decrease within twelve months of December 31, 2016. The Company has classified \$72 million of the unrecognized tax benefits as current because they are expected to be resolved within the next twelve months. Of the \$72 million, \$26 million represents the amount that if recognized, could affect the effective tax rate in future periods.

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 United States 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 only partially funded, and payments to plan participants are made by the Company.

The Company also provides healthcare and/or life insurance benefits for retired employees in the United States, Canada and Brazil. Healthcare benefits for retirees outside of the United States, Canada, and Brazil are generally

covered through local government plans.

On December 31, 2016, the Company merged its existing US qualified pension plans into the Ingredion Incorporated Cash Balance Plan for Salaried Employees. The Ingredion Incorporated Cash Balance Plan for Salaried Employees was renamed the Ingredion Pension Plan (“Combined Plan”). Certain US salaried employees are covered by a component of the Combined Plan which provides benefits based on service credits to the participating employees’ accounts of between 3 percent and 10 percent of base salary, bonus and overtime. On January 1, 2017, the Company amended this component of the Combined Plan to eliminate the service credit percentage increases and freeze them at the January 1, 2017 rate for eligible salaried employees. The amendment also impacted the nonqualified supplemental retirement plans. The plan amendment resulted in a reduction of the benefit obligation of \$5 million as of December 31, 2016. The benefit will be recognized over the remaining life of the plan as a prior service cost benefit.

In April 2016, the Company performed a pension remeasurement for one of its pension plans in Canada as a result of lump sum settlement payments made related to the Port Colborne plant sale. This plan settlement resulted in a reduction in the funded status of the Plan by \$5 million. The Company recorded a pension charge of \$1 million as a result of the settlement.

During the first quarter of 2015, the Company amended one of its pension plans in Canada to eliminate future benefit accruals for the plan effective April 30, 2015. This plan curtailment resulted in an improvement in the funded status of the plan by approximately \$9 million in the first quarter. The impact of this plan curtailment on net periodic benefit cost for the year ended December 31, 2015 was not significant. Also during the first quarter of 2015, the Company acquired certain pension and postretirement obligations and related assets as part of the Penford acquisition.

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In the fourth quarter of 2014, the Company amended its retiree medical plan in the US for salaried employees. This amendment provided that employees were required to meet certain age and years of service requirements through December 31, 2014 in order to continue to participate in the plan. As such, the number of eligible employees was significantly reduced. Eligible US salaried employees are provided with access to postretirement medical insurance through retirement healthcare spending accounts. US salaried employees accrue an account during employment, which can be used after employment to purchase postretirement medical insurance from the Company prior to age 65 and Medigap or Medicare HMO policies after age 65. The accounts are credited with a flat dollar amount and indexed for inflation annually during employment. These credits ceased after December 31, 2014. The accounts also accrue interest credits using a rate equal to a specified amount above the yield on five-year US Treasury notes. Employees can use the amounts accumulated in these accounts, including credited interest, to purchase postretirement medical insurance. Employees became eligible for benefits when they met minimum age and service requirements. The Company recognizes the cost of these postretirement benefits by accruing a flat dollar amount on an annual basis for each eligible US salaried employee.

Pension Obligation and Funded Status -- The changes in pension benefit obligations and plan assets during 2016 and 2015, 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, 2016 and 2015, were as follows:

(in millions)	US Plans		Non-US Plans	
	2016	2015	2016	2015
Benefit obligation				
At January 1	\$ 359	\$ 314	\$ 219	\$ 267
Service cost	6	8	3	4
Interest cost	14	14	10	12
Benefits paid	(16)	(15)	(15)	(11)
Actuarial loss (gain)	10	(26)	6	(4)
Business combinations / transfers	—	73	—	—
Curtailed / settlement / amendments	(6)	(9)	(5)	(11)
Foreign currency translation	—	—	5	(38)
Benefit obligation at December 31	\$ 367	\$ 359	\$ 223	\$ 219
Fair value of plan assets				
At January 1	\$ 354	\$ 313	\$ 206	\$ 232
Actual return on plan assets	20	(2)	11	16
Employer contributions	10	11	7	5
Benefits paid	(16)	(15)	(15)	(11)
Plan settlements	—	(9)	(5)	—
Business combinations	—	56	—	—
Foreign currency translation	—	—	7	(36)
Fair value of plan assets at December 31	\$ 368	\$ 354	\$ 211	\$ 206
Funded status	\$ 1	\$ (5)	\$ (12)	\$ (13)

Amounts recognized in the Consolidated Balance Sheets as of December 31, 2016 and 2015 were as follows:

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(in millions)	US Plans		Non-US Plans	
	2016	2015	2016	2015
Non-current asset	\$ 12	\$ 18	\$ 29	\$ 32
Current liabilities	(1)	(1)	(1)	(3)
Non-current liabilities	(10)	(22)	(40)	(42)
Net asset (liability) recognized	\$ 1	\$ (5)	\$ (12)	\$ (13)

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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, 2016 and 2015 were as follows:

(in millions)	US Plans		Non-US Plans	
	2016	2015	2016	2015
Net actuarial loss	\$ 28	\$ 19	\$ 52	\$ 48
Transition obligation	—	—	1	2
Prior service credit	(6)	(2)	(1)	(1)
Net amount recognized	\$ 22	\$ 17	\$ 52	\$ 49

The increase in the net amount recognized in accumulated comprehensive loss at December 31, 2016 for the US plans and Non-US plans, as compared to December 31, 2015, is largely due to the effect of the decrease in discount rates used to measure the Company's obligations under its pension plan, with an offset in the US plans for the effect of the service cost amendment to the Combined Plan described above.

The accumulated benefit obligation for all defined benefit pension plans was \$555 million and \$541 million at December 31, 2016 and 2015, respectively.

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

(in millions)	US Plans		Non-US Plans	
	2016	2015	2016	2015
Projected benefit obligation	\$ 11	\$ 164	\$ 43	\$ 47
Accumulated benefit obligation	10	158	36	38
Fair value of plan assets	—	141	2	2

Components of net periodic benefit cost consist of the following for the years ended December 31, 2016, 2015 and 2014:

(in millions)	US Plans			Non-US Plans		
	2016	2015	2014	2016	2015	2014

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Service cost	\$ 6	\$ 8	\$ 7	\$ 3	\$ 4	\$ 6
Interest cost	14	14	13	10	12	14
Expected return on plan assets	(20)	(24)	(21)	(10)	(13)	(14)
Amortization of actuarial loss	1	1	1	2	3	3
Settlement loss (gain)	—	(1)	—	1	—	—
Net periodic benefit cost	\$ 1	\$ (2)	\$ —	\$ 6	\$ 6	\$ 9

For the US plans, the Company estimates that net periodic benefit cost for 2017 will include approximately \$1 million relating to the amortization of its accumulated actuarial gain included in accumulated other comprehensive loss at December 31, 2016.

For the non-US plans, the Company estimates that net periodic benefit cost for 2017 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 during 2016 was as follows:

(in millions, pre-tax)	US Plans	Non-US Plans
Net actuarial loss	\$ 10	\$ 6
New prior service cost	(6)	(1)
Amortization of actuarial loss	(1)	(2)
Total recorded in other comprehensive income	3	3
Net periodic benefit cost	1	6
Total recorded in other comprehensive income and net periodic benefit cost	\$ 4	\$ 9

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

	US Plans		Non-US Plans	
	2016	2015	2016	2015
Discount rate	4.30 %	4.54 %	4.34 %	4.57 %
Rate of compensation increase	4.54 %	4.71 %	3.62 %	3.73 %

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

	US Plans			Non-US Plans		
	2016	2015	2014	2016	2015	2014
Discount rate	4.30 %	4.00 %	4.60 %	4.57 %	4.47 %	5.60 %
Expected long-term return on plan assets	5.75 %	7.00 %	7.25 %	5.41 %	6.48 %	6.82 %
Rate of compensation increase	4.71 %	4.31 %	4.22 %	3.73 %	3.76 %	4.39 %

For 2017 and 2016, the Company has assumed an expected long-term rate of return on assets of 5.75 percent in both years for US plans and approximately 4.76 percent and 5.00 percent for Canadian plans, respectively. In developing the expected long-term rate of return assumption on plan assets, which consist mainly of US and Canadian equity and debt 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 decrease in expected US and Non-US plan long-term rates of return on assets compared to 2015 is due to the change in our investment approach and related asset allocation in the US and Canada that occurred during 2016 to a liability-driven investment approach. As a result, a higher proportion of investments are in interest-sensitive investments (fixed income) as compared to the prior investment strategy for the US and Canada pension plans.

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, we changed the method used to estimate the service and interest cost components of net periodic benefit cost for certain of our defined benefit pension and postretirement benefit plans. Historically, we 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, we have 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. In 2016, the Company changed our investment approach for the US and Canada plans due to the funded nature of the plans to a liability-driven investment approach. As a result, a higher proportion of investments are in interest rate-sensitive investments (fixed income) as compared to the prior investment strategy. For US pension plans, the weighted average target range allocation of assets was 20-40 percent in equities, 57-79 percent in fixed income and 1-3 percent in cash and 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, 2016 and 2015 for US and non-US pension plan assets is as follows:

Asset Category	US Plans		Non-US Plans	
	2016	2015	2016	2015
Equity securities	38 %	62 %	41 %	49 %
Debt securities	61 %	37 %	44 %	38 %
Cash and other	1 %	1 %	15 %	13 %
Total	100 %	100 %	100 %	100 %

The fair values of the Company's plan assets at December 31, 2016, by asset category and level in the fair value hierarchy are as follows:

Asset Category (in millions)	Fair Value Measurements at December 31, 2016			Total
	Quoted Prices in Active Markets Identical Assets (Level 1)	Significant Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	
US Plans:				
Equity index:				
US (a)	\$	70		\$ 70
International (b)		68		68
Fixed income index:				
Long bond (c)		227		227
Cash (d)		3		3
Total US Plans	\$	368		\$ 368
Non-US Plans:				
Equity index:				
US (a)	\$	11		\$ 11
Canada (e)		21		21
International (b)		49		49
Real estate (f)		5		5
Fixed income index:				
Intermediate bond (g)		21		21
Long bond (h)		72		72
Other (i)		23		23
Cash (d)	1	8		9
Total Non-US Plans	\$ 1	\$ 210		\$ 211

- (a) This category consists of both passively and actively managed equity index funds that track the return of large capitalization US 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 securities with maturities generally exceeding 10 years.
- (d) This category represents cash or cash equivalents.

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- (e) This category consists of an actively managed equity index fund that tracks against an index of large capitalization Canadian equities.
- (f) This category consists of an actively managed equity index fund that tracks against real estate investment trusts and real estate operating companies.
- (g) 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.
- (h) 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.
- (i) 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 US and non-US 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 2016, the Company made cash contributions of \$10 million and \$7 million to its US and non-US pension plans, respectively. The Company anticipates that in 2017 it will make cash contributions of \$1 million and \$2 million to its US and non-US pension plans, respectively. Cash contributions in subsequent years will depend on a number of factors including the performance of plan assets. The following benefit payments, which reflect anticipated future service, as appropriate, are expected to be made:

(in millions)	US Plans	Non-US Plans
2017	\$ 19	\$ 9
2018	19	10
2019	20	10
2020	22	11
2021	23	11
Years 2022 - 2026	123	64

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 \$20 million, \$17 million and \$17 million in 2016, 2015 and 2014, respectively.

Postretirement Benefit Plans -- The Company's postretirement benefit plans currently are not funded. The information presented below includes plans in the United States, Brazil, and Canada. The changes in the benefit obligations of the plans during 2016 and 2015, and the amounts recognized in the Company's Consolidated Balance Sheets at December 31, 2016 and 2015, are as follows:

(in millions)	2016	2015
Accumulated postretirement benefit obligation		
At January 1	\$ 64	\$ 47
Service cost	1	1
Interest cost	2	3
Plan amendment	—	1
Actuarial loss (gain)	2	(1)
Business combinations/ transfers	—	21
Benefits paid	(4)	(3)
Foreign currency translation	2	(5)
At December 31	\$ 67	\$ 64
Fair value of plan assets	—	—
Funded status	\$ (67)	\$ (64)

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Amounts recognized in the Consolidated Balance Sheet consist of:

(in millions)	2016	2015
Current liabilities	\$ (4)	\$ (4)
Non-current liabilities	(63)	(60)
Net liability recognized	\$ (67)	\$ (64)

Amounts recognized in accumulated other comprehensive (income) loss, excluding tax effects, that have not yet been recognized as components of net periodic benefit cost at December 31, 2016 and 2015 were as follows:

(in millions)	2016	2015
Net actuarial loss	\$ 7	\$ 7
Prior service credit	(8)	(11)
Net amount recognized	\$ (1)	\$ (4)

Components of net periodic benefit cost consisted of the following for the years ended December 31, 2016, 2015 and 2014:

(in millions)	2016	2015	2014
Service cost	\$ 1	\$ 1	\$ 3
Interest cost	2	3	4
Amortization of prior service credit	(2)	(2)	—
Net periodic benefit cost	\$ 1	\$ 2	\$ 7

The Company estimates that postretirement benefit expense for these plans for 2017 will include approximately \$3 million relating to the amortization of the prior service credit included in accumulated other comprehensive income at December 31, 2016.

Total amounts recorded in other comprehensive income and net periodic benefit cost during 2016 was as follows:

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(in millions, pre-tax)	2016	2015
Net actuarial loss (gain)	\$ 2	\$ (2)
Amortization of prior service credit	2	2
New prior service cost	—	2
Total recorded in other comprehensive income	4	2
Net periodic benefit cost	1	2
Total recorded in other comprehensive income and net periodic benefit cost	\$ 5	\$ 4

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

	2016	2015
Discount rate	5.42 %	5.30 %

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

	2016	2015	2014
Discount rate	5.30 %	5.70 %	6.47 %

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.

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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, 2016:

	US	Canada	Brazil
2016 increase in per capita cost	6.90 %	6.90 %	8.66 %
Ultimate trend	4.50 %	4.50 %	8.66 %
Year ultimate trend reached	2037	2031	2016

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, 2016 are as follows:

	2016
One-percentage point increase in trend rates:	
- Increase in service cost and interest cost components	\$ 0.6 million
- Increase in year-end benefit obligations	\$ 7.0 million
One-percentage point decrease in trend rates:	
- Decrease in service cost and interest cost components	\$ 0.5 million
- Decrease in year-end benefit obligations	\$ 6.0 million

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)	
2017	\$ 4
2018	4
2019	4
2020	4
2021	4
Years 2022 - 2026	\$ 24

Multiemployer Plans -- The Company participates in and contributes to one multiemployer benefit plan under the terms of a collective bargaining agreement that covers certain union-represented employees and retirees in the US. The plan covers medical and dental benefits for active hourly employees and retirees represented by the United States Steel Workers Union for certain US locations.

The risks of participating in this multiemployer 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, 2016, 2015 and 2014, the Company made regular contributions of \$14 million, \$12 million and \$12 million, respectively, to this multi-employer plan. The Company cannot currently estimate the amount of multiemployer plan contributions that will be required in 2017 and future years, but these contributions could increase due to healthcare cost trends.

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NOTE 11 – Supplementary Information

Balance Sheets

(in millions)	2016	2015
Accounts receivable — net:		
Accounts receivable — trade	\$ 751	\$ 672
Accounts receivable — other	178	108
Allowance for doubtful accounts	(6)	(5)
Total accounts receivable — net	\$ 923	\$ 775
Inventories:		
Finished and in process	\$ 478	\$ 438
Raw materials	260	229
Manufacturing supplies	51	48
Total inventories	\$ 789	\$ 715
Accrued liabilities:		
Compensation-related costs	\$ 107	\$ 84
Income taxes payable	40	46
Unrecognized tax benefits	72	1
Dividends payable	36	33
Accrued interest	19	14
Taxes payable other than income taxes	36	34
Other	122	88
Total accrued liabilities	\$ 432	\$ 300
Non-current liabilities:		
Employees' pension, indemnity and postretirement	\$ 109	\$ 142
Other	49	28
Total non-current liabilities	\$ 158	\$ 170

Statements of Income

(in millions)	2016	2015	2014
Other income - net:			
Gain from sale of plant	\$ —	\$ 10	\$ —
Legal settlement	—	(7)	—
Income tax indemnification (expense) income (a)	—	(4)	7
Gain from sale of investment	—	—	5
Gain from sale of idled plant	—	—	3
Other	4	2	9
Other income - net	\$ 4	\$ 1	\$ 24

(a) Amount fully offset by \$4 million of benefit and \$7 million of expense recorded in the income tax provision for 2015 and 2014, respectively.

Financing costs-net:			
Interest expense, net of amounts capitalized (a)	\$ 73	\$ 69	\$ 73
Interest income	(10)	(14)	(13)
Foreign currency transaction losses	3	6	1
Financing costs-net	\$ 66	\$ 61	\$ 61

(a) Interest capitalized amounted to \$4 million, \$2 million and \$2 million in 2016, 2015 and 2014, respectively.

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Statements of Cash Flow:

(in millions)	2016	2015	2014
Other non-cash charges to net income:			
Mechanical stores expense (a)	\$ 57	\$ 57	\$ 56
Share-based compensation expense	28	21	19
Other	16	18	(7)
Total other non-cash charges to net income	\$ 101	\$ 96	\$ 68

(a) 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.

(in millions)	2016	2015	2014
Interest paid	\$ 59	\$ 52	\$ 59
Income taxes paid	254	158	94

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, 2016 and 2015.

Treasury stock:

On December 12, 2014, the Board of Directors authorized a new 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 Company's previously authorized stock repurchase program permitting the purchase of up to 4 million shares has been fully utilized. 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.

In 2016, the Company had no share repurchases of common shares in open market transactions. In 2015, the Company repurchased 435 thousand common shares in open market transactions at a cost of approximately \$34 million.

As part of the previous stock repurchase program, the Company entered into an accelerated share repurchase agreement ("ASR") on July 30, 2014 with an investment bank under which the Company repurchased \$300 million of its common stock. The Company paid the \$300 million on August 1, 2014 and received an initial delivery of shares from the investment bank of 3,152,502 shares, representing approximately 80 percent of the shares anticipated to be repurchased based on current market prices at that time. The ASR was initially accounted for as an initial stock purchase transaction and a forward stock purchase contract. The initial delivery of shares resulted in an immediate reduction in the number of shares used to calculate the weighted average common shares outstanding for basic and diluted net earnings per share from the effective date of the ASR. On December 29, 2014, the ASR was completed and the Company received 671,823 additional shares of its common stock bringing the total amount of repurchases to 3,824,325 shares, based upon the volume-weighted average price of \$78.45 per share over the term of the share repurchase agreement. The ASR was funded through a combination of cash on hand and utilization of the Company's revolving credit agreement.

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Set forth below is a reconciliation of common stock share activity for the years ended December 31, 2016, 2015 and 2014:

(Shares of common stock, in thousands)	Issued	Held in Treasury	Outstanding
Balance at December 31, 2013	77,673	3,361	74,312
Issuance of restricted stock units as compensation	89	(24)	113
Performance shares and other share-based awards	49	(63)	112
Stock options exercised	—	(618)	618
Purchase/acquisition of common stock shares	—	3,833	(3,833)
Balance at December 31, 2014	77,811	6,489	71,322
Issuance of restricted stock units as compensation	—	(102)	102
Performance shares and other share-based awards	—	(75)	75
Stock options exercised	—	(556)	556
Purchase/acquisition of common stock shares	—	439	(439)
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 common stock shares	—	2	(2)
Balance at December 31, 2016	77,811	5,397	72,414

Share-based payments:

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

(in millions)	2016	2015	2014
Stock options:			
Pre-tax compensation expense	\$ 9	\$ 7	\$ 7
Income tax (benefit)	(3)	(3)	(3)
Stock option expense, net of income taxes	6	4	4
RSUs:			
Pre-tax compensation expense	12	9	8
Income tax (benefit)	(5)	(3)	(3)
RSUs, net of income taxes	7	6	5
Performance shares and other share-based awards:			
Pre-tax compensation expense	7	5	4
Income tax (benefit)	(3)	(2)	(1)

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Performance shares and other share-based compensation expense, net of income taxes	4	3	3
Total share-based compensation:			
Pre-tax compensation expense	28	21	19
Income tax (benefit)	(11)	(8)	(7)
Total share-based compensation expense, net of income taxes	\$ 17	\$ 13	\$ 12

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, 2016, 4.5 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:

The Company grants nonqualified options to purchase shares of the Company’s common stock. The stock options have a ten-year life and are exercisable upon vesting, which occurs evenly 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

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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 within the amount of compensation costs recognized in each period. As of December 31, 2016, certain of these nonqualified options have been forfeited due to the termination of employees.

The fair value of stock option awards was estimated at the grant dates using the Black-Scholes option-pricing model with the following assumptions:

	2016		2015		2014
Expected life (in years)	5.5		5.5		5.5
Risk-free interest rate	1.4	%	1.4	%	1.6
Expected volatility	23.4	%	25.2	%	30.3
Expected dividend yield	1.8	%	2.0	%	2.8

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 US Treasury yield curve in effect at the time of the grant for periods corresponding with the expected life of the options. Expected volatility is based on historical volatilities of the Company's common stock. Dividend yields are based on historical dividend payments. The weighted average fair value of options granted during 2016, 2015 and 2014 was estimated to be \$18.73, \$16.04 and \$12.99, respectively.

A summary of stock option transactions for the year follows:

(dollars and options in thousands, except per share amounts)	Number of Options	Weighted Average Exercise Price per Share	Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value (in millions)
Outstanding at December 31, 2015	2,651	\$ 52.93	5.96	\$ 114
Granted	329	99.96		
Exercised	(638)	45.90		
Cancelled	(61)	63.96		
Outstanding at December 31, 2016	2,281	\$ 61.39	5.93	\$ 145
Exercisable at December 31, 2016	1,547	\$ 50.80	5.70	115

The intrinsic values of stock options exercised during 2016, 2015 and 2014 were approximately \$46 million, \$27 million and \$26 million, respectively. For the years ended December 31, 2016, 2015 and 2014, cash received

from the exercise of stock options was \$29 million, \$21 million and \$20 million, respectively. The excess income tax benefit realized from share-based compensation was \$12 million, \$8 million and \$6 million in 2016, 2015 and 2014, respectively. As of December 31, 2016, the unrecognized compensation cost related to non-vested stock options totaled \$4 million, which is expected to be amortized over the weighted-average period of approximately 1.3 years.

Restricted Stock Units:

In addition to stock options, the Company awards shares of restricted stock units (“RSUs”) to certain key employees. The RSUs issued under the plan 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 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, 2015	439	\$ 69.96
Granted	152	101.21
Vested	(134)	65.83
Cancelled	(28)	79.66
Non-vested at December 31, 2016	429	\$ 81.04

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The total fair value of RSUs that vested in 2016, 2015 and 2014 was \$15 million, \$13 million and \$11 million, respectively.

At December 31, 2016, the total remaining unrecognized compensation cost related to RSUs was \$14 million which will be amortized on a weighted-average basis over approximately 1.7 years. Recognized compensation cost related to unvested RSUs is included in share-based payments subject to redemption in the Consolidated Balance Sheets and totaled \$21 million and \$17 million at December 31, 2016 and 2015, 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 eventually paid will be based solely on the total shareholder return on the Company's stock as compared to the total shareholder return on the stock of a peer group. The final payments 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 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.

For the year ended December 31, 2016, the Company awarded 44 thousand performance shares at a weighted average fair value of \$131.34. The Company awarded 47 thousand, 58 thousand, and 45 thousand performance shares in 2015, 2014 and 2013, respectively. 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 weighted average fair value of the shares granted during 2015, 2014 and 2013 was \$77.54, \$52.03 and \$67.19, respectively.

The 2013 performance share award vested in February 2016, achieving a 200 percent pay out of the grant, or 90 thousand total vested shares. As of December 31, 2016, the performance awards granted in 2014 and 2015 are estimated to pay out at 200 percent. The 2016 granted performance award is estimated to pay out at 160 percent. There were no share cancellations during the year ended December 31, 2016.

As of December 31, 2016, the unrecognized compensation cost relating to these plans was \$3 million, which will be amortized over the remaining requisite service periods of 1.8 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 \$9 million and \$7 million at December 31, 2016 and 2015, 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, but 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 2016, 2015 and 2014. At December 31, 2016, there were approximately 175,000 restricted units outstanding under this plan at a carrying value of approximately \$9 million.

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Accumulated Other Comprehensive Loss:

A summary of accumulated other comprehensive income (loss) for the years ended December 31, 2014, 2015 and 2016 is presented below:

(in millions)	Cumulative Translation Adjustment	Deferred Gain/(Loss) on Hedging Activities	Pension/ Postretirement Adjustment	Unrealized Gain (Loss) on Investments	Accumulated Other Comprehensive Loss
Balance, December 31, 2013	\$ (489)	\$ (40)	\$ (53)	\$ (1)	\$ (583)
Losses on cash-flow hedges, net of income tax effect of \$12		(29)			(29)
Amount of losses on cash-flow hedges reclassified to earnings, net of income tax effect of \$23		50			50
Actuarial losses on pension and other postretirement obligations, settlements and plan amendments, net of income tax effect of \$5			(12)		(12)
Losses related to pension and other postretirement obligations reclassified to earnings, net of income tax effect of \$1			4		4
Currency translation adjustment	(212)				(212)
Balance, December 31, 2014	\$ (701)	\$ (19)	\$ (61)	\$ (1)	\$ (782)
Losses on cash-flow hedges, net of income tax effect of \$19		(42)			(42)
Amount of losses on cash-flow hedges reclassified to earnings, net of income tax effect of \$14		32			32
Actuarial gains on pension and other postretirement obligations, settlements and plan amendments, net of income tax effect of \$5			13		13
Losses related to pension and other postretirement obligations reclassified to earnings, net of income tax effect			1		1
Currency translation adjustment	(324)				(324)
Balance, December 31, 2015	\$ (1,025)	\$ (29)	\$ (47)	\$ (1)	\$ (1,102)
Losses on cash-flow hedges, net of income tax effect of \$6		(11)			(11)
Amount of losses on cash-flow hedges reclassified to earnings, net of income tax effect of \$16		33			33

Actuarial losses on pension and other postretirement obligations, settlements and plan amendments, net of income tax effect of \$4			(10)		(10)
Losses related to pension and other postretirement obligations reclassified to earnings, net of income tax effect			1		1
Unrealized gain on investments, net of income tax effect				1	1
Currency translation adjustment	17				17
Balance, December 31, 2016	\$ (1,008)	\$ (7)	\$ (56)	\$ —	\$ (1,071)

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

Details about AOCI Components (in millions)	Amount Reclassified from AOCI			Affected Line Item in Consolidated Statements of Income
	2016	2015	2014	
Losses on cash-flow hedges:				
Commodity and foreign currency contracts	\$ (47)	\$ (43)	\$ (70)	Gross profit
Interest rate contracts	(2)	(3)	(3)	Financing costs, net
Losses related to pension and other postretirement obligations	(1)	(1)	(5)	(a)
Total before-tax reclassifications	\$ (50)	\$ (47)	\$ (78)	
Income tax benefit	16	14	24	
Total after-tax reclassifications	\$ (34)	\$ (33)	\$ (54)	

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

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

except per share amounts)	2016		2015			2014		
	Net Income Available to Ingredion (Numerator)	Weighted Average Shares (Denominator)	Per Share Amount	Net Income Available to Ingredion (Numerator)	Weighted Average Shares (Denominator)	Per Share Amount	Net Income Available to Ingredion (Numerator)	Weighted Average Shares (Denominator)
	\$ 484.9	72.3	\$ 6.70	\$ 402.2	71.6	\$ 5.62	\$ 354.9	73.6
Derivative Securities:								
Shares from assumed dilutive stock options and derivative RSUs and other		1.8			1.4			1.3
	\$ 484.9	74.1	\$ 6.55	\$ 402.2	73.0	\$ 5.51	\$ 354.9	74.9

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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 United States, 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.

(in millions)	2016	2015	2014
Net sales to unaffiliated customers:			
North America	\$ 3,447	\$ 3,345	\$ 3,093
South America	1,010	1,013	1,203
Asia Pacific	709	733	794
EMEA	538	530	578
Total	\$ 5,704	\$ 5,621	\$ 5,668
Operating income:			
North America	\$ 610	\$ 479	\$ 375
South America	89	101	108
Asia Pacific	111	107	103
EMEA (a)	106	93	95
Corporate (b)	(86)	(75)	(65)
Subtotal	830	705	616
Restructuring / impairment charges (c)	(19)	(28)	(33)
Acquisition / integration costs	(3)	(10)	(2)
Charge for fair value markup of acquired inventory	—	(10)	—
Litigation settlement	—	(7)	—
Gain from sale of Canadian plant	—	10	—
Total	\$ 808	\$ 660	\$ 581
Total assets:			
North America	\$ 3,796	\$ 3,163	\$ 2,901
South America	809	714	923
Asia Pacific	697	716	711
EMEA	480	481	550
Total	\$ 5,782	\$ 5,074	\$ 5,085
Depreciation and amortization:			
North America	\$ 130	\$ 123	\$ 111
South America	26	30	38
Asia Pacific	23	23	26

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EMEA	17	18	20
Total	\$ 196	\$ 194	\$ 195
Capital expenditures:			
North America	\$ 167	\$ 158	\$ 130
South America	56	61	90
Asia Pacific	41	36	30
EMEA	20	25	26
Total	\$ 284	\$ 280	\$ 276

- a. For 2014, includes a \$3 million gain from the sale of an idled plant in Kenya.
- b. For 2015, includes \$4 million of expense relating to a tax indemnification agreement with offsetting income of \$4 million recorded in the provision for income taxes. For 2014, includes \$7 million of income relating to this tax

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indemnification agreement with an offsetting expense of \$7 million recorded in the provision for income taxes (see Note 9).

c. For 2016, includes \$11 million of employee severance-related and other costs associated with the execution of IT outsourcing contracts, \$6 million of employee severance-related costs associated with the Company's optimization initiatives in North America and South America and \$2 million of costs attributable to the Port Colborne plant sale. For 2015, includes \$12 million of charges for impaired assets and restructuring costs in Brazil, \$12 million of restructuring costs associated with the Penford acquisition and \$4 million of restructuring costs in Canada. For 2014, includes a \$33 million write-off of impaired goodwill in the Southern Cone of South America.

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

(in millions)	Net Sales		
	2016	2015	2014
United States	\$ 2,117	\$ 1,983	\$ 1,681
Mexico	955	945	955
Brazil	522	452	591
Canada	375	417	457
Korea	266	276	295
Argentina	201	252	262
Others	1,268	1,296	1,427
Total	\$ 5,704	\$ 5,621	\$ 5,668

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

(in millions)	Long-lived Assets		
	2016	2015	2014
United States	\$ 955	\$ 920	\$ 803
Mexico	303	292	296
Brazil	245	196	294
Canada	147	126	154
Germany	106	114	133
Thailand	119	111	105
Korea	84	83	88
Argentina	60	64	82
Others	218	200	214
Total	\$ 2,237	\$ 2,106	\$ 2,169

NOTE 14 – Commitments and Contingencies

The Company is a party to a large number of labor claims relating to our Brazilian operations. The Company has reserved an aggregate of approximately \$5 million as of December 31, 2016 in respect of these claims. These labor claims primarily relate to dismissals, severance, health and safety, work schedules and salary adjustments.

The Company is currently subject to various other claims and suits arising in the ordinary course of business, including certain environmental proceedings and other commercial claims. The Company also routinely receives inquiries from regulators and other government authorities relating to various aspects of its business, including with respect to 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 inquires, even if unfavorable to the Company, will be material to the Company. 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.

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Quarterly Financial Data (Unaudited)

Summarized quarterly financial data is as follows:

(in millions, except per share amounts)	1st QTR	2nd QTR	3rd QTR	4th QTR*
2016				
Net sales before shipping and handling costs	\$ 1,434	\$ 1,533	\$ 1,569	\$ 1,484
Less: shipping and handling costs	74	78	80	85
Net sales	\$ 1,360	\$ 1,455	\$ 1,489	\$ 1,399
Gross profit	339	355	369	339
Net income attributable to Ingredion	130	117	143	94
Basic earnings per common share of Ingredion	\$ 1.81	\$ 1.62	\$ 1.98	\$ 1.29
Diluted earnings per common share of Ingredion	\$ 1.77	\$ 1.58	\$ 1.93	\$ 1.26

(in millions, except per share amounts)	1st QTR	2nd QTR	3rd QTR	4th QTR*
2015				
Net sales before shipping and handling costs	\$ 1,410	\$ 1,536	\$ 1,524	\$ 1,489
Less: shipping and handling costs	80	87	87	84
Net sales	\$ 1,330	\$ 1,449	\$ 1,437	\$ 1,405
Gross profit	281	319	330	313
Net income attributable to Ingredion	84	107	108	104
Basic earnings per common share of Ingredion	\$ 1.17	\$ 1.49	\$ 1.51	\$ 1.45
Diluted earnings per common share of Ingredion	\$ 1.15	\$ 1.47	\$ 1.48	\$ 1.42

* Fourth quarter 2016 includes a charge of \$27 million (\$0.36 per diluted common share) associated with an income tax settlement, acquisition and integration costs of \$1.4 million (\$0.9 million after-tax, or \$0.01 per diluted common share) and restructuring costs of \$4.0 million (\$2.5 million after-tax, or \$0.03 per diluted common share) consisting of employee severance-related costs in North America and employee severance-related and other costs associated with the execution of global IT outsourcing contracts. Fourth quarter 2015 includes a charge of \$3.8 million (\$2.6 million after-tax, or \$0.04 per diluted common share) for restructuring costs in Canada, the United States and Brazil, costs of \$0.7 million (\$0.6 million after-tax, or \$0.01 per diluted common share) associated with the acquisition and integration of Penford and Kerr, costs of \$1.8 million (\$1.1 million after-tax, or \$0.02 per diluted common share) relating to the sale of Kerr inventory that was adjusted to fair value at the acquisition date in accordance with business combination accounting rules, costs of \$6.8 million (\$4.3 million after-tax, or \$0.06 per diluted common share) relating to a litigation settlement and a gain of \$9.8 million (\$8.9 million after-tax, or \$0.12 per diluted common share) from the sale of our Port Colborne, Canada plant.

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

Not applicable.

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, 2016. 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.

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In the fourth quarter of 2016, we acquired Shandong Huanong Specialty Corn Development Co., Ltd. in Pingyuan County, Shandong Province, China (“Shandong”) and TIC Gums Incorporated (“TIC Gums”). In conducting our evaluation of the effectiveness of internal control over financial reporting, we have elected to exclude Shandong and TIC Gums from our evaluation as of December 31, 2016, as permitted by the Securities and Exchange Commission. We are currently in the process of evaluating and integrating the acquired operations, processes and internal controls. See Note 3 of the Notes to the Consolidated Financial Statements for additional information regarding the acquisitions. There have been no other changes in our internal control over financial reporting during the quarter ended December 31, 2016 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 United States, 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 except for Shandong and TIC Gums, which were acquired in the fourth quarter of 2016. The consolidated net sales of the Company for the year ended December 31, 2016 were \$5.70 billion of which Shandong represented \$0.3 million. Our results did not include any sales for TIC Gums as that entity was acquired on December 29, 2016. The consolidated total assets of the Company at December 31, 2016 were \$5.78 billion of which Shandong and TIC Gums represented \$435 million. Based on the evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2016. 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 2017 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, 2016” 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 “2016 and 2015 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
2.1	Agreement and Plan of Merger, dated as of October 14, 2014, by and among Penford Corporation, a Washington corporation, Prospect Sub, Inc., a Washington corporation and a wholly-owned subsidiary of the Company, and the Company (incorporated by reference to Exhibit 2.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2014, filed on November 3, 2014) (File No. 1-13397). Certain schedules referenced in the Agreement and Plan of Merger have been omitted in accordance with Item 601(b)(2) of Regulation S-K. A copy of any omitted schedule will be furnished supplementally to the SEC upon request.
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	

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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) .

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- 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).
- 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 Third 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 4.3 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 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).
- 4.8 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).
- 4.9 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).
- 4.10 Eighth Supplemental Indenture, dated September 20, 2012, between Ingredion Incorporated 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 20, 2012, filed on September 21, 2012) (File No. 1-13397).
- 4.11 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)
- 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).

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- 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).
- 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 10.2 to the Company's Current Report on Form 8-K dated February 7, 2017, filed on February 14, 2017) (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 10.3 to the Company's Current Report on Form 8-K dated February 7, 2017, filed on February 14, 2017) (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 10.4 to the Company's Current Report on Form 8-K dated February 7, 2017, filed on February 14, 2017) (File No. 1-13397).

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- 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).
- 10.15* Letter of Agreement dated as of April 2, 2009 between the Company and Ilene S. Gordon (incorporated by reference to Exhibit 10.21 to the Company's Quarterly Report on Form 10-Q, for the quarter ended June 30, 2009, filed on August 6, 2009) (File No. 1-13397).
- 10.16* Letter of Agreement dated as of April 2, 2010 between the Company and Diane Frisch (incorporated by reference to Exhibit 10.24 to the Company's Quarterly Report on Form 10-Q, for the quarter ended June 30, 2010, filed on August 6, 2010) (File No. 1-13397).
- 10.17* Executive Severance Agreement dated as of May 1, 2010 between the Company and Diane Frisch (incorporated by reference to Exhibit 10.25 to the Company's Quarterly Report on Form 10-Q, for the quarter ended June 30, 2010, filed on August 6, 2010) (File No. 1-13397).
- 10.18* Letter of Agreement dated as of September 28, 2010 between the Company and James Zallie (incorporated by reference to Exhibit 10.30 to the Company's Annual Report on Form 10-K for the year ended December 31, 2010, filed on February 28, 2011) (File No. 1-13397).
- 10.19* Form of Executive Severance Agreement entered into by James Zallie, Christine M. Castellano, Anthony P. DeLio and Robert F. Stefansic (incorporated by reference to Exhibit 10.27 to the Company's Annual Report on Form 10-K for the year ended December 31, 2013, filed on February 24, 2014) (File No. 1-13397).
- 10.20* Form of Executive Severance Agreement entered into by Jorgen Kokke (incorporated by reference to Exhibit 10.39 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2014, filed on May 2, 2014) (File No. 1-13397).
- 10.21* Confidentiality and Non-Compete Agreement, dated March 7, 2014, by and between the Company and Cheryl K. Beebe (incorporated by reference to Exhibit 10.40 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2014, filed on May 2, 2014) (File No. 1-13397).
- 10.22 * Confidential Separation Agreement and General Release, dated as of March 29, 2013, by and between the Company and Kimberly A. Hunter (incorporated by reference to Exhibit 10.35 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2013, filed on August 2, 2013) (File No. 1-13397).
- 10.23* Consulting Agreement, dated as of September 3, 2013, by and between the Company and Julio dos Reis (incorporated by reference to Exhibit 10.36 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2013, filed on November 1, 2013) (File No. 1-13397).
- 10.24* Mutual Separation Agreement, dated as of September 3, 2013, by and between Ingredion Argentina S.A. and Julio dos Reis (incorporated by reference to Exhibit 10.37 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2013, filed on November 1, 2013) (File No. 1-13397).
- 10.25* Confidential Separation Agreement and General Release dates as of January 16, 2015, by and between the Company and John F. Saucier (incorporated by reference to Exhibit 10.26 to the Company's Quarterly Report on Form 10-Q, for the quarter ended March 31, 2015, filed on May 6, 2015) (File No. 1-13397).

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10.26*	Letter of Agreement dated as of September 30, 2015 between the Company and Martin Sonntag (incorporated by reference to Exhibit 10.28 to the Company's Quarterly Report on Form 10-Q, for the quarter ended September 30, 2015, filed on October 30, 2015) (File No. 1-13397).
10.27*	Executive Severance Agreement dated as of September 30, 2015 between the Company and Martin Sonntag (incorporated by reference to Exhibit 10.29 to the Company's Quarterly Report on Form 10-Q, for the quarter ended September 30, 2015, filed on October 30, 2015) (File No. 1-13397).
10.28*	Letter of Agreement dated as of November 10, 2016 between the Company and Jorgen Kokke
12.1	Computation of Ratio of Earnings to Fixed Charges
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
101	The following financial information from the Ingredion Incorporated Annual Report on Form 10-K for the year ended December 31, 2016 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.

* 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 22nd day of February, 2017.

INGREDION INCORPORATED

By: /s/ Ilene S. Gordon
Ilene S. Gordon
Chairman, 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 22nd day of February, 2017.

Signature	Title
/s/ Ilene S. Gordon Ilene S. Gordon	Chairman, President, Chief Executive Officer and Director
/s/ Jack C. Fortnum Jack C. Fortnum	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 Rhonda L. Jordan	Director
*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/ Christine M. Castellano
Christine M. Castellano
Attorney-in-fact

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