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: 001-34726

LyondellBasell Industries N.V.

(Exact name of registrant as specified in its charter)

The Netherlands	**98-0646235**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

1221 McKinney St., Suite 300	**4th Floor, One Vine Street**	**Delftseplein 27E**
Houston, Texas	**London**	**3013 AA Rotterdam**
USA 77010	**W1J0AH**	**The Netherlands**
	The United Kingdom	

(Address of principal executive offices) (Zip Code)

(713) 309-7200	**+44 (0) 207 220 2600**	**+31 (0)10 275 5500**

(Registrant s telephone numbers, including area codes)

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

Title of Each Class	**Name of Each Exchange On Which Registered**
Ordinary Shares, 0.04 Par Value	**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

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 website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

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 the 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 smaller reporting company. See the definitions of large accelerated filer, accelerated filer and smaller 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 Act). Yes No

The aggregate market value of common stock held by non-affiliates of the registrant on June 30, 2016, the last business day of the registrant s most recently completed second fiscal quarter, based on the closing price on that date of $74.42, was $25.4 billion. For purposes of this disclosure, in addition to the registrant s executive officers and members of its Supervisory Board, the registrant has included Access Industries, LLC and its affiliates as affiliates.

The registrant had 402,531,335 shares outstanding at February 14, 2017 (excluding 175,904,235 treasury shares).

Documents incorporated by reference:

Portions of the Notice of the 2017 Annual Meeting of Shareholders and 2017 Proxy Statement, in connection with the Company s 2017 Annual Meeting of Shareholders (in Part III), as indicated herein.

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CAUTIONARY STATEMENT FOR THE PURPOSES OF THE SAFE HARBOR PROVISIONS OF THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995

This report includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 (the Exchange Act). You can identify our forward-looking statements by the words anticipate, estimate, believe, continue, could, intend, may, plan, potential, predict, should, will, expect, objective, projection, forecast, target and similar expressions.

We based forward-looking statements on our current expectations, estimates and projections of our business and the industries in which we operate. We caution you that these statements are not guarantees of future performance. They involve assumptions about future events that, while made in good faith, may prove to be incorrect, and involve risks and uncertainties we cannot predict. Our actual outcomes and results may differ materially from what we have expressed or forecast in the forward-looking statements. Any differences could result from a variety of factors, including the following:

- the cost of raw materials represents a substantial portion of our operating expenses, and energy costs generally follow price trends of crude oil, natural gas liquids and/or natural gas; price volatility can significantly affect our results of operations and we may be unable to pass raw material and energy cost increases on to our customers due to the significant competition that we face, the commodity nature of our products and the time required to implement pricing changes;

- our U.S. operations have benefited from low-cost natural gas and natural gas liquids; decreased availability of these materials (for example, from their export or regulations impacting hydraulic fracturing in the U.S.) could reduce the current benefits we receive;

- if crude oil prices fall materially, or decrease relative to U.S. natural gas prices, we would see less benefit from low-cost natural gas and natural gas liquids and it could have a negative effect on our results of operations;

- industry production capacities and operating rates may lead to periods of oversupply and low profitability; for example, there have been substantial capacity expansions announced in the U.S. olefins industry;

- we may face unplanned operating interruptions (including leaks, explosions, fires, weather-related incidents, mechanical failures, unscheduled downtime, supplier disruptions, labor shortages, strikes, work stoppages or other labor difficulties, transportation interruptions, spills and releases and other environmental incidents) at any of our facilities, which would negatively impact our operating results; for example, because the Houston refinery is our only refining operation, we would not have the ability to increase production elsewhere to mitigate the impact of any outage at that facility;

- changes in general economic, business, political and regulatory conditions in the countries or regions in which we operate could increase our costs, restrict our operations and reduce our operating results;

- our ability to execute our organic growth plans may be negatively affected by our ability to complete projects on time and on budget;

- uncertainties associated with worldwide economies could create reductions in demand and pricing, as well as increased counterparty risks, which could reduce liquidity or cause financial losses resulting from counterparty default;

- the negative outcome of any legal and environmental proceedings or changes in laws or regulations regarding legal and environmental matters may increase our costs or otherwise limit our ability to achieve savings under current regulations;

any loss or non-renewal of favorable tax treatment under tax agreements or tax treaties, or changes in tax laws, regulations or treaties, may substantially increase our tax liabilities;

- we may be required to reduce production or idle certain facilities because of the cyclical and volatile nature of the supply-demand balance in the chemical and refining industries, which would negatively affect our operating results;

- we rely on continuing technological innovation, and an inability to protect our technology, or others technological developments, could negatively impact our competitive position;

- we have significant international operations, and fluctuations in exchange rates, valuations of currencies and our possible inability to access cash from operations in certain jurisdictions on a tax-efficient basis, if at all, could negatively affect our liquidity and our results of operations;

- we are subject to the risks of doing business at a global level, including wars, terrorist activities, political and economic instability and disruptions and changes in governmental policies, which could cause increased expenses, decreased demand or prices for our products and/or disruptions in operations, all of which could reduce our operating results;

- if we are unable to comply with the terms of our credit facilities, indebtedness and other financing arrangements, those obligations could be accelerated, which we may not be able to repay; and

- we may be unable to incur additional indebtedness or obtain financing on terms that we deem acceptable, including for refinancing of our current obligations; higher interest rates and costs of financing would increase our expenses.

Any of these factors, or a combination of these factors, could materially affect our future results of operations and the ultimate accuracy of the forward-looking statements. Our management cautions against putting undue reliance on forward-looking statements or projecting any future results based on such statements or present or prior earnings levels.

All subsequent written and oral forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section and any other cautionary statements that may accompany such forward-looking statements. Except as otherwise required by applicable law, we disclaim any duty to update any forward-looking statements. Additional factors that could cause results to differ materially from those described in the forward-looking statements can be found in the Risk Factors section of this report on page 16.

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PART I

Items 1 and 2. Business and Properties

OVERVIEW

LyondellBasell Industries N.V. is a global, independent chemical company and was incorporated under Dutch law on October 15, 2009. Unless otherwise indicated, the Company, we, our, us and LyondellBasell are used in this report to refer to the businesses of LyondellBasell Industr N.V. and its consolidated subsidiaries. We are one of the world s top five independent chemical companies based on revenues.

We participate globally across the petrochemical value chain and are an industry leader in many of our product lines. Our chemicals businesses consist primarily of large processing plants that convert large volumes of liquid and gaseous hydrocarbon feedstocks into plastic resins and other chemicals. Our chemical products tend to be basic building blocks for other chemicals and plastics, while our plastic products are typically used in large volume applications. Our customers use our plastics and chemicals to manufacture a wide range of products that people use in their everyday lives including food packaging, home furnishings, automotive components, paints and coatings. Our refining business consists of our Houston refinery, which processes crude oil into refined products such as gasoline, diesel and jet fuel.

Our financial performance is influenced by the supply and demand for our products, the cost and availability of feedstocks, global and regional competitor capacity, our operational efficiency and our ability to control costs. We have a strong operational focus and, as a producer of large volume commodities, continuously strive to differentiate ourselves through safe, reliable and low-cost operations in all our businesses. We purchase large quantities of natural gas, electricity and steam which we use as energy to fuel our facilities. We also purchase large quantities of natural gas and crude oil derivatives which we use as feedstocks. During recent years the cost of natural gas-derived raw materials in the U.S. versus the global cost of crude oil-derived raw materials has had a significant positive influence on the profitability of our North American operations. While the North American feedstock advantage has declined more recently with lower oil prices and resulting lower olefin prices, improved product supply and demand fundamentals in several businesses, notably global polyolefins products, have partially offset the decline.

SEGMENTS

We manage our operations through five operating segments. Our reportable segments are:

- *Olefins and Polyolefins Americas* (O&P Americas). Our O&P Americas segment produces and markets olefins and co-products, polyethylene and polypropylene.

- *Olefins and Polyolefins Europe, Asia, International* (O&P EAI). Our O&P EAI segment produces and markets olefins and co-products, polyethylene, and polypropylene, including polypropylene compounds.

- *Intermediates and Derivatives* (I&D). Our I&D segment produces and markets propylene oxide and its derivatives, oxyfuels and related products and intermediate chemicals, such as styrene monomer, acetyls, ethylene oxide and ethylene glycol.

- *Refining*. Our Refining segment refines heavy, high-sulfur crude oil and other crude oils of varied types and sources available on the U.S. Gulf Coast into refined products including gasoline and distillates.

- *Technology*. Our Technology segment develops and licenses chemical and polyolefin process technologies and manufactures and sells polyolefin catalysts.

Financial information about our business segments and geographical areas can be found in Note 22, *Segment and Related Information*, to the Consolidated Financial Statements. Information about the locations where we produce our primary products can be found under Description of Properties.

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In 2016, 2015 and 2014, no single customer accounted for 10% or more of our total revenues.

Olefins and Polyolefins Segments Generally

We are one of the leading worldwide producers of olefins and polyethylene (PE) and we are the world s second largest producer of polypropylene (PP). We manage our olefin and polyolefin business in two reportable segments, O&P Americas and O&P EAI.

Olefins & Co-products Ethylene is the most significant petrochemical in terms of worldwide production volume and is the key building block for PE and a large number of other chemicals, plastics and synthetics. Ethylene is produced by steam cracking hydro-carbons such as ethane and propane as well as naphtha. This production results in co-products such as aromatics and other olefins, including propylene and butadiene. Ethylene and its co-products are fundamental to many parts of the economy, including the production of consumer products, packaging, housing and automotive components and other durable and nondurable goods.

Polyolefins The term polyolefins includes PE and PP and they are derived from ethylene and propylene. Polyolefins are the most used thermoplastics in the world and are used in wide-ranging applications and products and enhance everyday quality of life. Our products are used in consumer automotive and industrial applications ranging from food and beverage packaging to housewares and construction materials.

Polyethylene We produce high density polyethylene (HDPE), low density polyethylene (LDPE) and linear low density polyethylene (LLDPE). PE sales accounted for approximately 24%, 21% and 18% of our total revenues in 2016, 2015 and 2014, respectively.

Polypropylene We produce PP homopolymers, PP impact copolymers and PP random copolymers. PP compounds are produced from blends of polyolefins and additives and are sold mainly to the automotive and home appliances industries. PP sales accounted for approximately17% of our total revenues in 2016 and 2015, and 16% in 2014.

Olefins and Polyolefins Americas Segment

Overview

Our O&P Americas segment produces and markets olefins and co-products, polyethylene and polypropylene.

Sales & Marketing / Customers

The majority of the ethylene we produce is consumed internally as a raw material in the production of PE and other derivatives, with the balance sold to third party customers under multi-year contracts or on a spot basis. In the last two years, we have added 1.11 billion pounds of ethylene capacity at our Gulf Coast facilities.

We use all of the propylene that we produce in the production of PP, propylene oxide and other derivatives. As a result we also purchase propylene from third parties. In addition to purchases of propylene, at times we purchase ethylene for resale, when necessary, to satisfy customer demand above our own production levels. Volumes of any of these products purchased for resale can vary significantly from period to period, and are typically most significant during extended outages of our own production, such as during planned turnarounds. However, purchased volumes have not historically had a significant impact on profits, except to the extent that they replace lower-cost production.

Most of the ethylene and propylene production of our Channelview, Corpus Christi and La Porte, Texas facilities is shipped via a pipeline system, which has connections to numerous U.S. Gulf Coast consumers. This pipeline extends from Corpus Christi to Mont Belvieu, Texas. In addition, exchange agreements with other

ethylene and co-products producers allow access to customers who are not directly connected to this pipeline system. Some ethylene is shipped by rail car from our Clinton, Iowa facility to our Morris, Illinois facility and some is shipped directly to customers. Some propylene is shipped by ocean going vessel, barge, railcar and truck.

Our PP and PE production is typically sold through our sales organization to an extensive base of established customers and distributors servicing both the domestic and export markets either under annual contracts or on a spot basis. We have sales offices in various locations in North America and our polyolefins primarily are transported in North America by railcar or truck. Export sales are primarily to customers in Central and South America, with sales to Asia expected to increase in the coming years as global supply and demand balances shift. We also consume PP in our PP compounds business, which is managed worldwide by our O&P EAI segment.

Joint Venture Relationships

We participate in a joint venture in Mexico, which provides us with capacity for approximately 640 million pounds of PP production. The capacity is based on our percentage ownership of the joint ventures total capacity. We do not hold a majority interest in or have operational control of this joint venture.

Raw Materials

Raw material cost is the largest component of the total cost for the production of ethylene and its co-products. The primary raw materials used in our Americas olefin facilities are heavy liquids and natural gas liquids (NGLs). Heavy liquids include crude oil-based naphtha and other refined products, as well as condensate, a very light crude oil resulting from natural gas production. NGLs include ethane, propane and butane. The use of heavy liquid raw materials results in the production of a significant amount of co-products such as propylene, butadiene and benzene, as well as gasoline blending components, while the use of NGLs results in the production of a smaller amount of co-products.

Our ability to pass on raw material price increases to our customers is dependent upon market-driven demand for olefins and polyolefins. Sales prices for products sold in the spot market are determined by market forces. Our contract prices are influenced by product supply and demand conditions, spot prices, indices published in industry publications and, in some instances, cost recovery formulas.

Prior to 2010, olefins facilities using heavy liquids as feedstock generated higher margins than those using NGLs. However, technological advances for extracting shale-based oil and gas have led to an increased supply of NGLs giving them a cost advantage over heavy liquids, particularly in the U.S. With reductions in oil prices since 2014, the cost advantage has declined, but is still significant. A plant s flexibility to consume a wide range of raw materials generally will provide an advantage over plants that are restricted in their processing capabilities. Our Americas facilities can process significant quantities of either heavy liquids or NGLs. We estimate that in the U.S. we can produce up to approximately 90% of our total ethylene output using NGLs. Changes in the raw material feedstock utilized in the production process will result in variances in production capacities among products. We believe our raw material flexibility in the U.S. is a key advantage in our production of ethylene and its co-products.

Industry Dynamics / Competition

With respect to olefins and polyolefins, competition is based on price and, to a lesser extent, on product quality, product delivery, reliability of supply, product performance and customer service. Industry consolidation in North America has led to fewer, although larger, competitors. Profitability is affected not only by supply and demand for olefins and polyolefins, but also by raw material costs and price competition among producers, which may intensify due to, among other things, the addition of new capacity. In general, demand is a function of worldwide economic growth, including the regional dynamics that underlie global growth trends.

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We compete in North America with other large marketers and producers, including global chemical companies, chemical divisions of large oil companies and regional marketers and producers.

Based on published data, we believe we were, as of December 31, 2016:

- the second largest producer of ethylene in North America, with ethylene capacity of 11.7 billion pounds per year,
- the third largest producer of PE in North America with 6.4 billion pounds per year of capacity; and
- the largest producer of PP in North America, with 3.9 billion pounds, including our share of our Indelpro joint venture capacity.

Olefins and Polyolefins Europe, Asia, International Segment

Overview

Our O&P EAI segment produces and markets olefins and co-products, polyethylene and polypropylene, including PP compounds.

Sales & Marketing / Customers

Our ethylene production is primarily consumed internally as a raw material in the production of polyolefins, and we purchase additional ethylene as needed to meet our production needs. Our propylene production is used as a raw material in the production of PP and propylene oxide, and we regularly purchase propylene from third parties because our internal needs exceed our internal production.

With respect to PP and PE, our production is typically sold through our sales organization to an extensive base of established customers under annual contracts or on a spot basis and is also sold through distributors. Our polyolefins are transported in Europe primarily by railcar or truck.

Our regional sales offices are in various locations, including The Netherlands, Hong Kong, China, India, Australia and the United Arab Emirates. We also operate through a worldwide network of local sales and representative offices in Europe, Asia and Africa. Our joint ventures described below typically manage their domestic sales and marketing efforts independently, and we typically operate as their agent/distributor for all or a portion of their exports.

Joint Venture Relationships

We participate in several manufacturing joint ventures in Saudi Arabia, Thailand, Poland, Australia and South Korea. We do not hold majority interests in any of these joint ventures, nor do we have operational control. These ventures provide us with additional production capacity of approximately 2.9 billion pounds of PP, approximately 1.4 billion pounds of olefins, approximately 0.9 billion pounds of PE and approximately 100 million pounds of PP compounds. These capacities are based on our percentage ownership interest in the joint ventures total capacities. We realize profits or losses from these ventures as income (or loss) on the equity basis of accounting.

We generally license our polyolefin process technologies and supply catalysts to our joint ventures through our Technology segment. Some of our joint ventures are able to source cost advantaged raw materials from their local shareholders.

Raw Materials

Raw material cost is the largest component of the total cost for the production of olefins and co-products. The primary raw material used in our European olefin facilities is naphtha; however, in recent years we have

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sourced increased amounts of advantaged NGLs when the opportunity arises. For our Saudi joint venture facilities, locally sourced and cost advantaged NGLs, including ethane, propane and butane are used. The principal raw materials used in the production of polyolefins are propylene and ethylene. In Europe, we have the capacity to produce approximately 50% of the propylene requirements for our European PP production and all of the ethylene requirements for our European PE production. Propylene and ethylene requirements that are not produced internally are generally acquired pursuant to long-term contracts with third party suppliers or via spot purchases.

Our PP compounds facilities receive the majority of their PP raw materials from one of our wholly owned or joint venture facilities. Some of our joint ventures receive propylene and ethylene from their local shareholders under long-term contracts.

Our ability to pass through the increased cost of raw materials to customers is dependent on global market demand for olefins and polyolefins. In general, the pricing for purchases and sales of most products is determined by global market forces, including the impacts of foreign exchange on the pricing of the underlying naphtha raw materials, most of which are priced in U.S. dollars. There can be a lag between naphtha raw material price changes and contract product price changes that will cause volatility in our product margins.

Industry Dynamics / Competition

With respect to olefins and polyolefins, competition is based on price, product quality, product delivery, reliability of supply, product performance and customer service. We compete with regional and multinational chemical companies and divisions of large oil companies. The petrochemical market in the European Union (EU) has been affected by the price volatility of naphtha, the primary feedstock for olefins in the region, as well as fluctuating demand as a result of changing European and global economic conditions.

Based on published data and including our proportionate share of our joint ventures, we believe we were, as of December 31, 2016:

- the fifth largest producer of ethylene in Europe with an ethylene capacity in Europe of 4.3 billion pounds per year;
- the largest producer of PP in Europe with 5.7 billion pounds per year of capacity, including our share of the Poland joint venture; and
- the largest producer of PE in Europe with 4.8 billion pounds per year of capacity, including our share of the Poland joint venture.

Intermediates and Derivatives Segment

Overview

Our I&D segment produces and markets propylene oxide (PO) and its derivatives, oxyfuels and related products, and intermediate chemicals such as styrene monomer (SM), acetyls and ethylene oxides and derivatives.

PO and Derivatives We produce PO through two distinct technologies, one of which yields tertiary butyl alcohol (TBA) as the co-product and the other of which yields SM as the co-product. The two technologies are mutually exclusive with dedicated assets for manufacturing either PO/TBA or PO/SM. PO is an intermediate commodity chemical and is a precursor of polyols, propylene glycol, propylene glycol ethers and butanediol. PO and derivatives are used in a variety of durable and consumables items with key applications such as urethane foams used for insulation, automotive/furniture cushioning, coatings, surfactants, synthetic resins and several other household usages.

Oxyfuels and Related Products We produce two distinct ether-based oxyfuels, methyl tertiary butyl ether (MTBE) and ethyl tertiary butyl ether (ETBE). These oxyfuels are produced by converting the TBA co-product of PO into isobutylene and reacting with methanol or ethanol to produce either MTBE or ETBE. Both are used as high-octane gasoline components that help gasoline burn cleaner and reduce automobile emissions. Other TBA derivatives which we refer to as C4 chemicals, are largely used to make synthetic rubber and other gasoline additives.

Intermediate Chemicals We produce other commodity chemicals that utilize ethylene as a key component feedstock, including SM, acetyls and ethylene oxide derivatives. SM is utilized in various applications such as plastics, expandable polystyrene for packaging, foam cups and containers, insulation products and durables and engineering resins. Acetyls comprise methanol, glacial acetic acid (GAA) and vinyl acetate monomer (VAM). Natural gas (methane) is the feedstock for methanol, some of which is converted to GAA, and a portion of the GAA is reacted with ethylene to create VAM. VAM is an intermediate chemical used in fabric or wood treatments, pigments, coatings, films and adhesives. Ethylene oxide is an intermediate chemical that is used to produce ethylene glycol, glycol ethers and other derivatives. Ethylene oxide and its derivatives are used in the production of polyester, antifreeze fluids, solvents and other chemical products.

Sales & Marketing / Customers

We sell our PO and its co-products and derivatives through multi-year sales and processing agreements as well as spot sales. Some of our contract sales agreements have cost plus pricing terms. PO and derivatives are transported by barge, ocean going vessel, pipeline, railcar, and tank truck.

We sell our oxyfuels and related products under market and cost-based sales agreements and in the spot market. Oxyfuels are transported by barge, ocean going vessel and tank truck and are used as octane blending components worldwide outside of the United States due to their blending characteristics and emission benefits. C4 chemicals, such as high-purity isobutylene, are sold to producers of synthetic rubber and other chemical products primarily in the United States and Europe, and are transported by rail, truck, pipeline and marine shipments.

Intermediate chemicals are shipped by barge, marine vessel, pipeline, railcar and tank truck. SM is sold globally into regions such as North America, Europe, Asia, and South America export markets through spot sales and commercial contracts. Within acetyls, methanol is consumed internally to make GAA, used as a feedstock for oxyfuels and related products, and also sold directly into the merchant commercial market. As the final conversion stage, GAA is converted with ethylene to produce VAM which is sold worldwide under multi-year commercial contracts and on a spot basis.

Sales of our PO and derivatives, oxyfuels and related products, and intermediate chemicals are made by our marketing and sales personnel, and also through distributors and independent agents in the Americas, Europe, the Middle East, Africa and the Asia Pacific region.

Joint Venture Relationships

We have two PO joint ventures with Covestro AG, one in the U.S. and one in Europe. We operate four of the U.S. PO production facilities for the U.S. PO joint venture. Covestro s interest represents ownership of an in-kind portion of the PO production of 1.5 billion pounds per year. We take, in-kind, the remaining PO production and all co-product production. The parties rights in the joint venture are based on off-take volumes related to actual production of PO as opposed to ownership percentages. Covestro also has the right to 50% of the PO and SM production of our European PO joint venture. Our proportional production capacity provided through this venture is approximately 340 million pounds of PO and approximately 750 million pounds of SM. We do not share marketing or product sales with Covestro under either of these PO joint ventures.

We also have joint venture manufacturing relationships in China. These ventures provide us with additional production capacity of approximately 115 million pounds of PO. This capacity is based on our operational share of the joint ventures total capacities.

Raw Materials

The cost of raw materials is the largest component of total production cost for PO, its co-products and its derivatives. Propylene, isobutane or mixed butane, ethylene, and benzene are the primary raw materials used in the production of PO and its co-products. The market prices of these raw materials historically have been related to the price of crude oil, NGLs and natural gas, as well as supply and demand for the raw materials.

In the U.S., we obtain a large portion of our propylene, benzene and ethylene raw materials needed for the production of PO and its co-products from our O&P Americas segment and to a lesser extent from third parties. Raw materials for the non-U.S. production of PO and its co-products are obtained from our O&P EAI segment and from third parties. We consume a significant portion of our internally-produced PO in the production of PO derivatives.

The raw material requirements not sourced internally are purchased at market-based prices from numerous suppliers in the U.S. and Europe with which we have established contractual relationships, as well as in the spot market.

For the production of oxyfuels, we purchase our ethanol feedstock requirements from third parties and our methanol from both internal production and external sources. Carbon monoxide and methanol are the primary raw materials required for the production of GAA. We purchase carbon monoxide pursuant to a long-term contract with pricing primarily based on the cost of production. The methanol required for our downstream production of acetyls is internally sourced from a partnership and from our methanol plant at Channelview, Texas. Natural gas is the primary raw material required for the production of methanol.

In addition to ethylene, acetic acid is a primary raw material for the production of VAM. We obtain our entire requirements for acetic acid and ethylene from our internal production. Historically, we have used a large percentage of our acetic acid production to produce VAM.

Industry Dynamics / Competition

With respect to product competition, the market is influenced and based on a variety of factors, including product quality, price, reliability of supply, technical support, customer service and potential substitute materials. Profitability is affected by the worldwide level of demand along with price competition, which may intensify due to, among other things, new industry capacity and industry outages. Demand growth could be impacted by further development of alternative bio-based methodologies. Our major worldwide competitors include other multinational chemical and refining companies as well as some regional marketers and producers.

Based on published data, excluding our partners shares of joint venture capacity, we believe as of December 31, 2016 we were:

- the second largest producer of PO worldwide; and
- the largest producer of oxyfuels worldwide.

Refining Segment

Overview

The primary product of our Refining segment is refined products made from heavy, high-sulfur crude oil and other crude oils of varied types and sources available on the U.S. Gulf Coast. These refined products include gasoline and other distillates.

Sales & Marketing / Customers

The Houston refinery s products primarily are sold in bulk to other refiners, marketers, distributors and wholesalers at market-related prices. Most of the Houston refinery s products are sold under contracts with a term of one year or less or are sold in the spot market. The Houston refinery s products generally are transported to customers via pipelines and terminals owned and operated by other parties.

Raw Materials

Our Houston refinery, which is located on the Houston Ship Channel in Houston, Texas, has a heavy, high-sulfur crude oil processing capacity of approximately 268,000 barrels per day on a calendar day basis (normal operating basis), or approximately 292,000 barrels per day on a stream day basis (maximum achievable over a 24 hour period). The Houston refinery is a full conversion refinery designed to refine heavy, high-sulfur crude oil. This crude oil is more viscous and dense than traditional crude oil and contains higher concentrations of sulfur and heavy metals, making it more difficult to refine into gasoline and other high-value fuel products. However, this crude oil has historically been less costly to purchase than light, low-sulfur crude oil such as Brent.

We purchase the crude oil used as a raw material for the Houston refinery on the open market on a spot basis and under a number of supply agreements with regional producers, generally with terms varying from one to two years.

Industry Dynamics / Competition

Our refining competitors are major integrated oil companies, refineries owned or controlled by foreign governments and independent domestic refiners. Based on published data, as of January 2016, there were 141 operable crude oil refineries in the U.S., and total U.S. refinery capacity was approximately 18.3 million barrels per day. During 2016, the Houston refinery processed an average of approximately 205,000 barrels per day of crude oil.

Our refining operations compete for the purchases of crude oil based on price and quality. Supply disruptions could impact the availability and pricing. We compete in gasoline and distillate markets as a bulk supplier of fungible products satisfying industry and government specifications. Competition is based on price and location.

The markets for fuel products tend to be volatile as well as cyclical as a result of the changing global economy and changing crude oil and refined product prices. Crude oil prices are impacted by worldwide political events, the economics of exploration and production and refined products demand. Prices and demand for fuel products are influenced by seasonal and short-term factors such as weather and driving patterns, as well as by longer term issues such as the economy, energy conservation and alternative fuels. Industry fuel products supply is dependent on short-term industry operating capabilities and on long-term refining capacity.

A crack spread is a benchmark indication of refining margins based on the processing of a specific type of crude oil into an assumed selection of major refined products. The Houston refinery generally tracks the Maya 2-1-1 crack spread, which represents the difference between the current month Gulf Coast price of two barrels of Maya crude oil as set by Petróleos Mexicanos (Pemex) and one barrel each of U.S. Gulf Coast Reformulated Gasoline Blendstock for Oxygen Blending (RBOB) Gasoline and of U.S. Gulf Coast Ultralow-sulfur Diesel (ULSD). While these benchmark refining spreads are generally indicative of the level of profitability at the Houston refinery and similarly configured refineries, there are many other factors specific to each refinery and the industry in general, which influence operating results such as the value of refinery by-products. Refinery by-products are products other than gasoline and distillates that represent about one-third of the total product volume, and include coke, sulfur, and lighter materials such as NGLs and crude olefins streams. The cost of Renewable Identification Numbers (RINs), which are EPA mandated renewable fuel credits, can also affect profitability.

Technology Segment

Overview

Our Technology segment develops and licenses chemical and polyolefin process technologies and manufactures and sells polyolefin catalysts. We market our process technologies and our polyolefin catalysts to external customers and also use them in our own manufacturing operations. Approximately 25% of our catalyst sales are intercompany.

Our polyolefin process licenses are structured to provide a standard core technology, with individual customer needs met by adding customized modules that provide the required capabilities to produce the defined production grade slate and plant capacity. In addition to the basic license agreement, a range of services can also be provided, including project assistance, training, assistance in starting up the plant, and ongoing technical support after start-up. We may also offer marketing and sales services. In addition, licensees may continue to purchase polyolefin catalysts that are consumed in the production process, generally under long-term catalyst supply agreements with us.

Research and Development

Our research and development (R&D) activities are designed to improve our existing products and processes, and discover and commercialize new materials, catalysts and processes. These activities focus on product and application development, process development, catalyst development and fundamental polyolefin focused research.

In 2016, 2015 and 2014, our R&D expenditures were $99 million, $102 million and $127 million, respectively. A portion of these expenses are related to technical support and customer service and are allocated to the other business segments. In 2016 and 2015, approximately 45% of all R&D costs were allocated to business segments other than Technology, while in 2014, the allocation approximated 35%.

GENERAL

Intellectual Property

We maintain an extensive patent portfolio and continue to file new patent applications in the U.S. and other countries. As of December 31, 2016, we owned approximately 5,300 patents and patent applications worldwide. Our patents and trade secrets cover our processes, products and catalysts and are significant to our competitive position, particularly with regard to PO, intermediate chemicals, petrochemicals, polymers and our process technologies. We own globally registered and unregistered trademarks including marks for LyondellBasell, Lyondell and Equistar. While we believe that our intellectual property provides competitive advantages, we do not regard our businesses as being materially dependent upon any single patent, trade secret or trademark. Some of our heritage production capacity operates under licenses from third parties.

Environmental

Most of our operations are affected by national, state, regional and local environmental laws. Matters pertaining to the environment are discussed in Part I, Item 1A. *Risk Factors*; Part I, Item 3. *Legal Proceedings*; Part II, Item 7. *Management s Discussion and Analysis of Financial Condition and Results of Operation*s; and Notes 2 and 19 to the Consolidated Financial Statements.

We have made, and intend to continue to make, the expenditures necessary for compliance with applicable laws and regulations relating to environmental, health and safety matters. We incurred capital expenditures of $192 million in 2016 for health, safety and environmental compliance purposes and improvement programs, and estimate such expenditures to be approximately $200 million in 2017 and $180 million in 2018.

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While capital expenditures or operating costs for environmental compliance, including compliance with potential legislation and potential regulation related to climate change, cannot be predicted with certainty, we do not believe they will have a material effect on our competitive position.

While there can be no assurance that physical risks to our facilities and supply chain due to climate change will not occur in the future, we do not believe these risks are material in the near term.

Employee Relations

As of December 31, 2016, we employed approximately 13,000 full-time and part-time employees around the world. Of this total, 6,300 were located in North America and another 5,800 were located in Europe. The remainder of our employees is in other global locations.

As of December 31, 2016, approximately 830 of our employees in North America were represented by labor unions. The vast majority of our employees in Europe and South America are subject to staff council or works council coverage or collective bargaining agreements.

In addition to our own employees, we use the services of contractors in the routine conduct of our businesses.

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EXECUTIVE OFFICERS OF THE REGISTRANT

Our executive officers as of February 1, 2017 were as follows:

Name and Age	Significant Experience
Bhavesh V. (Bob) Patel, 50	Chief Executive Officer and Chairman of the Management Board since January 2015.
	Executive Vice President, Olefins and Polyolefins EAI and Technology from October 2013 and member of the Management Board from April 2014 to January 2015.
	Senior Vice President, Olefins and Polyolefins EAI and Technology from November 2010 to October 2013.
	Senior Vice President, Olefins and Polyolefins Americas from March 2010 to June 2011.
	General Manager, Olefins and NGLs of Chevron Phillips Chemical Company from 2009 to 2010.
Thomas Aebischer, 55	Executive Vice President and Chief Financial Officer since January 2016.
	Chief Financial Officer of LaFargeHolcim from July 2015 to December 2015.
	Chief Financial Officer of Holcim Ltd. from January 2011 to June 2015.
Kevin W. Brown, 59	Executive Vice President, Manufacturing and Refining since January 2015 and member of the Management Board since May 2015.
	Senior Vice President, Refining from October 2009 to January 2015.
	Director of Sinclair Oil from January 2006 to September 2009.

	Executive Vice President, Operations of Sinclair Oil from June 2004 to September 2009.
Dan M. Coombs, 60	Executive Vice President, Global Olefins and Polyolefins, and Technology since January 2016.
	Executive Vice President, Intermediates and Derivatives from May 2015 to January 2016.
	Senior Vice President of Manufacturing for Chevron Phillips Chemical from December 2013 to May 2015.
	Senior Vice President for Specialties, Aromatics and Styrenics for Chevron Phillips Chemical from December 2011 to November 2013.
	Vice President of Corporate Planning and Development for Chevron Phillips Chemical from September 2011 to November 2011.

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Name and Age	Significant Experience
	Deputy General Manager for Qatar Chemical Company Limited Development and Vice President Qatar for Chevron Phillips Chemical from April 2010 to September 2011.
Massimo Covezzi, 59	Senior Vice President, Research and Development since January 2008.
James Guilfoyle, 46	Senior Vice President, Global Intermediates and Derivatives since June 2015.
	Vice President of Global Propylene Oxide and Co-Products from March 2015 to May 2015.
	Director of Polymer Sales Americas from January 2012 to February 2015.
	Director of High Density Polyethylene from November 2006 to December 2011.
Jeffrey A. Kaplan, 48	Executive Vice President and Chief Legal Officer since March 2015 and member of the Management Board since May 2015.
	Deputy General Counsel from December 2009 to March 2015.
Michael VanDerSnick, 52	Senior Vice President, Health, Safety, Security and Environment since June 2015.
	Senior Vice President, Manufacturing EAI from July 2012 to June 2015.
	Site manager of the Company s Channelview, Matagorda, Chocolate Bayou and Bayport, Texas plants from 2004 to 2012.
Jacquelyn H. Wolf, 55	Senior Vice President and Chief Human Resources Officer since September 2012.
	Senior Vice President and Chief Human Resources Officer for Celanese, Inc. from December 2009 to July 2012.
	Executive Vice President and Chief Human Resources Officer for Comerica Bank from January 2006 to December 2009.

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Description of Properties

Our principal manufacturing facilities as of December 31, 2016 are set forth below, and are identified by the principal segment or segments using the facility. All of the facilities are wholly owned, except as otherwise noted.

Location	Segment
Americas	
Bayport (Pasadena), Texas	I&D
Bayport (Pasadena), Texas(1)	I&D
Bayport (Pasadena), Texas	O&P Americas
Channelview, Texas(2)	O&P Americas
Channelview, Texas(1)(2)(3)	I&D
Chocolate Bayou, Texas	O&P Americas
Clinton, Iowa	O&P Americas
Corpus Christi, Texas	O&P Americas
Edison, New Jersey	O&P Americas
Houston, Texas	Refining
La Porte, Texas(4)	O&P Americas
La Porte, Texas(4)(5)	I&D
Lake Charles, Louisiana	O&P Americas
Matagorda, Texas	O&P Americas
Morris, Illinois	O&P Americas
Tuscola, Illinois	O&P Americas
Victoria, Texas	O&P Americas
Europe	
Berre l Etang, France	O&P EAI
Botlek, Rotterdam, The Netherlands	I&D
Brindisi, Italy	O&P EAI
Carrington, UK	O&P EAI
Ferrara, Italy	O&P EAI
	Technology
Fos-sur-Mer, France	I&D
Frankfurt, Germany	O&P EAI
	Technology
Knapsack, Germany	O&P EAI
Ludwigshafen, Germany	Technology
Maasvlakte, The Netherlands(6)	I&D
Moerdijk, The Netherlands	O&P EAI
Münchsmünster, Germany	O&P EAI
Tarragona, Spain(7)	O&P EAI
Wesseling, Germany	O&P EAI
Asia Pacific	

Geelong, Australia	O&P EAI

The facility is located on leased land.

(1) The Bayport PO/TBA plants and the Channelview PO/SM I plant are held by the U.S. PO joint venture between Covestro and Lyondell Chemical Company. These plants are located on land leased by the U.S. PO joint venture.
(2) Equistar Chemicals, LP operates a styrene maleic anhydride unit and a polybutadiene unit, which are owned by an unrelated party and are located within the Channelview facility on property leased from Equistar Chemicals, LP.
(3) Unrelated equity investors hold a minority interest in the PO/SM II plant at the Channelview facility.
(4) The La Porte facilities are on contiguous property.
(5) The La Porte methanol facility is owned by La Porte Methanol Company, a partnership owned 85% by us.
(6) The Maasvlakte plant is owned by the European PO joint venture and is located on land leased by the European PO joint venture.
(7) The Tarragona PP facility is located on leased land; the compounds facility is located on co-owned land.

Other Locations and Properties

We maintain executive offices in London, the United Kingdom; Rotterdam, The Netherlands; and Houston, Texas. We maintain research facilities in Lansing, Michigan; Channelview, Texas; Cincinnati, Ohio; Ferrara, Italy and Frankfurt, Germany. Our Asia Pacific headquarters are in Hong Kong. We also have technical support centers in Bayreuth, Germany; Geelong, Australia and Tarragona, Spain. We have various sales facilities worldwide.

Website Access to SEC Reports

Our Internet website address is *http://www.lyb.com*. Information contained on our Internet website is not part of this report on Form 10-K.

Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and any amendments to these reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 are available on our website, free of charge, as soon as reasonably practicable after such reports are filed with, or furnished to, the U.S. Securities and Exchange Commission. Alternatively, you may access these reports at the SEC s website at *http://www.sec.gov*.

Item 1A. Risk Factors.

You should carefully consider the following risk factors in addition to the other information included in this Annual Report on Form 10-K. Each of these risk factors could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our common stock.

Our business, including our results of operations and reputation, could be adversely affected by safety or product liability issues.

Failure to appropriately manage safety, human health, product liability and environmental risks associated with our products, product life cycles and production processes could adversely impact employees, communities, stakeholders, our reputation and our results of operations. Public perception of the risks associated with our products and production processes could impact product acceptance and influence the regulatory environment in which we operate. While we have procedures and controls to manage safety risks, issues could be created by events outside of our control, including natural disasters, severe weather events and acts of sabotage.

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Our operations are subject to risks inherent in chemical and refining businesses, and we could be subject to liabilities for which we are not fully insured or that are not otherwise mitigated.

We maintain property, business interruption, product, general liability, casualty and other types of insurance that we believe are appropriate for our business and operations as well as in line with customary industry practices. However, we are not fully insured against all potential hazards incident to our business, including losses resulting from natural disasters, wars or terrorist acts. Changes in insurance market conditions have caused, and may in the future cause, premiums and deductibles for certain insurance policies to increase substantially and, in some instances, for certain insurance to become unavailable or available only for reduced amounts of coverage. If we were to incur a significant liability for which we were not fully insured, we might not be able to finance the amount of the uninsured liability on terms acceptable to us or at all, and might be obligated to divert a significant portion of our cash flow from normal business operations.

Further, because a part of our business involves licensing polyolefin process technology, our licensees are exposed to similar risks involved in the manufacture and marketing of polyolefins. Hazardous incidents involving our licensees, if they do result or are perceived to result from use of our technologies, may harm our reputation, threaten our relationships with other licensees and/or lead to customer attrition and financial losses. Our policy of covering these risks through contractual limitations of liability and indemnities and through insurance may not always be effective. As a result, our financial condition and results of operation would be adversely affected, and other companies with competing technologies may have the opportunity to secure a competitive advantage.

A sustained decrease in the price of crude oil may adversely impact the results of our operations, primarily in North America.

Energy costs generally follow price trends of crude oil and natural gas. These price trends may be highly volatile and cyclical. In the past, raw material and energy costs have experienced significant fluctuations that adversely affected our business segments results of operations. For example, we have benefitted from the favorable ratio of U.S. natural gas prices to crude oil prices in recent years. This advantage was reduced as oil prices declined beginning in 2014. If the price of crude oil remains lower relative to U.S. natural gas prices or if the demand for natural gas and NGLs increases, this may have a negative impact on our results of operations.

Costs and limitations on supply of raw materials and energy may result in increased operating expenses.

The costs of raw materials and energy represent a substantial portion of our operating expenses. Due to the significant competition we face and the commodity nature of many of our products we are not always able to pass on raw material and energy cost increases to our customers. When we do have the ability to pass on the cost increases, we are not always able to do so quickly enough to avoid adverse impacts on our results of operations.

Cost increases for raw materials also may increase working capital needs, which could reduce our liquidity and cash flow. Even if we increase our sales prices to reflect rising raw material and energy costs, demand for products may decrease as customers reduce their consumption or use substitute products, which may have an adverse impact on our results of operations. In addition, producers in natural gas cost-advantaged regions, such as the Middle East and North America, benefit from the lower prices of natural gas and NGLs. Competition from producers in these regions may cause us to reduce exports from Europe and elsewhere. Any such reductions may increase competition for product sales within Europe and other markets, which can result in lower margins in those regions.

For some of our raw materials and utilities there are a limited number of suppliers and, in some cases, the supplies are specific to the particular geographic region in which a facility is located. It is also common in the chemical and refining industries for a facility to have a sole, dedicated source for its utilities, such as steam, electricity and gas. Having a sole or limited number of suppliers may limit our negotiating power, particularly in

the case of rising raw material costs. Any new supply agreements we enter into may not have terms as favorable as those contained in our current supply agreements.

Additionally, there is growing concern over the reliability of water sources, including around the Texas Gulf Coast where several of our facilities are located. The decreased availability or less favorable pricing for water as a result of population growth, drought or regulation could negatively impact our operations.

If our raw material or utility supplies were disrupted, our businesses may incur increased costs to procure alternative supplies or incur excessive downtime, which would have a direct negative impact on plant operations. Disruptions of supplies may occur as a result of transportation issues including, but not limited to, as a result of natural disasters and water levels that can affect the operations of vessels, barges, rails, trucks and pipeline traffic. These risks are particularly prevalent in the U.S. Gulf Coast area. Additionally, the export of NGLs from the U.S., greater restrictions on hydraulic fracturing or the lifting by the U.S. government of the ban on U.S. crude oil exports could restrict the availability of our raw materials, thereby increasing our costs.

With increased volatility in raw material costs, our suppliers could impose more onerous terms on us, resulting in shorter payment cycles and increasing our working capital requirements.

Our ability to source raw materials may be adversely affected by political instability, civil disturbances or other governmental actions.

We obtain a portion of our principal raw materials from sources in North Africa, the Middle East, and Central and South America that may be less politically stable than other areas in which we conduct business, such as Europe or the U.S. Political instability, civil disturbances and actions by governments in these areas are likely to substantially increase the price and decrease the supply of raw materials necessary for our operations, which will have a material adverse effect on our results of operations.

Increased incidents of civil unrest, including terrorist attacks and demonstrations that have been marked by violence, have occurred in a number of countries in North Africa and the Middle East. Some political regimes in these countries are threatened or have changed as a result of such unrest. Political instability and civil unrest could continue to spread in the region and involve other areas. Such unrest, if it continues to spread or grow in intensity, could lead to civil wars, regional conflicts, or regime changes resulting in governments that are hostile to countries in which we conduct substantial business, such as in Europe, the U.S., or their respective trading partners.

Economic disruptions and downturns in general, and particularly continued global economic uncertainty or economic turmoil in emerging markets, could have a material adverse effect on our business, prospects, operating results, financial condition and cash flows.

Our results of operations can be materially affected by adverse conditions in the financial markets and depressed economic conditions generally. Economic downturns in the businesses and geographic areas in which we sell our products substantially reduce demand for our products and result in decreased sales volumes and increased credit risk. Recessionary environments adversely affect our business because demand for our products is reduced, particularly from our customers in industrial markets generally and the automotive and housing industries specifically, and may result in higher costs of capital. A significant portion of our revenues and earnings are derived from our business in Europe, including southern Europe. In addition, most of our European transactions and assets, including cash reserves and receivables, are denominated in euros.

If a sustained financial crisis in Europe leads to a further significant devaluation of the euro, the value of our financial assets that are denominated in euros would be significantly reduced when translated to U.S. dollars for financial reporting purposes. We also derive significant revenues from our business in emerging markets, particularly the emerging markets in Asia and South America. Any broad-based downturn in these emerging

markets, or in a key market such as China, could require us to reduce export volumes into these markets and could also require us to divert product sales to less profitable markets. Any of these conditions could ultimately harm our overall business, prospects, operating results, financial condition and cash flows.

The cyclicality and volatility of the industries in which we participate may cause significant fluctuations in our operating results.

Our business operations are subject to the cyclical and volatile nature of the supply-demand balance in the chemical and refining industries. Our future operating results are expected to continue to be affected by this cyclicality and volatility. The chemical and refining industries historically have experienced alternating periods of capacity shortages, causing prices and profit margins to increase, followed by periods of excess capacity, resulting in oversupply, declining capacity utilization rates and declining prices and profit margins.

In addition to changes in the supply and demand for products, changes in energy prices and other worldwide economic conditions can cause volatility. These factors result in significant fluctuations in profits and cash flow from period to period and over business cycles.

New capacity additions in Asia, the Middle East and North America may lead to periods of oversupply and lower profitability. A sizable number of expansions have been announced in North America. The timing and extent of any changes to currently prevailing market conditions are uncertain and supply and demand may be unbalanced at any time. As a consequence, we are unable to accurately predict the extent or duration of future industry cycles or their effect on our business, financial condition or results of operations.

We sell products in highly competitive global markets and face significant price pressures.

We sell our products in highly competitive global markets. Due to the commodity nature of many of our products, competition in these markets is based primarily on price and, to a lesser extent, on product performance, product quality, product deliverability, reliability of supply and customer service. Often, we are not able to protect our market position for these products by product differentiation and may not be able to pass on cost increases to our customers due to the significant competition in our business.

In addition, we face increased competition from companies that may have greater financial resources and different cost structures or strategic goals than us. These include large integrated oil companies (some of which also have chemical businesses), government-owned businesses, and companies that receive subsidies or other government incentives to produce certain products in a specified geographic region. Continuing, increased competition from these companies, especially in our olefin and refining businesses, could limit our ability to increase product sales prices in response to raw material and other cost increases, or could cause us to reduce product sales prices to compete effectively, which could reduce our profitability. Competitors with different cost structures or strategic goals than we have may be able to invest significant capital into their businesses, including expenditures for research and development.

In addition, specialty products we produce may become commoditized over time. Increased competition could result in lower prices or lower sales volumes, which would have a negative impact on our results of operations.

Interruptions of operations at our facilities may result in liabilities or lower operating results.

We own and operate large-scale facilities. Our operating results are dependent on the continued operation of our various production facilities and the ability to complete construction and maintenance projects on schedule. Interruptions at our facilities may materially reduce the productivity and profitability of a particular manufacturing facility, or our business as a whole, during and after the period of such operational difficulties. In the past, we had to shut down plants on the U.S. Gulf Coast, including the temporary shutdown of our Houston refinery, as a result of hurricanes striking the Texas coast.

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In addition, because the Houston refinery is our only refining operation, an outage at the refinery could have a particularly negative impact on our operating results. Unlike our chemical and polymer production facilities, which may have sufficient excess capacity to mitigate the negative impact of lost production at other facilities, we do not have the ability to increase refining production elsewhere in the U.S.

Although we take precautions to enhance the safety of our operations and minimize the risk of disruptions, our operations are subject to hazards inherent in chemical manufacturing and refining and the related storage and transportation of raw materials, products and wastes. These potential hazards include:

- pipeline leaks and ruptures;
- explosions;
- fires;
- severe weather and natural disasters;
- mechanical failure;
- unscheduled downtimes;
- supplier disruptions;
- labor shortages or other labor difficulties;
- transportation interruptions;
- remediation complications;
- increased restrictions on, or the unavailability of, water for use at our manufacturing sites or for the transport of our products or raw materials;
- chemical and oil spills;
- discharges or releases of toxic or hazardous substances or gases;
- shipment of incorrect or off-specification product to customers;

- storage tank leaks;
- other environmental risks; and
- terrorist acts.

Some of these hazards may cause severe damage to or destruction of property and equipment or personal injury and loss of life and may result in suspension of operations or the shutdown of affected facilities.

Large capital projects can take many years to complete, and market conditions could deteriorate significantly between the project approval date and the project startup date, negatively impacting project returns. If we are unable to complete capital projects at their expected costs and in a timely manner, or if the market conditions assumed in our project economics deteriorate, our business, financial condition, results of operations and cash flows could be materially and adversely affected.

Delays or cost increases related to capital spending programs involving engineering, procurement and construction of facilities could materially adversely affect our ability to achieve forecasted internal rates of return and operating results. Delays in making required changes or upgrades to our facilities could subject us to fines or penalties as well as affect our ability to supply certain products we produce. Such delays or cost increases may arise as a result of unpredictable factors, many of which are beyond our control, including:

- denial of or delay in receiving requisite regulatory approvals and/or permits;
- unplanned increases in the cost of construction materials or labor;

- disruptions in transportation of components or construction materials;

- adverse weather conditions, natural disasters or other events (such as equipment malfunctions, explosions, fires or spills) affecting our facilities, or those of vendors or suppliers;

- shortages of sufficiently skilled labor, or labor disagreements resulting in unplanned work stoppages; and

- nonperformance by, or disputes with, vendors, suppliers, contractors or subcontractors.

Any one or more of these factors could have a significant impact on our ongoing capital projects. If we were unable to make up the delays associated with such factors or to recover the related costs, or if market conditions change, it could materially and adversely affect our business, financial condition, results of operations and cash flows.

Increased IT security threats and more sophisticated and targeted computer crime could pose a risk to our systems, networks, products, facilities and services.

Increased global information security threats and more sophisticated, targeted computer crime pose a risk to the confidentiality, availability and integrity of our data, operations and infrastructure. While we attempt to mitigate these risks by employing a number of measures, including security measures, employee training, comprehensive monitoring of our networks and systems, and maintenance of backup and protective systems, our employees, systems, networks, products, facilities and services remain potentially vulnerable to sophisticated espionage or cyber-assault. Depending on their nature and scope, such threats could potentially lead to the compromise of confidential information, improper use of our systems and networks, manipulation and destruction of data, defective products, production downtimes and operational disruptions, which in turn could adversely affect our reputation, competitiveness and results of operations.

We operate internationally and are subject to exchange rate fluctuations, exchange controls, political risks and other risks relating to international operations.

We operate internationally and are subject to the risks of doing business on a global level. These risks include fluctuations in currency exchange rates, economic instability and disruptions, restrictions on the transfer of funds and the imposition of duties and tariffs. Additional risks from our multinational business include transportation delays and interruptions, war, terrorist activities, epidemics, pandemics, political instability, import and export controls, changes in governmental policies, labor unrest and current and changing regulatory environments.

We generate revenues from export sales and operations that may be denominated in currencies other than the relevant functional currency. Exchange rates between these currencies and functional currencies in recent years have fluctuated significantly and may do so in the future. It is possible that fluctuations in exchange rates will result in reduced operating results. Additionally, we operate with the objective of having our worldwide cash available in the locations where it is needed, including the United Kingdom for our parent company s significant cash obligations as a result of dividend and interest payments. It is possible that we may not always be able to provide cash to other jurisdictions when needed or that such transfers of cash could be subject to additional taxes, including withholding taxes.

Our operating results could be negatively affected by the global laws, rules and regulations, as well as political environments, in the jurisdictions in which we operate. There could be reduced demand for our products, decreases in the prices at which we can sell our products and disruptions of production or other operations. Additionally, there may be substantial capital and other costs to comply with regulations and/or increased security costs or insurance premiums, any of which could reduce our operating results.

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We obtain a portion of our principal raw materials from international sources that are subject to these same risks. Our compliance with applicable customs, currency exchange control regulations, transfer pricing regulations or any other laws or regulations to which we may be subject could be challenged. Furthermore, these laws may be modified, the result of which may be to prevent or limit subsidiaries from transferring cash to us.

Furthermore, we are subject to certain existing, and may be subject to possible future, laws that limit or may limit our activities while some of our competitors may not be subject to such laws, which may adversely affect our competitiveness.

Changes in tax laws and regulations could affect our tax rate and our results of operations.

We are a tax resident in the United Kingdom and are subject to the United Kingdom corporate income tax system. LyondellBasell N.V. has little or no taxable income of its own because, as a holding company, it does not conduct any operations. Through our subsidiaries, we have substantial operations world-wide. Taxes are primarily paid on the earnings generated in various jurisdictions, including the United States, The Netherlands, Germany, France, and Italy.

A portion of the Company s interest income from internal financing is either untaxed or taxed at rates substantially lower than the U.S. statutory rate. In September 2016, the UK enacted provisions (the so called anti-hybrid provisions), effective for years beginning January 1, 2017, that will impact our internal financing structure. In addition, in October 2016 the U.S. Treasury issued final Section 385 debt-equity regulations that may also impact our internal financings.

We monitor income tax legislative developments (including, for example, the U.S. tax reform proposals and the European Union s state aid investigations) in countries where we conduct business. Recently, there has been an increase in attention, both in the U.K. and globally, to the tax practices of multinational companies, including proposals by the Organization for Economic Cooperation and Development with respect to base erosion and profit shifting. Such attention may result in legislative changes that could adversely affect our tax rate. Management does not believe that recent changes in income tax laws will have a material impact on our Consolidated Financial Statements, although new or proposed changes to tax laws could affect our tax liabilities in the future.

Many of our businesses depend on our intellectual property. Our future success will depend in part on our ability to protect our intellectual property rights, and our inability to do so could reduce our ability to maintain our competitiveness and margins.

We have a significant worldwide patent portfolio of issued and pending patents. These patents and patent applications, together with proprietary technical know-how, are significant to our competitive position, particularly with regard to PO, performance chemicals, petrochemicals, and polymers. We rely on the patent, copyright and trade secret laws of the countries in which we operate to protect our investment in research and development, manufacturing and marketing. However, we may be unable to prevent third parties from using our intellectual property without authorization. Proceedings to protect these rights could be costly, and we may not prevail.

The failure of our patents or confidentiality agreements to protect our processes, apparatuses, technology, trade secrets or proprietary know-how could result in significantly lower revenues, reduced profit margins and cash flows and/or loss of market share. We also may be subject to claims that our technology, patents or other intellectual property infringes on a third party s intellectual property rights. Unfavorable resolution of these claims could result in restrictions on our ability to deliver the related service or in a settlement that could be material to us.

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Shared control or lack of control of joint ventures may delay decisions or actions regarding the joint ventures.

A portion of our operations are conducted through joint ventures, where control may be exercised by or shared with unaffiliated third parties. We cannot control the actions of our joint venture partners, including any nonperformance, default or bankruptcy of joint venture partners. The joint ventures that we do not control may also lack financial reporting systems to provide adequate and timely information for our reporting purposes.

Our joint venture partners may have different interests or goals than we do and may take actions contrary to our requests, policies or objectives. Differences in views among the joint venture participants also may result in delayed decisions or in failures to agree on major matters, potentially adversely affecting the business and operations of the joint ventures and in turn our business and operations. We may develop a dispute with any of our partners over decisions affecting the venture that may result in litigation, arbitration or some other form of dispute resolution. If a joint venture participant acts contrary to our interest, it could harm our brand, business, results of operations and financial condition.

We cannot predict with certainty the extent of future costs under environmental, health and safety and other laws and regulations, and cannot guarantee they will not be material.

We may face liability arising out of the normal course of business, including alleged personal injury or property damage due to exposure to chemicals or other hazardous substances at our current or former facilities or chemicals that we manufacture, handle or own. In addition, because our products are components of a variety of other end-use products, we, along with other members of the chemical industry, are subject to potential claims related to those end-use products. Any substantial increase in the success of these types of claims could negatively affect our operating results.

We (together with the industries in which we operate) are subject to extensive national, regional, state and local environmental laws, regulations, directives, rules and ordinances concerning:

- emissions to the air;
- discharges onto land or surface waters or into groundwater; and
- the generation, handling, storage, transportation, treatment, disposal and remediation of hazardous substances and waste materials.

Many of these laws and regulations provide for substantial fines and potential criminal sanctions for violations. Some of these laws and regulations are subject to varying and conflicting interpretations. In addition, some of these laws and regulations require us to meet specific financial responsibility requirements. Any substantial liability for environmental damage could have a material adverse effect on our financial condition, results of operations and cash flows.

Although we have compliance programs and other processes intended to ensure compliance with all such regulations, we are subject to the risk that our compliance with such regulations could be challenged. Non-compliance with certain of these regulations could result in the incurrence of additional costs, penalties or assessments that could be material.

Our industry is subject to extensive government regulation, and existing, or future regulations may restrict our operations, increase our costs of operations or require us to make additional capital expenditures.

Compliance with regulatory requirements could result in higher operating costs, such as regulatory requirements relating to emissions, the security of our facilities, and the transportation, export or registration of our products. We generally expect that regulatory controls worldwide will become increasingly more demanding, but cannot accurately predict future developments.

Increasingly strict environmental laws and inspection and enforcement policies, could affect the handling, manufacture, use, emission or disposal of products, other materials or hazardous and non-hazardous waste. Stricter environmental, safety and health laws, regulations and enforcement policies could result in increased operating costs or capital expenditures to comply with such laws and regulations. Additionally, we are required to have permits for our businesses and are subject to licensing regulations. These permits and licenses are subject to renewal, modification and in some circumstances, revocation. Further, the permits and licenses are often difficult, time consuming and costly to obtain and could contain conditions that limit our operations.

We may incur substantial costs to comply with climate change legislation and related regulatory initiatives.

There has been a broad range of proposed or promulgated state, national and international laws focusing on greenhouse gas (GHG) reduction. These proposed or promulgated laws apply or could apply in countries where we have interests or may have interests in the future. Laws in this field continue to evolve and, while they are likely to be increasingly widespread and stringent, at this stage it is not possible to accurately estimate either a timetable for implementation or our future compliance costs relating to implementation. Within the framework of the EU emissions trading scheme (ETS), we were allocated certain allowances of carbon dioxide for the affected plants of our European sites for the period from 2008 to 2012 (ETS II period). The ETS II period did not bring additional cost to us as the allowance allocation was sufficient to cover the actual emissions of the affected plants. We were able to build an allowance surplus during the ETS II period which has been banked to the scheme for the period from 2013 to 2020 (ETS III period). We expect to incur additional costs for the ETS III period, despite the allowance surplus accrued over the ETS II period, as allowance allocations have been reduced for the ETS III period and more of our plants are affected by the scheme. We maintain an active hedging strategy to cover these additional costs. We expect to incur additional costs in relation to future carbon or GHG emission trading schemes.

In the U.S., the Environmental Protection Agency (the EPA) has promulgated federal GHG regulations under the Clean Air Act affecting certain sources. The EPA has issued mandatory GHG reporting requirements, requirements to obtain GHG permits for certain industrial plants and proposals for GHG performance standards for some facilities. The recent EPA action could be a precursor to further federal regulation of carbon dioxide emissions and other greenhouse gases, and may affect the outcome of other climate change lawsuits pending in U.S. courts in a manner unfavorable to our industry. In any event, additional regulation may be forthcoming at the U.S. federal or state level with respect to GHG emissions, and such regulation could result in the creation of additional costs in the form of taxes or required acquisition or trading of emission allowances.

Compliance with these or other changes in laws, regulations and obligations that create a GHG emissions trading scheme or GHG reduction policies generally could significantly increase our costs or reduce demand for products we produce. Additionally, compliance with these regulations may result in increased permitting necessary for the operation of our business or for any of our growth plans. Difficulties in obtaining such permits could have an adverse effect on our future growth. Therefore, any future potential regulations and legislation could result in increased compliance costs, additional operating restrictions or delays in implementing growth projects or other capital investments, and could have a material adverse effect on our business and results of operations.

We may be required to record material charges against our earnings due to any number of events that could cause impairments to our assets.

We may be required to reduce production at or idle facilities for extended periods of time or exit certain businesses as a result of the cyclical nature of our industry. Specifically, oversupplies of or lack of demand for particular products or high raw material prices may cause us to reduce production. We may choose to reduce production at certain facilities because we have off-take arrangements at other facilities, which make any reductions or idling unavailable at those facilities. Any decision to permanently close facilities or exit a business likely would result in impairment and other charges to earnings.

Temporary outages at our facilities can last for several quarters and sometimes longer. These outages could cause us to incur significant costs, including the expenses of maintaining and restarting these facilities. In addition, even though we may reduce production at facilities, we may be required to continue to purchase or pay for utilities or raw materials under take-or-pay supply agreements.

Our business is capital intensive and we rely on cash generated from operations and external financing to fund our growth and ongoing capital needs. Limitations on access to external financing could adversely affect our operating results.

We require significant capital to operate our current business and fund our growth strategy. Moreover, interest payments, dividends and the expansion of our business or other business opportunities may require significant amounts of capital. We believe that our cash from operations currently will be sufficient to meet these needs. However, if we need external financing, our access to credit markets and pricing of our capital is dependent upon maintaining sufficient credit ratings from credit rating agencies and the state of the capital markets generally. There can be no assurances that we would be able to incur indebtedness on terms we deem acceptable, and it is possible that the cost of any financings could increase significantly, thereby increasing our expenses and decreasing our net income. If we are unable to generate sufficient cash flow or raise adequate external financing, including as a result of significant disruptions in the global credit markets, we could be forced to restrict our operations and growth opportunities, which could adversely affect our operating results.

We may use our five-year, $2.5 billion revolving credit facility, which backs our commercial paper program, to meet our cash needs, to the extent available. As of December 31, 2016, we had no borrowings or letters of credit outstanding under the facility and $500 million outstanding under our commercial paper program, leaving an unused and available credit capacity of $1,973 million. We may also meet our cash needs by selling receivables under our $900 million U.S. accounts receivable securitization facility. In the event of a default under our credit facility or any of our senior notes, we could be required to immediately repay all outstanding borrowings and make cash deposits as collateral for all obligations the facility supports, which we may not be able to do. Any default under any of our credit arrangements could cause a default under many of our other credit agreements and debt instruments. Without waivers from lenders party to those agreements, any such default could have a material adverse effect on our ability to continue to operate.

Legislation and regulatory initiatives could lead to a decrease in demand for our products.

New or revised governmental regulations and independent studies relating to the effect of our products on health, safety and the environment may affect demand for our products and the cost of producing our products. Initiatives by governments and private interest groups will potentially require increased toxicological testing and risk assessments of a wide variety of chemicals, including chemicals used or produced by us. For example, in the United States, the National Toxicology Program (NTP) is a federal interagency program that seeks to identify and select for study chemicals and other substances to evaluate potential human health hazards. In the European Union, the Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) is regulation designed to identify the intrinsic properties of chemical substances, assess hazards and risks of the substances, and identify and implement the risk management measures to protect humans and the environment.

Assessments under NTP, REACH or similar programs or regulations in other jurisdictions may result in heightened concerns about the chemicals we use or produce and may result in additional requirements being placed on the production, handling, labeling or use of those chemicals. Such concerns and additional requirements could also increase the cost incurred by our customers to use our chemical products and otherwise limit the use of these products, which could lead to a decrease in demand for these products. Such a decrease in demand could have an adverse impact on our business and results of operations.

Adverse results of legal proceedings could materially adversely affect us.

We are subject to and may in the future be subject to a variety of legal proceedings and claims that arise out of the ordinary conduct of our business. Results of legal proceedings cannot be predicted with certainty. Irrespective of its merits, litigation may be both lengthy and disruptive to our operations and may cause significant expenditure and diversion of management attention. We may be faced with significant monetary damages or injunctive relief against us that could materially adversely affect a portion of our business operations or materially and adversely affect our financial position and our results of operations should we fail to prevail in certain matters.

Significant changes in pension fund investment performance or assumptions relating to pension costs may adversely affect the valuation of pension obligations, the funded status of pension plans, and our pension cost.

Our pension cost is materially affected by the discount rates used to measure pension obligations, the level of plan assets available to fund those obligations at the measurement date and the expected long-term rates of return on plan assets. Significant changes in investment performance or a change in the portfolio mix of invested assets may result in corresponding increases and decreases in the value of plan assets, particularly equity securities, or in a change of the expected rate of return on plan assets. Any changes in key actuarial assumptions, such as the discount rate or mortality rate, would impact the valuation of pension obligations, affecting the reported funded status of our pension plans as well as the net periodic pension cost in the following fiscal years.

Nearly all of our current pension plans have projected benefit obligations that exceed the fair value of the plan assets. As of December 31, 2016, the aggregate deficit was $942 million. Any declines in the fair values of the pension plans assets could require additional payments by us in order to maintain specified funding levels.

Our pension plans are subject to legislative and regulatory requirements of applicable jurisdictions, which could include, under certain circumstances, local governmental authority to terminate the plan.

Item 1B. Unresolved Staff Comments.
None.

Item 3. Legal Proceedings.
Environmental Matters

From time to time we and our joint ventures receive notices or inquiries from government entities regarding alleged violations of environmental laws and regulations pertaining to, among other things, the disposal, emission and storage of chemical and petroleum substances, including hazardous wastes. Item 103 of the SEC s Regulation S-K requires disclosure of certain environmental matters when a governmental authority is a party to the proceedings and the proceedings involve potential monetary sanctions that we reasonably believe could exceed $100,000. The matters below are disclosed solely pursuant to that requirement.

In September 2013, the Louisiana Department of Environmental Quality (the LDEQ) issued a Compliance Order and Notice of Potential Penalty to Equistar Chemicals, LP pertaining to self-reported deviations arising from our Lake Charles, Louisiana polyolefins plant and relating to certain Clean Air Act Title V permit conditions, limits and other requirements. The matter involves deviations reported by us to the LDEQ in semi-annual reports covering 2007 through June 2011. We reasonably believe that LDEQ may assert an administrative penalty demand in this matter in excess of $100,000.

In September 2013, U.S. Environmental Protection Agency (the EPA) Region V issued a Notice and Finding of Violation alleging violations at our Morris, Illinois facility related to flaring activity. The Notice

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generally alleges failures to monitor steam usage and improper flare operations. We reasonably believe that EPA Region V may assert a penalty demand in excess of $100,000.

In June 2014, EPA Region V issued a Notice and Finding of Violation alleging violations at our Tuscola, Illinois facility related to flaring activity. The Notice generally alleges failure to conduct a valid performance test and improper flare operations. We reasonably believe that EPA Region V may assert a penalty demand in excess of $100,000.

In July 2015, the Texas Commission on Environmental Quality (the TCEQ) issued a proposed Agreed Order to Houston Refining LP pertaining to an emissions event which occurred in August 2014. TCEQ has asserted an administrative penalty demand for this matter of $100,000, which was approved by the Commissioners in January 2016, and has been fully paid.

In February 2016, the TCEQ issued a Notice of Enforcement to Equistar Chemicals, LP following a TCEQ compliance investigation file review. In April 2016, TCEQ issued a proposed Agreed Order, which assesses an administrative penalty of $105,000 and proposes a one-time offer to defer $21,000 of the penalty if Equistar satisfactorily complies with the terms of the order. TCEQ approved the Agreed Order in November 2016 and the penalty has been fully paid.

In April 2016, the EPA issued a Notice of Violation to Houston Refining LP arising from a 2014 inspection. The EPA alleged the production of fuel with excess sulfur and the failure to retire sufficient sulfur credits. We have reached a final settlement which requires Houston Refining to pay a penalty of $434,500 with no additional requirements. This penalty was paid in January 2017.

Litigation and Other Matters

Information regarding our litigation and other legal proceedings can be found in Note 19, *Commitments and Contingencies*, to the Consolidated Financial Statements.

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.
Market and Dividend Information

Our shares were listed on the New York Stock Exchange (NYSE) on October 14, 2010 under the symbol LYB. The high and low sales prices for our ordinary shares and the cash dividends per share declared for the two most recent fiscal years are shown in the table below.

	High	Low	Cash Dividends Declared
2016			
First Quarter	$ 89.99	$ 69.10	$ 0.78
Second Quarter	93.75	69.82	0.85
Third Quarter	81.75	71.48	0.85
Fourth Quarter	92.68	76.71	0.85
2015			
First Quarter	$ 91.99	$ 71.74	$ 0.70
Second Quarter	107.32	87.03	0.78
Third Quarter	104.66	72.76	0.78
Fourth Quarter	98.25	83.22	0.78

The payment of dividends or distributions in the future will be subject to the requirements of Dutch law and the discretion of our Management Board and our Supervisory Board. The declaration of any future cash dividends and, if declared, the amount of any such dividends, will depend upon general business conditions, our financial condition, our earnings and cash flow, our capital requirements, financial covenants and other contractual restrictions on the payment of dividends or distributions.

There can be no assurance that any dividends or distributions will be declared or paid in the future.

Holders

As of February 14, 2017, there were approximately 6,000 record holders of our shares, including Cede & Co. as nominee of the Depository Trust Company.

United Kingdom Tax Considerations

In May 2013, we announced the planned migration of the tax domicile of LyondellBasell Industries N.V. from The Netherlands, where LyondellBasell Industries N.V. is incorporated, to the United Kingdom. On August 28, 2013, the Dutch and the United Kingdom competent authorities completed a mutual agreement procedure and issued a ruling that retroactively as of July 1, 2013 LyondellBasell Industries N.V. should be treated solely as a tax resident in the United Kingdom and is subject to the United Kingdom corporate income tax system.

As a result of its United Kingdom tax residency, dividend distributions by LyondellBasell Industries N.V. to its shareholders are not subject to withholding tax, as the United Kingdom currently does not levy a withholding tax on dividend distributions.

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Performance Graph

The performance graph and the information contained in this section is not soliciting material , is being furnished, not filed, with the SEC and is not to be incorporated by reference into any of our filings under the Securities Act or the Exchange Act whether made before or after the date hereof and irrespective of any general incorporation language contained in such filing.

The graph below shows the relative investment performance of LyondellBasell Industries N.V. shares, the S&P 500 Index and the S&P 500 Chemicals Index since December 31, 2011. The graph assumes that $100 was invested on December 31, 2011 and any dividends paid were reinvested at the date of payment. The graph is presented pursuant to SEC rules and is not meant to be an indication of our future performance.

	12/31/2011	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016
LyondellBasell Industries N.V.	$100	$191.38	$276.98	$282.05	$319.09	$327.88
S&P 500 Index	$100	$116.00	$153.57	$174.60	$177.01	$198.18
S&P 500 Chemicals Index	$100	$123.61	$162.92	$180.35	$172.82	$190.37

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Issuer Purchases of Equity Securities

2016 Period	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 of Shares That May Yet Be Purchased Under the Plans or Programs
October 1 October 31	1,818,874	$ 80.83	1,818,874	24,608,892
November 1 November 30	1,785,643	$ 82.34	1,785,643	22,823,249
December 1 December 31	1,620,896	$ 88.24	1,620,896	21,202,353
Total	5,225,413	$ 83.64	5,225,413	21,202,353

On May 13, 2016, we announced a share repurchase program of up to 42,518,980 of our ordinary shares through November 13, 2017. The maximum number of shares that may yet be purchased is not necessarily an indication of the number of shares that will ultimately be purchased.

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Item 6. Selected Financial Data.

The following selected financial data was derived from our consolidated financial statements, which were prepared from our books and records. This data should be read in conjunction with the Consolidated Financial Statements and related notes thereto and Management s Discussion and Analysis of Financial Condition and Results of Operations, below. Management s Discussion and Analysis of Financial Condition and Results of Operations includes a discussion of factors that will enhance an understanding of this data.

	Year Ended December 31,				
In millions of dollars, except per share data	**2016**	**2015**	**2014**	**2013**	**2012**
Results of operations data:					
Sales and other operating revenues	$ 29,183	$ 32,735	$ 45,608	$ 44,062	$ 45,352
Operating income(a)	5,060	6,122	5,736	5,102	4,676
Interest expense(b)	(322)	(310)	(352)	(309)	(655)
Income from equity investments	367	339	257	203	143
Income from continuing operations(a)(c)	3,847	4,479	4,172	3,860	2,858
Earnings per share from continuing operations:					
Basic	9.17	9.63	8.04	6.81	5.01
Diluted	9.15	9.60	8.00	6.76	4.96
Loss from discontinued operations, net of tax	(10)	(5)	(4)	(7)	(24)
Loss per share from discontinued operations:					
Basic	(0.02)	(0.01)	(0.01)	(0.01)	(0.04)
Diluted	(0.02)	(0.01)	(0.01)	(0.01)	(0.04)
Balance sheet data:					
Total assets	23,442	22,757	24,221	27,230	24,167
Short-term debt	594	353	346	58	95
Long-term debt(d)	8,387	7,675	6,699	5,709	4,252
Cash and cash equivalents	875	924	1,031	4,450	2,732
Short-term investments	1,147	1,064	1,593		
Accounts receivable	2,842	2,517	3,448	4,030	3,904
Inventories	3,809	4,051	4,517	5,279	5,075
Working capital	4,122	4,386	4,901	5,737	5,694
Cash flow data:					
Cash provided by (used in):					
Operating activities	5,606	5,842	6,048	4,835	4,787
Investing activities	(2,297)	(1,051)	(3,531)	(1,602)	(1,013)
Expenditures for property, plant and equipment	(2,243)	(1,440)	(1,499)	(1,561)	(1,060)
Financing activities	(3,349)	(4,850)	(5,907)	(1,589)	(2,145)
Dividends declared per share	3.33	3.04	2.70	2.00	4.20

(a) Includes pretax, non-cash charges in 2016, 2015 and 2014 of $29 million ($18 million after tax), $548 million ($351 million after tax) and $760 million ($483 million after tax), respectively, related to lower of cost or market (LCM) inventory valuation adjustments. Also includes a pre-tax and after-tax gain of $78 million on the sale of our wholly owned Argentine subsidiary and a pre-tax charge of $58 million ($37 million after tax) for a pension settlement in 2016.

(b) Interest expense in 2012 included charges of $294 million for premiums related to the refinancing of notes bearing interest rates of 8% and 11% per annum with lower coupon notes.

(c) Income from continuing operations in 2016 includes $135 million of out of period adjustments related to taxes on our cross currency swaps and deferred liabilities related to some of our consolidated subsidiaries. Income from continuing operations for the year ended December 31, 2013 included a $353 million benefit related to the release of valuation allowances primarily associated with tax losses in our French group. Income from continuing operations for the year ended December 31, 2012 included after-tax charges of $210 million for premiums and charges on the early repayment of debt.

(d) Includes current maturities of long-term debt.

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Item 7. Management s Discussion and Analysis of Financial Condition and Results of Operations.
GENERAL

This discussion should be read in conjunction with the information contained in our Consolidated Financial Statements, and the accompanying notes elsewhere in this report. When we use the terms we, us, our or similar words in this discussion, unless the context otherwise requires, we are referring to LyondellBasell Industries N.V. and its consolidated subsidiaries.

OVERVIEW

Earnings for 2016 were good despite a heavy schedule of planned maintenance and the challenges of several operational upsets at our Houston refinery. Our continued strong earnings and cash flow enabled us to increase the amount of our interim dividends and to continue the repurchase of our ordinary shares. During 2016, the global olefins and polyolefins industry benefitted from continued favorable supply and demand balances, while low crude oil and fuel prices negatively impacted margins for refining and oxyfuels and related products. Strong results for our O&P EAI and Technology segments demonstrate continued global industry strength.

The completion of the expansion and turnaround of our Corpus Christi ethylene facility in the fourth quarter of 2016 marked the final step in our 2 billion pound North American ethylene expansion program. Our completed ethylene expansion program, the start of site preparation for our 1.1 billion pound polyethylene facility and advancements on the design of our new PO/TBA plant, along with the completion of several major plant turnarounds this year position us favorably for the coming years.

Significant items that affected 2016 results include:

- Olefins and Polyolefins Americas (O&P Americas) results declined on lower olefins results.
- Lower refining margins and lower crude processing rates due primarily to planned and unplanned maintenance at our Houston refinery;
- Lower Intermediates and Derivatives (I&D) segment results driven mainly by lower margins for most I&D products; and
- Improved Olefins and Polyolefins Europe, Asia, International (O&P EAI) segment results on higher European polyolefins margins.

Other noteworthy items during 2016 include the following:

- We increased our interim dividend from $0.78 to $0.85 in May 2016;
- We repurchased approximately 36.6 million of our ordinary shares during 2016;
- We increased our revolving credit facility and commercial paper program from $2,000 million to $2,500 million in June 2016;
- We issued 750 million of 1.875% guaranteed notes due 2022 in March 2016; and
- We sold our wholly owned Argentine subsidiary for $184 million in February 2016, realizing net proceeds of $137 million and an increase in earnings of $78 million.

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Results of operations for the periods discussed in these Results of Operations are presented in the table below.

Millions of dollars	Year Ended December 31, 2016	2015	2014
Sales and other operating revenues	$ 29,183	$ 32,735	$ 45,608
Cost of sales	23,191	25,683	38,939
Selling, general and administrative expenses	833	828	806
Research and development expenses	99	102	127
Operating income	5,060	6,122	5,736
Interest expense	(322)	(310)	(352)
Interest income	17	33	33
Other income (expense), net	111	25	38
Income from equity investments	367	339	257
Provision for income taxes	1,386	1,730	1,540
Income from continuing operations	3,847	4,479	4,172
Loss from discontinued operations, net of tax	(10)	(5)	(4)
Net income	$ 3,837	$ 4,474	$ 4,168

RESULTS OF OPERATIONS

Revenues We had revenues of $29,183 million in 2016, $32,735 million in 2015 and $45,608 million in 2014.

2016 versus 2015 Revenues decreased by $3,552 million, or 11%, in 2016 compared to 2015.

Lower average sales prices driven by decreases in the prices of crude oil and other feedstocks led to revenue declines of 10% in 2016. Lower sales volumes in our Refining segment due to turnaround activities and unplanned outages, which were substantially offset by higher I&D segment sales volumes, led to a 1% volume-driven decline in revenues. The decline in revenues includes a $290 million impact from the sale of our wholly owned Argentine subsidiary.

2015 versus 2014 Revenues decreased $12,873 million, or 28%, in 2015 compared to 2014.

The decline in prices for crude oil and other feedstocks during 2015 was the primary contributing factor for lower average sales prices, which were responsible for 23% of the revenue decline in 2015 versus 2014. Unfavorable translation impacts resulting from a significant decline in the euro/U.S. dollar exchange rate further reduced revenues by 5% during 2015.

Sales volumes during 2015 were relatively unchanged from 2014. A decrease in sales due to lower crude processing rates in our Refining segment was mostly offset by higher sales volumes for U.S. and European polyolefins, oxyfuels and related products and intermediate chemicals. Revenues for each of our business segments are reviewed further in the Segment Analysis section below.

Cost of Sales Cost of sales were $23,191 million in 2016, $25,683 million in 2015 and $38,939 million in 2014.

Fluctuations in our cost of sales are generally driven by changes in feedstock and energy costs, as all other material components remain relatively flat from year to year. Feedstock and energy related costs generally represent approximately 75% to 80% of cost of sales, other variable costs account for approximately 10% of cost

of sales on an annual basis and fixed operating costs, consisting primarily of expenses associated with employee compensation, depreciation and amortization, and maintenance, range from approximately 10% to 15% in each annual period.

2016 versus 2015 Cost of sales decreased by $2,492 million in 2016 compared to 2015.

The decrease in cost of sales in 2016 was primarily due to lower feedstock and energy costs. Raw material costs for crude oil, heavy liquids and natural gas liquids (NGLs) and other feedstocks were lower in 2016 compared to 2015. The sale of our wholly owned Argentine subsidiary in 2016 also contributed approximately $230 million to the decline in 2016 cost of sales.

Cost of sales in 2016 and 2015 also included noncash, pre-tax lower of cost or market (LCM) inventory valuation charges totaling $29 million and $548 million, respectively. The 2016 adjustment is related to a drop in polypropylene prices in our O&P Americas segment and the adjustments in 2015 affected all of our segments except Technology. The 2015 adjustments were driven mainly by declines in the prices for crude oil, ethylene, propylene, benzene and ETBE. During 2015, cost of sales also included $35 million of amortization expense associated with the expiration of emission allowance credits in our Refining and I&D segments.

2015 versus 2014 Cost of sales decreased by $13,256 million in 2015 compared to 2014.

The decrease in cost of sales in 2015 was primarily due to lower feedstock and energy costs. In 2015, the raw material costs for crude oil, heavy liquids and natural gas liquids (NGLs) and other feedstocks were significantly lower relative to 2014.

Cost of sales in 2015 included the $548 million pretax LCM inventory valuation charge and $35 million of amortization expense discussed above. Cost of sales in 2014 included a $760 million charge related to an LCM inventory valuation adjustment driven by a decline in feedstock prices in our O&P Americas segment and a $52 million benefit in our O&P EAI segment associated with a settlement for certain existing and future environmental claims under a 2005 indemnification agreement.

Operating Income Our operating income was $5,060 million, $6,122 million and $5,736 million in 2016, 2015 and 2014, respectively.

2016 versus 2015 Operating income decreased by $1,062 million in 2016.

Operating income for 2016 reflects the impacts of the LCM inventory valuation adjustment discussed above and a $58 million pension settlement charge. Operating income for 2015 reflects the LCM inventory valuation adjustment and the emission credit allowance amortization discussed above. Including these impacts, 2016 operating income declined relative to 2015 by $863 million, $243 million and $166 million in our O&P Americas, Refining and I&D segments, respectively. These lower results were partially offset by a $185 million improvement in operating income for our O&P EAI segment.

2015 versus 2014 Operating income increased by $386 million in 2015, which includes the impact of the LCM inventory valuation adjustments, environmental settlement and emission credit allowances amortization discussed above.

Including these impacts, operating income in 2015 for our O&P EAI and Refining segments reflect improvements of $425 million and $250 million, respectively. These improvements were offset in part by a $316 million decline in the results of our O&P Americas segment.

Operating results for each of our business segments are reviewed further in the Segment Analysis section below.

Interest Expense Interest expense was $322 million in 2016, $310 million in 2015 and $352 million in 2014.

2016 versus 2015 Debt issuances of our 1.875% guaranteed notes due 2022 in March 2016 and our 4.625% senior notes due 2055 in March 2015 and reduced benefits from our fixed-for-floating interest rate swaps resulted in $42 million of higher interest expense in 2016. This increase was partially offset by a $22 million increase in capitalized interest and $7 million of lower bank and other fees.

2015 versus 2014 The decrease in interest expense in 2015 relative to 2014 was primarily due to favorable impacts of $85 million related to our fixed-for-floating interest rate swaps and cross-currency swaps. This decrease was offset in part by $46 million of higher interest charges related to the issuance of our 4.875% guaranteed notes due 2044 in February 2014 and our 4.625% senior notes due 2055 in March 2015.

For additional information related to our fixed-for-floating interest rate swaps and cross-currency swaps, see Notes 12, 14 and 15.

Income from Equity Investments Our income from equity investments was $367 million in 2016, $339 million in 2015 and $257 million in 2014.

2016 versus 2015 The $28 million increase in income from equity investments in 2016 is largely due to improved results for our joint ventures in Mexico, Saudi Arabia, Poland and Thailand.

2015 versus 2014 Our 2015 income from equity investments increased by $82 million over 2014 largely due to improved results from our joint ventures in Poland, Korea and Mexico, offset in part by lower results from our joint ventures in Saudi Arabia.

Income Taxes Our effective income tax rates of 26.5% in 2016, 27.9% in 2015 and 27.0% in 2014 resulted in tax provisions of $1,386 million, $1,730 million and $1,540 million, respectively. Our 2016 income tax provision includes $135 million of non-cash out of period adjustments from prior years, for further information on these adjustments, please see Footnote 18, Income Taxes. Our effective income tax rate fluctuates based on, among other factors, changes in pretax income in countries with varying statutory tax rates, the U.S. domestic production activity deduction, changes in valuation allowances, changes in foreign exchange gains/losses, the amount of exempt income, and changes in unrecognized tax benefits associated with uncertain tax positions. The Company s exempt income primarily includes interest income and equity earnings of joint ventures. The interest income is earned by certain of our European subsidiaries through intercompany financings and is either untaxed or taxed at rates substantially lower than the U.S. statutory rate. The equity earnings are attributable to our joint ventures and these earnings when paid through dividends to certain European subsidiaries are eligible for participation exemptions, which exempt the dividend payments from all or portions of normal statutory income tax rates. We currently anticipate the favorable treatment for the interest income and dividends to continue in the near term; however, this treatment is based on current law and tax rulings, which could change. The foreign exchange gains/losses have a permanent impact on our effective income tax rate that can cause unpredictable movement in our effective income tax rate. We continue to maintain valuation allowances in various jurisdictions totaling $96 million, which could impact our effective tax rate in the future. We believe our effective income tax rate for 2017 will be approximately 27%.

2016 The 2016 effective income tax rate, which was lower than the U.S. statutory tax rate of 35%, was favorably impacted by exempt income (-6.7%), earnings in various countries (notably in Europe) with lower statutory tax rates (-3.0%), the impact of a change in non-U.S. tax law on our deferred tax liabilities (-1.0%) and the U.S. domestic production activity deduction (-0.8%). These favorable items were partially offset by the effects of non-cash out of period adjustments (2.5%) and U.S. state and local income taxes (0.5%).

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2015 The 2015 effective income tax rate, which was lower than the U.S. statutory tax rate of 35%, was favorably impacted by exempt income (-5.1%), earnings in various countries (notably in Europe) with lower statutory tax rates (-2.1%), and the U.S. domestic production activity deduction (-1.4%). These favorable items were partially offset by the effects of U.S. state and local income taxes (1.0%).

2014 The 2014 effective income tax rate, which was lower than the U.S. statutory tax rate of 35%, was favorably impacted by exempt income (-4.8%), the U.S. domestic production activity deduction (-1.9%), foreign exchange losses (-1.5%), and earnings in various countries (notably in Europe) with lower statutory tax rates (-1.1%). These favorable items were partially offset by the effects of U.S. state and local income taxes (1.1%).

For further information related to our income taxes, see Note 18 to the Consolidated Financial Statements.

Comprehensive Income We had comprehensive income of $3,763 million in 2016, $4,064 million in 2015 and $3,052 million in 2014.

2016 versus 2015 In 2016, comprehensive income decreased on lower net income, the unfavorable impacts of financial derivative adjustments and the increase in actuarial losses related to our defined benefit pension and other postretirement benefit plans recognized in 2016. These decreases were offset in part by the net favorable impact of unrealized net changes in foreign currency translation adjustments.

In 2016, we had a pre-tax gain of $43 million related to the effective portion of the unrealized gains of our financial instruments designated as net investment hedges. The cumulative effect of our derivatives designated as cash flow hedges in 2016 was a loss of $29 million. In 2016, cumulative losses associated with the strengthening of the euro versus the U.S. dollar in the first half of the year resulted in a pre-tax loss of $15 million related to our cross currency swaps. An unrealized loss of $17 million in 2016 related to forward-starting interest rate swaps was driven by decreases in benchmark interest rates during that period.

A pre-tax loss of $63 million related to our cross currency swaps was a reclassification adjustment included in net income in 2016.

In 2016 and 2015, we recognized net actuarial losses of $188 million and $8 million, respectively. The $188 million net loss in 2016 reflects $279 million of losses due to pension and other postretirement benefit discount rate decreases, offset by $79 million of gains related to pension asset experience and $10 million due to favorable postretirement liability experience and other immaterial items. In 2015, the $8 million net loss was primarily attributable to $133 million of actual asset return less than the expected return. This loss was offset by gains due to $73 million of discount rate increases and, $50 million of gains due to favorable liability experience and healthcare assumptions. In 2016, we also recognized a $61 million reclassification adjustment related primarily to a voluntary lump sum program offered to certain former employees in select U.S. pension plans. Total lump sum payments from these plans exceeded annual service and interest cost in 2016 resulting in this loss.

2015 versus 2014 In 2015, Comprehensive income increased on higher net income, the reduction in actuarial losses related to our defined benefit pension and other postretirement benefit plans recognized in 2015, the favorable impact of unrealized net changes in foreign currency translation adjustments and to a lesser extent, the benefit of favorable financial derivative adjustments.

In 2015 and 2014, we recognized net actuarial losses of $8 million and $493 million, respectively. The $493 million net loss in the prior year was caused primarily by pension and other postretirement benefit discount rate decreases and mortality assumption changes. In 2015, the $8 million net loss was primarily attributable to $133 million of actual asset return less than the expected return. This loss was offset by gains due to $73 million of discount rate increases and, $50 million of gains due to favorable liability experience and healthcare assumptions.

The predominant functional currency for our operations outside of the U.S. is the euro. Relative to the U.S. dollar, the value of the euro decreased during 2015 and 2014, resulting in losses as reflected in the Consolidated Statements of Comprehensive Income.

In 2015, the cumulative effect of our derivatives designated as cash flow hedges was a gain of $279 million. Cumulative gains in 2015 associated with the decline in the euro versus the U.S. dollar resulted in a pre-tax gain of $262 million related to our cross currency swaps. A $17 million gain in 2015 related to forward-starting interest rate swaps were driven by increases in benchmark interest rates during that period.

A pre-tax loss of $207 million related to our cross currency swaps was a reclassification adjustment included in net income in 2015.

See Critical Accounting Policies below and Note 16 to the Consolidated Financial Statements for additional information on the key assumptions included in calculating the discount rate and expected return on plan assets.

Segment Analysis

We use earnings before interest, income taxes, and depreciation and amortization (EBITDA) as our measure of profitability for segment reporting purposes. This measure of segment operating results is used by our chief operating decision maker to assess the performance of and allocate resources to our operating segments. Intersegment eliminations and items that are not directly related or allocated to business operations are included in Other. For additional information related to our operating segments, as well as a reconciliation of EBITDA to its nearest generally accepted accounting principles (GAAP) measure, Income from continuing operations before income taxes, see Note 22, *Segment and Related Information*, to our Consolidated Financial Statements.

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Our continuing operations are divided into five reportable segments: O&P Americas; O&P EAI; I&D; Refining; and Technology. The following tables reflect selected financial information for our reportable segments.

Millions of dollars	Year Ended December 31, 2016	2015	2014
Sales and other operating revenues:			
O&P Americas segment	$ 9,077	$ 9,964	$ 13,948
O&P EAI segment	10,579	11,576	15,203
I&D segment	7,226	7,772	10,130
Refining segment	5,135	6,557	11,710
Technology segment	479	465	497
Other, including intersegment eliminations	(3,313)	(3,599)	(5,880)
Total	$ 29,183	$ 32,735	$ 45,608
Operating income:			
O&P Americas segment	$ 2,393	$ 3,256	$ 3,572
O&P EAI segment	1,494	1,309	884
I&D segment	1,058	1,224	1,220
Refining segment	(99)	144	(106)
Technology segment	221	197	171
Other, including intersegment eliminations	(7)	(8)	(5)
Total	$ 5,060	$ 6,122	$ 5,736
Depreciation and amortization:			
O&P Americas segment	$ 362	$ 353	$ 316
O&P EAI segment	229	219	248
I&D segment	269	233	225
Refining segment	163	196	169
Technology segment	41	46	61
Total	$ 1,064	$ 1,047	$ 1,019
Income (loss) from equity investments:			
O&P Americas segment	$ 59	$ 42	$ 21
O&P EAI segment	302	283	229
I&D segment	6	14	7
Total	$ 367	$ 339	$ 257
Other income (expense), net			
O&P Americas segment	$ 63	$ 10	$ 2
O&P EAI segment	42	14	5
I&D segment		4	7
Refining segment	8	2	2
Other, including intersegment eliminations	(2)	(5)	22
Total	$ 111	$ 25	$ 38
EBITDA:			
O&P Americas segment	$ 2,877	$ 3,661	$ 3,911
O&P EAI segment	2,067	1,825	1,366
I&D segment	1,333	1,475	1,459

Refining segment	72	342	65
Technology segment	262	243	232
Other, including intersegment eliminations	(9)	(13)	17
Total	$ 6,602	$ 7,533	$ 7,050

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Olefins and Polyolefins Americas Segment

Overview In calculating the impact of margin and volume on EBITDA, consistent with industry practice, management offsets revenues and volumes related to ethylene co-products against the cost to produce ethylene. Volume and price impacts of ethylene co-products are reported in margin. Ethylene is a major building block of olefins and polyolefins and as such management assesses the performance of the segment based on ethylene sales volumes and prices and our internal cost of ethylene production.

2016 versus 2015 EBITDA in 2016 reflects lower olefins and polyethylene results, partially offset by improved polypropylene results.

The benefit to 2016 EBITDA from a $57 million gain on the sale of our wholly owned Argentine subsidiary in February 2016 was offset in part by a $29 million non-cash LCM inventory valuation charge recognized in the fourth quarter due primarily to a drop in polypropylene prices. In 2015, volatility in the benchmark prices for heavy liquids and natural gas and certain correlated products, particularly ethylene and propylene, which continued during most of the year, led to net non-cash LCM inventory valuation adjustments totaling $160 million.

2015 versus 2014 Segment results were lower in 2015 primarily due to a decline in olefins results partially offset by improved polyolefin results relative to 2014. Olefins margins in 2015 continued to benefit from low-cost ethylene produced from NGLs in North America, but to a lesser extent than in 2014. The cost advantage for this ethylene, compared to that produced from naphtha and other crude oil-based liquids in the rest of the world, declined due to the lower crude oil prices in 2015.

Prices for heavy liquids, NGLs and olefins declined significantly in the fourth quarter of 2014 to levels that had not been seen in recent years. These declines resulted in the recognition of the non-cash, LCM inventory adjustments totaling $279 million in 2014 discussed below. As discussed above, results for 2015 were also negatively impacted by a $160 million LCM inventory valuation adjustment.

Ethylene Raw Materials Benchmark crude oil and natural gas prices generally have been indicators of the level and direction of the movement of raw material and energy costs for ethylene and its co-products in the O&P Americas segment. Ethylene and its co-products are produced from two major raw material groups:

- NGLs, principally ethane and propane, the prices of which are generally affected by natural gas prices; and
- crude oil-based liquids (liquids or heavy liquids), including naphtha, condensates, and gas oils, the prices of which are generally related to crude oil prices.

Although prices of these raw materials are generally related to crude oil and natural gas prices, during specific periods the relationships among these materials and benchmarks may vary significantly. In the U.S., we have significant capability to change the mix of raw materials used in the production of ethylene and its co-products to take advantage of the relative costs of heavy liquids and NGLs.

Production economics for the industry have favored NGLs in recent years. Although the decline in oil prices significantly reduced the cost of ethylene produced from heavy liquids in 2015, NGL prices also declined and they have continued to be preferred feedstocks. We produced between 87% and 90% of our U.S. ethylene production NGLs during the past three years.

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The following table sets forth selected financial information for the O&P Americas segment including Income from equity investments, which is a component of EBITDA.

Millions of dollars	Year Ended December 31, 2016	2015	2014
Sales and other operating revenues	$ 9,077	$ 9,964	$ 13,948
Income from equity investments	59	42	21
EBITDA	2,877	3,661	3,911

Revenues Revenues decreased by $887 million, or 9%, in 2016 compared to 2015 and by $3,984 million, or 29%, in 2015 compared to 2014.

2016 versus 2015 Average sales prices for ethylene and polyethylene declined in 2016, consistent with feedstock prices that are correlated to the price of natural gas, which declined relative to 2015. These lower average sales prices led to a revenue decrease of 11% in that period. A 2% revenue increase resulted from the improvement in 2016 product sales volumes as higher olefins sales volume, supported by an increase in the level of purchases for resale during turnaround activities, were only partly offset by lower polyolefins volumes. The sale of our Argentine subsidiary reduced 2016 revenues by $230 million.

2015 versus 2014 Average sales prices declined for most products in 2015 resulting in a 31% revenue decrease compared to 2014. Lower average olefin prices reflect the significant decline in prices for crude oil and correlated products relative to prices in 2014. The decline in average polyethylene and polypropylene sales prices followed the decline in the 2015 prices of their respective feedstocks, ethylene and propylene.

These decreases in revenues were offset in part by an increase in sales volumes, which gave rise to a 2% revenue increase in 2015, compared to 2014. Ethylene sales volumes were higher due to increased production reflecting higher capacity following the completion of the expansion-related turnaround at our La Porte, Texas facility during 2014 and additional production related to less planned and unplanned downtime at our Channelview, Texas facility. Polyethylene sales volumes improved in 2015, due to the completion of an expansion-related turnaround at our Matagorda, Texas facility in the first quarter of 2014 and continued healthy global demand.

EBITDA EBITDA decreased by $784 million, or 21%, in 2016 compared to 2015 and by $250 million, or 6%, in 2015 compared to 2014.

2016 versus 2015 Lower olefin and polyethylene margins in 2016 were partially offset by higher polypropylene margins. The decline in olefins margins reflected a 2 cents per pound decrease in average ethylene sales prices and an approximate 4 cents per pound increase in the cost of ethylene production driven by lower co-product prices and an increase in the cost of NGL feedstocks. Polyethylene margins declined 4 cents per pound from very high levels in 2015 as average polyethylene sales prices caught up with the overall decline in the cost of ethylene feedstock, after lagging feedstock cost declines in 2015. A 4 cent per pound improvement in 2016 polypropylene margins reflects the benefits of lower propylene feedstock costs and tight market conditions. These olefin and polyethylene margin impacts led to a 17% decrease in EBITDA during 2016. An additional 10% decline in 2016 EBITDA is attributed to the impact of lower volumes related to lower ethylene production during the turnaround and expansion-related activities at our Corpus Christi, Texas ethylene facility and a site-wide outage related to turnaround activities at our Morris, Illinois site.

These negative impacts were partially offset by a 6% increase in 2016 EBITDA primarily due to a $131 million reduction in the unfavorable LCM adjustment recognized in 2016 versus 2015 and to the $57 million gain on the 2016 sale of our Argentine subsidiary.

2015 versus 2014 The 6% decrease in EBITDA reflected a 24% net margin decline as lower olefin margins were partly offset by higher polyethylene and polypropylene margins. This decrease in margins was

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offset in part by a 14% increase related to higher volumes and a 3% increase related to the $119 million decline in the non-cash charges related to the LCM inventory valuation adjustments discussed above. Improvements in our income from equity investments accounts for the remaining 1% increase in EBITDA during 2015.

Olefin margins declined in 2015 as a 19 cent per pound drop in the average sales price for ethylene outpaced the decrease in our cost of ethylene production. Lower NGL and heavy liquids feedstock prices in 2015 outpaced the decline in selling prices of our co-products, which resulted in the decrease of our cost of ethylene production compared to the prior year.

Polyethylene margins reflected a 5 cent per pound improvement in 2015 as demand remained strong and decreases in the cost of ethylene feedstock outpaced lower average sales prices relative to 2014. Polypropylene margins, which increased by 7 cents per pound in 2015, benefited from lower propylene feedstock costs, which in part reflected the decline in crude oil prices, and higher average sales prices relative to propylene, driven by industry operating issues and increased demand.

Sales volumes in 2015 increased as compared to the prior year as a result of downtime and expansion-related activities in 2014 and the increased demand discussed above.

Olefins and Polyolefins Europe, Asia, International Segment

Overview In calculating the impact of margin and volume on EBITDA, consistent with industry practice, management offsets revenues and volumes related to ethylene co-products against the cost to produce ethylene. Volume and price impacts of ethylene co-products are reported in margin. Ethylene is a major building block of our olefins and polyolefins and as such management assesses the performance of the segment based on ethylene sales volumes and prices and our internal cost of ethylene production.

2016 versus 2015 Higher operating results in 2016 were largely the result of higher polyolefin margins, offset in part by lower olefins results and reductions in polyolefins volumes due to turnaround activity and unplanned downtime.

EBITDA in 2016 reflects the benefit of a $21 million gain from the sale of our wholly owned Argentine subsidiary and $11 million of gains from the sales of our joint venture in Japan and idled assets in Australia. EBITDA in 2015 included a $30 million non-cash LCM inventory valuation adjustment driven by a decline in the prices of naphtha and polyolefins.

2015 versus 2014 Operating results in 2015 reflect improved results for our European polyolefins and, to a lesser extent, higher results for olefins and better results for our joint ventures that are accounted for using the equity method.

At the end of the fourth quarter of 2015, lower feedstock and product prices resulted in market prices that were lower than the carrying value of our related inventories. Accordingly, we recorded a $30 million non-cash, LCM inventory valuation charge related to olefins and polyolefins. This compares to the $44 million non-cash, LCM inventory valuation charge related to olefins that was recognized in the fourth quarter of 2014 as a result of the declining price of naphtha.

Ethylene Raw Materials In Europe, heavy liquids are the primary raw materials for our ethylene production. In recent years, we have sourced increased amounts of advantaged NGLs when the opportunity has arisen. In 2016, we continued to process advantaged feedstocks as market opportunities allowed.

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The following table sets forth selected financial information for the O&P EAI segment including Income from equity investments, which is a component of EBITDA.

	Year Ended December 31,		
Millions of dollars	**2016**	**2015**	**2014**
Sales and other operating revenues	$ 10,579	$ 11,576	$ 15,203
Income from equity investments	302	283	229
EBITDA	2,067	1,825	1,366

Revenues Revenues in 2016 decreased by $997 million, or 9%, compared to 2015 and by $3,627 million, or 24%, in 2015 compared to 2014.

2016 versus 2015 The decline in 2016 revenues comprises a 7% decrease related to lower average sales prices, and a 2% reduction of sales volumes stemming from turnaround activities and unplanned outages.

In 2016, average sales prices for olefins and polyolefins fell following feedstock prices that declined in conjunction with the price of crude oil.

2015 versus 2014 The decline in 2015 revenues reflects decreases of 14% and 12% related to lower average sales prices and currency translation impacts, respectively. An increase in polyolefins volumes resulting from increased demand and higher operating rates, which was substantially offset by a decline in olefins volumes stemming from turnaround activities at our Münchsmünster, Germany facility and unplanned outages, was responsible for a 2% revenue increase in 2015.

In 2015, lower average sales prices for polypropylene were partially offset by higher average polyethylene prices. Decreases in feedstock costs in 2015 led to the decline in polypropylene sales prices compared to 2014. The increase in polyethylene prices in 2015 reflect strong spread increases over ethylene, primarily in Europe.

EBITDA EBITDA increased by $242 million, or 13%, in 2016 compared to 2015 and by $459 million, or 34%, in 2015 compared to 2014.

2016 versus 2015 In 2016, higher European polyolefins margins stemming from declining ethylene and propylene feedstock costs outpaced falling product prices and led to an 11% increase in EBITDA. This margin improvement in 2016 was partially offset by a 2% decrease in EBITDA due largely to lower polyolefin volumes.

A 3% increase in 2016 EBITDA is attributed to gains associated with the sales of a joint venture, idled assets and our wholly owned Argentine subsidiary, as well as the absence of the 2015 LCM inventory valuation adjustment discussed above. Income from our equity investments also led to a 1% increase in EBITDA in 2016 due to higher polyolefin margins in our European joint venture and strong operating rates in our Saudi joint ventures.

2015 versus 2014 Improved margins in all major product groups and the increase in polyolefins volumes described above contributed 42% and 4%, respectively, to EBITDA in 2015. Polyolefins margins improved due to supply constraints as a result of several industry outages. Olefins margins improved in 2015 as the lower cost of ethylene production, which was driven by lower feedstock prices, outpaced the decline in olefin product prices.

A 4% increase in EBITDA associated with an improvement in Income from equity investments in 2015, was mainly driven by improved margins relative to 2014 in certain joint ventures as a result of favorable market prices during 2015 and strong operating rates.

These increases were partially offset by a 13% decrease due to the translation of a weaker euro and a 3% decrease related to a net charge of $38 million discussed below. In 2015, EBITDA included a $30 million charge related to the LCM adjustment previously discussed. In 2014, EBITDA included a $52 million benefit associated

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with a settlement for certain existing and future environmental claims under a 2005 indemnification agreement from an insurance settlement, which was offset in part by the $44 million LCM inventory valuation charge discussed above.

Intermediates and Derivatives Segment

Overview

2016 versus 2015 Operating results for 2016 were lower than in 2015, as margin compression for most products related to declining energy prices, higher industry production rates and additional industry capacity was only partly offset by the impact of higher volumes.

EBITDA in 2015 was negatively impacted by the recognition of $181 million of LCM inventory valuation adjustments driven by the continued decline in prices for feedstocks, certain oxyfuels and related products, and intermediate chemical products to levels that were lower than the carrying value of our related inventories at reporting dates throughout the year.

2015 versus 2014 Results in 2015 improved as higher margins in intermediate chemicals benefited from the favorable impact of product pricing and declining feedstock costs. This improvement was substantially offset by a decline in 2015 oxyfuels and related products results indicative of a decrease in energy prices compared to unusually high margins in 2014.

Our 2015 results were also unfavorably impacted by the non-cash, LCM inventory valuation adjustment discussed above, which reflects an $88 million increase over the LCM inventory valuation adjustment recognized in the fourth quarter of 2014.

The following table sets forth selected financial information for the I&D segment including Income from equity investments, which is a component of EBITDA.

	Year Ended December 31,		
Millions of dollars	**2016**	**2015**	**2014**
Sales and other operating revenues	$ 7,226	$ 7,772	$ 10,130
Income from equity investments	6	14	7
EBITDA	1,333	1,475	1,459

Revenues Revenues for 2016 decreased by $546 million, or 7%, compared to 2015 and by $2,358 million, or 23%, in 2015 compared to 2014.

2016 versus 2015 Lower average sales prices in 2016 reflect the impacts of lower crude oil, lower gasoline prices and the decline in various feedstock prices. Additional industry supply also negatively impacted the average sales prices for certain products during 2016. These lower sales prices in 2016 were responsible for an 11% revenue decrease.

This price driven decrease was offset in part by a 4% volume-related revenue increase in 2016 resulting from fewer planned and unplanned production outages relative to 2015.

2015 versus 2014 In 2015, the significant decline in crude oil and key feedstocks prices was the primary driver behind the overall decrease in average sales prices across most products. This decline in prices was offset in part by improved octane blend premiums for oxyfuels and related products and gasoline price spreads over crude oil that were strong in 2015. These lower average sales prices and the impact of currency translation impacts led to revenue decreases of 23% and 6%, respectively.

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Higher sales volumes for oxyfuels and related products and intermediate chemicals were largely responsible for a 6% volume driven revenue increase. Sales volumes for oxyfuels and related products increased due to strong octane and gasoline demand. Intermediate chemicals volumes increased due to increased feedstock supply and improved operating rates at our acetyls facilities.

EBITDA EBITDA decreased by $142 million, or 10%, in 2016 compared to 2015 and increased by $16 million, or 1%, in 2015 compared to 2014.

2016 versus 2015 Lower margins in most I&D products in 2016 resulted in a 30% decrease in EBITDA. Weaker gasoline markets drove oxyfuels and related product values lower relative to butane feedstock costs, and lower product prices in propylene oxide and derivatives and intermediate chemicals were driven largely by increased industry supply. Lower income from our equity investments in 2016 also resulted in a 1% decrease in EBITDA during that period.

An EBITDA increase in 2016 of 9% related to the higher volumes discussed above, partially offset the negative margin impact. EBITDA in 2016 also reflected an increase of 12% related to the absence of the LCM inventory valuation adjustment recognized in the 2015 comparison period.

2015 versus 2014 EBITDA increased by $16 million, or 1%, in 2015 compared to 2014. Higher sales volumes in 2015 as discussed above led to a volume-driven increase of 7% in EBITDA.

Lower oxyfuels and related products margins, substantially offset by an improvement in intermediate chemicals margins resulted in a 1% decrease in 2015 EBITDA. Oxyfuels and related products margins were lower in 2015 due to a significant decline in crude oil prices offset in part by strong gasoline price spreads over crude oil and octane blending value. Margins for intermediate chemicals improved as styrene margins were favorably impacted by tight supply resulting from industry outages and feedstock prices that declined more rapidly than average sales prices.

EBITDA was further reduced by 6% as a result of the $88 million incremental increase in the non-cash LCM inventory valuation adjustment recognized in 2015 over 2014. The remaining change in 2015 EBITDA is attributable to a small improvement in income from our equity investments.

Refining Segment

Overview

2016 versus 2015 Lower margins and reduced production due to planned and unplanned outages in 2016 as described below resulted in significantly lower results for our Refining segment in 2016 as compared to 2015. EBITDA in 2015 included charges totaling $177 million related to non-cash charges associated with LCM inventory valuation adjustments driven by a decline of nearly $20 per barrel in crude oil prices and corresponding reductions in refined product prices.

2015 versus 2014 The results of our Refining segment in 2015 were impacted by non-cash charges totaling $177 million related to LCM inventory valuation adjustments described above which were $167 million less than the LCM inventory valuation adjustment recorded in 2014.

Fourth quarter 2015 results declined significantly compared to the results in the prior three quarters of 2015 as refinery operating rates were significantly lower due to unplanned maintenance outages. The recognition of a $127 million non-cash, LCM inventory valuation adjustment resulted in a loss for the fourth quarter. Operating results were higher in 2015 relative to 2014 as a result of improvements in refining margins and the favorable impact of the lower LCM adjustment recognized in 2015.

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The following table sets forth selected financial information and heavy crude processing rates for the Refining segment and the U.S. refining market margins for the applicable periods. LLS is a light crude oil, while Maya is a heavy crude oil.

	Year Ended December 31,		
Millions of dollars	**2016**	**2015**	**2014**
Sales and other operating revenues	$ 5,135	$ 6,557	$ 11,710
EBITDA	72	342	65
Heavy crude oil processing rates, thousands of barrels per day	201	238	259
Market margins, dollars per barrel			
Light crude oil 2-1-1	$ 10.73	$ 14.04	$ 13.32
Light crude oil Maya differential	8.51	8.26	11.11
Total Maya 2-1-1	$ 19.24	$ 22.30	$ 24.43

Revenues Revenues decreased by $1,422 million, or 22% in 2016 compared to 2015 and by $5,153 million, or 44%, in 2015 compared to 2014.

2016 versus 2015 Major refined product prices declined due to lower crude oil prices and to weakness relative to crude oil. The average per barrel price of benchmark Maya crude oil declined $7.59 in 2016 compared to 2015. A 16% price-related revenue decline in 2016 versus 2015 reflected per barrel price declines of approximately $10.51 and $10.77 for gasoline and distillates, respectively.

The remaining 6% revenue decrease in 2016 is attributed to reduced processing rates. Processing declines resulted from several unplanned outages, including a coker unit fire, downtime at crude units with reduced processing and several utility interruptions. Planned turnaround activity on a crude unit and a coker unit processing train early in 2016 also contributed to lower throughput during 2016.

2015 versus 2014 Total revenues decreased on significantly lower product prices due to the drop in crude oil prices and a reduction in sales volumes due to production limitations. The average crude oil price in 2015 declined by slightly over $40 per barrel compared to 2014 leading to lower product pricing. This decline in product pricing caused a 38% decrease in revenues compared to 2014. Processing rates in 2015 reflect an 8% decrease from 2014 rates, driven by processing limits which were negatively impacted primarily by unplanned maintenance in the fourth quarter of 2015. This decline contributed to a 6% decrease in 2015 revenues.

EBITDA EBITDA decreased by $270 million, or 79%, in 2016 compared to 2015 and decreased by $277 million, or 426%, in 2015 compared to 2014.

2016 versus 2015 A decline in refining margins in 2016 led to a 90% decrease in EBITDA. The Maya 2-1-1 benchmark refining spread declined in 2016 by approximately $3.10 per barrel relative to 2015. This decrease was driven by per barrel declines of approximately $3.15 and $3.40 in gasoline and diesel spreads, respectively, and an approximate $1.00 reduction in the price differential between Brent and Maya crude oils. The operating issues that drove lower crude throughput in 2016 also negatively impacted margins due to a less favorably priced crude oil mix and higher variable costs per barrel.

Lower production stemming from a reduction in average heavy crude oil processing rates relative to 2015 led to a decrease in EBITDA in 2016 of 41%. This reduction in rates was attributable to the unplanned outages, crude unit operating limitations and planned turnaround activities discussed above.

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The absence of the $177 million LCM inventory valuation adjustment recognized in 2015 resulted in an EBITDA increase of 52% in 2016 as compared to 2015.

2015 versus 2014 LCM inventory valuation adjustments of $177 million and $344 million were recognized in 2015 and 2014, respectively. This change in the 2015 LCM inventory valuation adjustment resulted in a 257% increase in EBITDA. Results improved by an additional 283% in 2015 due to an increase in refining margins. These improvements were offset in part by a 114% decline in EBITDA due to lower processing rates.

The increase in refining margins in 2015 relative to 2014 was generated by improved by-product price spreads to crude oil and a 14% increase in purchases of crude oil at advantaged prices relative to the Maya crude price benchmark. By-product spreads improved due to the decline in 2015 of the average per barrel price of crude oil relative to 2014. These factors more than offset the $2.13 per barrel decline in the Maya 2-1-1 benchmark margin in 2015 versus 2014.

Crude processing rates in 2015 reflect an 8% decline relative to 2014. This decline is mainly due to a number of unplanned outages for maintenance that began in the latter part of the third quarter and extended into early December. The average crude processing rate for the fourth quarter of 2015 was 206 thousands of barrels per day. Processing rates returned to near full capacity by mid-December 2015.

Technology Segment

Overview The Technology segment recognizes revenues related to the sale of polyolefin catalysts and the licensing of chemical and polyolefin process technologies. These revenues are offset in part by the costs incurred in the production of catalysts, licensing and services activities and research and development (R&D) activities. In 2016 and 2015, our Technology segment incurred approximately 55% of all R&D costs while in 2014, it incurred approximately 65% of our R&D costs.

2016 versus 2015 EBITDA in 2016 improved with higher catalyst margins. A small increase in licensing and services revenue was mostly offset by slightly lower catalyst sales volumes.

2015 versus 2014 EBITDA in 2015 was relatively unchanged compared to 2014, reflecting improved catalyst results and lower R&D expenses, offset by lower licensing and services revenues.

The following table sets forth selected financial information for the Technology segment.

	Year Ended December 31,		
Millions of dollars	**2016**	**2015**	**2014**
Sales and other operating revenues	$ 479	$ 465	$ 497
EBITDA	262	243	232

Revenues Revenues increased by $14 million, or 3%, in 2016 compared to 2015 and decreased by $32 million, or 6%, in 2015 compared to 2014.

2016 versus 2015 Higher average catalyst sales prices and higher revenues recognized on process licenses each led to a 2% increase in 2016 revenues. These increases were partly offset by a 1% revenue decrease resulting from lower catalyst sales volumes.

2015 versus 2014 The unfavorable currency translation impacts due to the significantly weaker euro versus the U.S. dollar and a decline in licensing and services revenues contributed 12% and 7% to the decrease in 2015 revenues. These declines were offset in part by revenue increases of 12% and 1%, respectively, related to higher catalyst sales volumes and higher average catalyst sales prices in 2015.

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EBITDA EBITDA in 2016 increased by $19 million, or 8%, compared to 2015 and by $11 million, or 5%, in 2015 compared to 2014.

2016 versus 2015 A 10% improvement in EBITDA during 2016 due to higher catalyst margins and an increase in licensing and services revenue was partly offset by a 2% decrease in EBITDA resulting from lower catalyst volumes.

2015 versus 2014 EBITDA increased by $11 million, or 5%, in 2015 compared to 2014. Improved catalyst volumes and margins, partly offset by unfavorable currency translation impacts, and lower R& D expenses were responsible for increases in EBITDA of 7% and 9%, respectively. These increases were partly offset by an 11% decrease in EBITDA due to lower licensing and services revenues.

FINANCIAL CONDITION

Operating, investing and financing activities of continuing operations, which are discussed below, are presented in the following table:

	Year Ended December 31,		
Millions of dollars	**2016**	**2015**	**2014**
Source (use) of cash:			
Operating activities	$ 5,606	$ 5,842	$ 6,048
Investing activities	(2,297)	(1,051)	(3,531)
Financing activities	(3,349)	(4,850)	(5,907)

Operating Activities Cash of $5,606 million generated in 2016 primarily reflected earnings adjusted for non-cash items and cash generated by the main components of working capital accounts receivable, inventories and accounts payable. The non-cash items in 2016 included a $78 million gain related to the sale of our wholly owned Argentine subsidiary with adjustments for related working capital and gains totaling $11 million related to sales of our joint venture in Japan and idled assets in Australia.

The main components of working capital generated cash of $123 million in 2016. Higher product sales prices in the fourth quarter of 2016 across all segments combined with the impact of higher fourth quarter 2016 sales volumes in our O&P Americas, Refining and I&D segments led to an increase in accounts receivable. This increase in accounts receivable was offset by higher accounts payable, which was driven by the higher cost of crude oil and other feedstocks. The level of inventories fell in our O&P Americas segment following the completion of turnaround activities in the fourth quarter of 2016 and in our Refining segment, which had higher crude oil inventories at the end of 2015 due to operational issues during the fourth quarter.

Cash of $5,842 million generated in 2015 primarily reflected earnings adjusted for non-cash items and cash used by the main components of working capital. The main components of working capital consumed cash of $246 million in 2015. The lower cost of crude oil and other feedstocks in 2015 led to a decline in accounts payable. Preparation for the turnaround in 2016 at our Corpus Christi, Texas facility and the unplanned maintenance outage at our Houston refinery, which resulted in higher levels of U.S. olefins and crude oil inventories at year end, led to the increase in consolidated inventories in 2015. Accounts receivable decreased on lower average product sales prices, reflective of the drop in 2015 crude oil prices.

Cash of $6,048 million generated in 2014 primarily reflected earnings adjusted for non-cash items and refunds totaling $232 million for value added taxes related to prior periods that were received from Italian tax authorities in 2014. These cash inflows were offset in part by cash used by the main components of working capital.

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The increase in 2014 inventories primarily reflected higher olefins raw material inventories, offset in part by lower ethylene and propylene inventories due to turnaround activities at our La Porte, Texas facility, and higher levels of inventory for crude oil and work-in-process in our Refining segment. Lower feedstock costs led to the decrease in 2014 accounts payable. The decrease in accounts receivable primarily reflected lower ethylene prices in our O&P EAI segment, lower prices for oxyfuels and related products in our I&D segment, lower average sales prices and year end volumes in North American polyolefins and lower prices for refining products. Also contributing to the decline was a larger than usual accounts receivable balance at the end of 2013 attributable to customer remittance timing.

Investing Activities We invested cash of $2,297 million, $1,051 million and $3,531 million in 2016, 2015 and 2014, respectively.

We invest in investment-grade and other high-quality instruments that provide adequate flexibility to redeploy funds as needed to meet our cash flow requirements while maximizing yield. In 2016, 2015 and 2014, we invested $764 million, $2,073 million and $3,439 million, respectively, in securities that are classified as Short-term investments. The majority of these investments are deemed available-for-sale; however, beginning in the third quarter of 2016, we invested in additional securities deemed held-to-maturity. We also invested $674 million, $397 million and $425 million in tri-party repurchase agreements in 2016, 2015 and 2014, respectively. These investments are classified as short-term loans receivable except for a $101 million investment which was classified as a long-term loan receivable in 2015. We received proceeds upon the sale and maturity of certain of our available-for-sale securities and repurchase agreements of $674 million and $685 million, respectively, in 2016; $2,489 million and $350 million, respectively, in 2015; and $1,751 million and $75 million, respectively, in 2014. See Note 14 to the Consolidated Financial Statements for additional information regarding these investments.

The following table summarizes our capital expenditures for continuing operations for the periods from 2014 through 2016:

	Year Ended December 31,		
Millions of dollars	**2016**	**2015**	**2014**
Capital expenditures by segment:			
O&P Americas	$ 1,376	$ 668	$ 912
O&P EAI	261	186	191
I&D	333	441	241
Refining	224	108	123
Technology	36	24	25
Other	13	13	7
Consolidated capital expenditures of continuing operations	$ 2,243	$ 1,440	$ 1,499

In 2017, we expect to spend approximately $2 billion, which includes contributions to our PO joint venture assets. Capital spending is projected to be lower in 2017 relative to 2016, which included the ethylene expansion and related turnaround of our Corpus Christi, Texas facility and turnaround activities at other facilities.

In 2016 and 2015, capital expenditures included debottlenecks of certain assets to enhance production, turnaround activities and expansion projects at several sites, as well as other plant improvement projects and railcar purchases. The increased levels of capital expenditures in 2016 versus 2015 for our O&P Americas, O&P EAI and Refining segments were largely due to debottleneck and turnaround activities.

Financing Activities Financing activities used cash of $3,349 million, $4,850 million and $5,907 million in 2016, 2015 and 2014, respectively.

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We made payments totaling $2,938 million, $4,656 million and $5,788 million in 2016, 2015 and 2014, respectively, to acquire a portion of our outstanding ordinary shares. We also made dividend payments totaling $1,395 million, $1,410 million and $1,403 million to our shareholders in 2016, 2015 and 2014, respectively. For additional information related to these share repurchases and dividend payments, see Note 20 to the Consolidated Financial Statements.

We received net proceeds of $177 million, $61 million and $262 million in 2016, 2015 and 2014, respectively, through the issuance and repurchase of commercial paper instruments under our commercial paper program.

In March 2016, we issued 750 million of 1.875% guaranteed notes due 2022 and received net proceeds of $812 million. In March 2015, we issued $1,000 million of 4.625% senior notes due 2055 and received net proceeds of $984 million. In February 2014, we issued $1,000 million of 4.875% guaranteed notes due 2044 and received net proceeds of $988 million.

Additional information related to our commercial paper program and the issuance of debt can be found in the Liquidity and Capital Resources section below and in Note 12 to the Consolidated Financial Statements.

Liquidity and Capital Resources As of December 31, 2016, we had $2,022 million of unrestricted cash and cash equivalents and marketable securities classified as Short-term investments. We also held $369 million of tri-party repurchase agreements classified as Prepaid expenses and other current assets at December 31, 2016. For additional information related to our purchases of marketable securities, which currently include time deposits, certificates of deposit, commercial paper, bonds and limited partnership investments, and our investments in tri-party repurchase agreements, see Investing Activities above and Note 14 to the Consolidated Financial Statements.

At December 31, 2016, we held $556 million of cash in jurisdictions outside the U.S., principally in the United Kingdom. There are currently no material legal or economic restrictions that would impede our transfers of cash.

We also had total unused availability under our credit facilities of $2,710 million at December 31, 2016, which included the following:

- $1,973 million under our $2,500 million revolving credit facility, which backs our $2,500 million commercial paper program. Availability under this facility is net of outstanding borrowings, outstanding letters of credit provided under the facility and notes issued under our commercial paper program. A small portion of our availability under this facility is impacted by changes in the euro/U.S. dollar exchange rate. At December 31, 2016, we had $500 million of outstanding commercial paper, no outstanding letters of credit and no outstanding borrowings under the facility; and

- $737 million under our $900 million U.S. accounts receivable securitization facility. Availability under this facility is subject to a borrowing base of eligible receivables, which is reduced by outstanding borrowings and letters of credit, if any. This facility had no outstanding borrowings or letters of credit at December 31, 2016.

See Note 12 to the Consolidated Financial Statements for additional information related to our credit facilities.

In accordance with our current interest rate risk management strategy and subject to management s evaluation of market conditions and the availability of favorable interest rates among other factors, we may from time to time enter into interest rate swap agreements to economically convert a portion of our fixed rate debt to variable rate debt or convert a portion of variable rate debt to fixed rate debt.

We have $451 million of outstanding letters of credit and bank guarantees issued under uncommitted credit facilities at December 31, 2016. At December 31, 2016, we had total debt, including current maturities, of $8,981 million.

In June 2016, the term of our existing $2,000 million revolving credit facility was extended for one year to June 2021 pursuant to a consent agreement. We also amended the revolving credit facility in June 2016 to increase its size from $2,000 million to $2,500 million. All other material terms of the agreement remained unchanged. The letters of credit sublimit of our senior revolving credit facility was reduced from $700 million to $500 million by agreement in September 2015.

In connection with the increase of our revolving credit facility, in June 2016 we increased the size of our 2014 commercial paper program to permit the issuance of privately placed, unsecured short-term promissory notes (commercial paper) in an aggregate amount not to exceed $2,500 million. Proceeds from the issuance of commercial paper may be used for general corporate purposes, including dividend payments and share repurchases. At December 31, 2016, we had $500 million of commercial paper outstanding.

In March 2016, our direct, 100% owned subsidiary, LYB International Finance II B.V., issued 750 million of 1.875% guaranteed notes due 2022 at a discounted price of 99.607%. Proceeds from these notes were used for general corporate purposes, including repurchases of our ordinary shares. These unsecured notes, which are fully and unconditionally guaranteed by LyondellBasell Industries N.V., rank equally in right of payment to all of LYB Finance II s existing and future unsecured indebtedness and to all of LyondellBasell N.V. s existing and future unsubordinated indebtedness.

In August 2015, we amended our U.S. accounts receivable securitization facility, which, among other things, decreased the purchase limit from $1,000 million to $900 million, added a $300 million uncommitted accordion feature and extended the term of the facility to August 2018.

In March 2015, we issued $1,000 million of 4.625% Notes due 2055 at a discounted price of 98.353%. Proceeds from these notes were used for general corporate purposes, including repurchases of our ordinary shares. These unsecured notes rank equally in right of payment to all of LyondellBasell N.V. s existing and future unsubordinated indebtedness.

In February 2014, our direct, 100% owned subsidiary, LYB International Finance B.V., issued $1,000 million of 4.875% Notes due 2044 at a discounted price of 98.831%. Proceeds from these notes were used for general corporate purposes, including repurchases of our ordinary shares. These unsecured notes, which are fully and unconditionally guaranteed by LyondellBasell Industries N.V., rank equally in right of payment to all of LYB International Finance B.V. s existing and future unsecured indebtedness and to all of LyondellBasell s existing and future unsubordinated indebtedness.

See Note 12 to the Consolidated Financial Statements, for additional information related to our credit facilities and Notes discussed above, including terms of redemption.

In May 2016, our shareholders approved a proposal to authorize us to repurchase up to an additional 10%, or approximately 42.5 million, of our shares outstanding over the following eighteen months. Our share repurchase program does not have a stated dollar amount, and purchases may be made through open market purchases, private market transactions or other structured transactions. Repurchased shares could be retired or used for general corporate purposes, including for various employee benefit and compensation plans. As of December 31, 2016, we have purchased 21.3 million shares under this program for approximately $1,688 million. As of February 14, 2017, we had approximately 20 million shares remaining under the current authorization. The timing and amount of additional shares repurchased will be determined by our Management Board based on its evaluation of market conditions and other factors. For additional information related to our share repurchase programs, see Note 20 to the Consolidated Financial Statements.

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In September 2016, we received proceeds of $72 million from the sale of our joint venture in Japan. We also purchased a net additional 7.41% interest in our joint venture in Korea for $36 million in September 2016. In February 2016, we received net proceeds of $137 million from the sale of our wholly owned Argentine subsidiary.

We engaged an investment bank in 2016 to assist in testing the value of our Houston refinery as part of our regular review of our asset portfolio and as a result of indications of interest in the refinery by third parties. Following a thorough process, we have elected to retain the refinery in our asset portfolio.

We may repay or redeem our debt, including purchases of our outstanding bonds in the open market, using cash on hand, cash from operating activities, proceeds from the issuance of debt, proceeds from asset divestitures, or a combination thereof. In connection with any repayment or redemption of our debt, we may incur cash and non-cash charges, which could be material in the period in which they are incurred. We currently intend to refinance certain outstanding debt, subject to market conditions, in the first quarter of 2017. Our current analyses indicate that the refinancing may result in charges of approximately $125 million based on current market conditions. The actual costs will depend on several factors, including interest rates and market conditions if and when the refinancing occurs.

We plan to fund our ongoing working capital, capital expenditures, debt service and other funding requirements with cash from operations, which could be affected by general economic, financial, competitive, legislative, regulatory, business and other factors, many of which are beyond our control. Cash on hand, cash from operating activities, proceeds from the issuance of debt, or a combination thereof, may be used to fund the repurchase of shares under our share repurchase program.

We intend to continue to declare and pay quarterly dividends, with the goal of increasing the dividend over time, after giving consideration to our cash balances and expected results from operations.

We believe that our cash on hand, cash from operating activities and proceeds from our credit facilities provide us with sufficient financial resources to meet our anticipated capital requirements and obligations as they come due.

Contractual and Other Obligations The following table summarizes, as of December 31, 2016, our minimum payments for long-term debt, including current maturities, short-term debt, and contractual and other obligations for the next five years and thereafter:

		Payments Due By Period					
Millions of dollars	Total	2017	2018	2019	2020	2021	Thereafter
Total debt	$ 9,191	$ 596	$ 1	$ 2,001	$	$ 1,000	$ 5,593
Interest on total debt	5,470	321	321	321	321	321	3,865
Advances from customers	69	22	13	15	4		15
Other	1,688	922	397	105	31	27	206
Deferred income taxes	2,331	423	134	147	136	120	1,371
Other obligations:							
Purchase obligations:							
Take-or-pay contracts	15,436	2,647	2,633	2,750	2,871	2,769	1,766
Other contracts	8,556	3,343	2,179	1,002	467	204	1,361
Operating leases	1,650	341	286	211	173	146	493
Total	$ 44,391	$ 8,615	$ 5,964	$ 6,552	$ 4,003	$ 4,587	$ 14,670

Total Debt Our debt includes unsecured senior notes, guaranteed notes and various other U.S. and non-U.S. loans. See Note 12 to the Consolidated Financial Statements for a discussion of covenant requirements under the credit facilities and indentures and additional information regarding our debt facilities.

Interest on Total Debt Our debt and related party debt agreements contain provisions for the payment of monthly, quarterly or semi-annual interest at a stated rate of interest over the term of the debt.

Pension and other Postretirement Benefits We maintain several defined benefit pension plans, as described in Note 16 to the Consolidated Financial Statements. Many of our U.S. and non-U.S. plans are subject to minimum funding requirements; however, the amounts of required future contributions for all our plans are not fixed and can vary significantly due to changes in economic assumptions, liability experience and investment return on plan assets. As a result, we have excluded pension and other postretirement benefit obligations from the Contractual and Other Obligations table above. Our annual contributions may include amounts in excess of minimum required funding levels. Contributions to our non-U.S. plans in years beyond 2017 are not expected to be materially different than the expected 2017 contributions disclosed in Note 16 to the Consolidated Financial Statements. At December 31, 2016, the projected benefit obligation for our pension plans exceeded the fair value of plan assets by $942 million. Subject to future actuarial gains and losses, as well as future asset earnings, we, together with our consolidated subsidiaries, will be required to fund the discounted obligation of $942 million in future years. We contributed $114 million, $107 million and $94 million to our pension plans in 2016, 2015 and 2014, respectively. We provide other postretirement benefits, primarily medical benefits to eligible participants, as described in Note 16 to the Consolidated Financial Statements. We pay other unfunded postretirement benefits as incurred.

Advances from Customers We are obligated to deliver products in connection with long-term sales agreements under which advances from customers were received in prior years. These advances are treated as deferred revenue and will be amortized to earnings as product is delivered over the remaining terms of the respective contracts, which range predominantly from 2 to 8 years. The unamortized long-term portion of such advances totaled $47 million as of December 31, 2016.

Other Other primarily consists of accruals for environmental remediation costs, obligations under deferred compensation arrangements, and anticipated asset retirement obligations. See Critical Accounting Policies below for a discussion of obligations for environmental remediation costs.

Deferred Income Taxes The scheduled settlement of the deferred tax liabilities shown in the table is based on the scheduled reversal of the underlying temporary differences. Actual cash tax payments will vary depending upon future taxable income. See Note 18 to the Consolidated Financial Statements for additional information related to our deferred tax liabilities.

Purchase Obligations We are party to various obligations to purchase products and services, principally for raw materials, utilities and industrial gases. These commitments are designed to assure sources of supply and are not expected to be in excess of normal requirements. The commitments are segregated into take-or-pay contracts and other contracts. Under the take-or-pay contracts, we are obligated to make minimum payments whether or not we take the product or service. Other contracts include contracts that specify minimum quantities; however, in the event that we do not take the contractual minimum, we are only obligated for any resulting economic loss suffered by the vendor. The payments shown for the other contracts assume that minimum quantities are purchased. For contracts with variable pricing terms, the minimum payments reflect the contract price at December 31, 2016.

Operating Leases We lease various facilities and equipment under noncancelable lease arrangements for various periods. See Note 13 to the Consolidated Financial Statements for related lease disclosures.

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CURRENT BUSINESS OUTLOOK

In the past several months, the industry outlook for 2017 has steadily improved. Healthy U.S. and global economic activity and ethylene project delays have led to an improved forecast for industry supply and demand dynamics. Crude oil prices and NGL supply have stabilized at more favorable levels than during much of 2016. The U.S. regulatory landscape may change in ways that are generally favorable to our industry. While we will continue to watch these developments, we believe our significant investment in our 2016 maintenance programs favorably positions us for 2017.

RELATED PARTY TRANSACTIONS

We have related party transactions with our joint venture partners. We believe that such transactions are effected on terms substantially no more or less favorable than those that would have been agreed upon by unrelated parties on an arm s length basis. See Note 4 to the Consolidated Financial Statements for additional related party disclosures.

CRITICAL ACCOUNTING POLICIES

Management applies those accounting policies that it believes best reflect the underlying business and economic events, consistent with accounting principles generally accepted in the U.S. (see Note 2 to the Consolidated Financial Statements). Our more critical accounting policies include those related to the valuation of inventory, long-lived assets, the valuation of goodwill, accruals for long-term employee benefit costs such as pension and other postretirement costs, and accruals for taxes based on income. Inherent in such policies are certain key assumptions and estimates made by management. Management periodically updates its estimates used in the preparation of the financial statements based on its latest assessment of the current and projected business and general economic environment.

Inventory We account for our inventory using the last-in, first-out (LIFO) method of accounting.

The cost of raw materials, which represents a substantial portion of our operating expenses, and energy costs generally follow price trends for crude oil and/or natural gas. Crude oil and natural gas prices are subject to many factors, including changes in economic conditions.

Since our inventory consists of manufactured products derived from crude oil, natural gas, natural gas liquids and correlated materials, as well as the associated feedstocks and intermediate chemicals, our inventory market values are generally influenced by changes in benchmark crude oil and heavy liquid values and prices for manufactured finished goods. The degree of influence of a particular benchmark may vary from period to period, as the composition of the dollar value LIFO pools change. Due to natural inventory composition changes, variation in pricing from period to period does not necessarily result in a linear LCM impact. Additionally, an LCM condition may arise due to a volumetric decline in a particular material that had previously provided a positive impact within a pool. As a result, market valuations and LCM conditions are dependent upon the composition and mix of materials on hand at the balance sheet date. In the measurement of an LCM adjustment, the numeric input value for determining the crude oil market price includes pricing that is weighted by volume of inventories held at a point in time, including WTI, Brent and Maya crude oils.

As indicated above, fluctuation in the prices of crude oil, natural gas and correlated products from period to period may result in the recognition of charges to adjust the value of inventory to the lower of cost or market in periods of falling prices and the reversal of those charges in subsequent interim periods as market prices recover. Accordingly, our cost of sales and results of operations may be affected by such fluctuations.

On May 1, 2010, upon emergence from bankruptcy, we recorded our inventory, which is primarily crude oil and correlated products derived therefrom, at fair value in accordance with the requirements of fresh-start accounting. The per barrel benchmark price of WTI crude oil at that date was $86.15.

During 2014, we recorded LCM inventory valuation adjustments totaling $760 million driven primarily by the decline in the price of crude oil and related declines in the prices of heavy liquids and other correlated products. A $45 million charge was taken in the third quarter of 2014 which marked the beginning of a downward price trend. An additional $715 million of LCM inventory valuation adjustment was recognized in the fourth quarter of 2014 to reflect decreases of approximately 50% in the price indices for crude oil and other correlated products as compared to the third quarter of 2014. At December 31, 2014, representative prices for crude oil and heavy liquids were $47.59 per barrel and $45.20 per barrel, respectively. These price inputs were calculated using a weighted average of the materials held in inventory on that date.

The trend of falling hydrocarbon prices continued in 2015, leading to further LCM inventory valuation adjustments. In 2015, the cumulative charge related to LCM inventory valuation adjustments, which was driven by declines in crude oil, ethylene, propylene, benzene and ETBE, was $548 million. Representative prices used in the calculation of the cumulative LCM inventory adjustments recognized in 2015 were $30.22 per barrel for crude oil, 20 cents per pound for ethylene, 32 cents per pound for propylene, $2.14 per gallon for benzene and $1.66 per gallon for ETBE.

A drop in polypropylene prices led to the recognition of a $29 million LCM adjustment in the fourth quarter of 2016.

Further sustained price declines in our finished goods and raw materials could result in additional LCM inventory valuation charges during 2017. Several of our LIFO inventory pools are at-risk for further adjustment as each impacted LIFO pool is at, or close to, the calculated market value at the last balance sheet measurement date. At-risk inventory accounts for $2.2 billion of our total inventory carrying value of $3.8 billion as of December 31, 2016. The extent to which further adjustment may occur is dependent on pool specific product prices and composition within each individual dollar value LIFO pool at the balance sheet date.

Long-Lived Assets With respect to long-lived assets, which primarily include property, plant and equipment and intangible assets, key assumptions included estimates of useful lives and the recoverability of carrying values of fixed assets and other intangible assets, as well as the existence of any obligations associated with the retirement of fixed assets. Such estimates could be significantly modified and/or the carrying values of the assets could be impaired by such factors as new technological developments, new chemical industry entrants with significant raw material or other cost advantages, uncertainties associated with the European, U.S. and other world economies, the cyclical nature of the chemical and refining industries, and uncertainties associated with regulatory governmental actions.

When events or changes in circumstances indicate that the carrying value of an asset may not be recoverable, we evaluate definite lived intangible assets for impairment. Long-lived assets are grouped at the lowest level for which there are identifiable cash flows that are largely independent of the cash flows of other groups of assets, which for us is generally at the plant group level (or, at times individual plants in certain circumstances where we have isolated production units with separately identifiable cash flows). When it is probable that the undiscounted cash flows of a tangible asset or asset group will not be sufficient to recover the carrying amount, the asset is written down to its estimated fair value. In-process research and development projects are impaired when abandoned.

The estimated useful lives of long-lived assets range from 3 to 30 years. Depreciation and amortization of these assets, including amortization of capitalized plant turnaround costs, under the straight-line method over their estimated useful lives totaled $1,064 million in 2016. The useful lives of assets are assessed periodically and if determined to be shorter than originally estimated, depreciation and amortization charges would be accelerated over the revised useful life.

Goodwill Goodwill of $528 million at December 31, 2016 represents the tax effect of the differences between the tax and book bases of our assets and liabilities resulting from the revaluation of those assets and liabilities to fair value in connection with the Company s emergence from bankruptcy and adoption of fresh-start accounting. We evaluate the recoverability of the carrying value of goodwill annually or more frequently if events or changes in circumstances indicate that the carrying amount of the goodwill of a reporting unit may not be fully recoverable.

We have the option to first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value. Qualitative factors assessed for each of the reporting units include, but are not limited to, changes in long-term commodity prices, discount rates, competitive environments, planned capacity, cost factors such as raw material prices, and financial performance of the reporting units. If the qualitative assessment indicates that it is more likely than not that the carrying value of a reporting unit exceeds its estimated fair value, a two-step quantitative test is required.

We also have the option to proceed directly to the two-step quantitative impairment test. Under the two-step impairment test, the fair value of each reporting unit is compared to its carrying value, including goodwill. For step one of the impairment test, the fair value of the reporting unit is calculated using a discounted cash-flow model. Such a model inherently utilizes a significant number of estimates and assumptions, including operating margins, tax rates, discount rates, capital expenditures and working capital changes. Step two of the impairment test would be performed should management conclude that the carrying value of a reporting unit, including goodwill, is in excess of its fair value. In step two of the impairment test, the carrying amount of a reporting unit s goodwill is compared to the implied fair value of its goodwill. Valuation experts may be used in such an assessment. If the carrying value of goodwill exceeds its implied fair value, an impairment charge equal to the excess would be recognized.

For 2016 and 2015, management performed a qualitative impairment assessment of our reporting units which indicated that the fair value of our reporting units was greater than their carrying value. Accordingly, a quantitative two-step goodwill impairment test was not required. Accordingly, no goodwill impairment was recognized in 2016 or 2015.

Long-Term Employee Benefit Costs Our costs for long-term employee benefits, particularly pension and other postretirement medical and life insurance benefits, are incurred over long periods of time, and involve many uncertainties over those periods. The net periodic benefit cost attributable to current periods is based on several assumptions about such future uncertainties, and is sensitive to changes in those assumptions. It is management s responsibility, often with the assistance of independent experts, to select assumptions that in its judgment represent its best estimates of the future effects of those uncertainties. It also is management s responsibility to review those assumptions periodically to reflect changes in economic or other factors that affect those assumptions.

The current benefit service costs, as well as the existing liabilities, for pensions and other postretirement benefits are measured on a discounted present value basis. The discount rate is a current rate, related to the rate at which the liabilities could be settled. Our assumed discount rate is based on yield information for high-quality corporate bonds with durations comparable to the expected cash settlement of our obligations. For the purpose of measuring the benefit obligations at December 31, 2016, we used a weighted average discount rate of 4.20% for the U.S. plans which reflects the different terms of the related benefit obligations. The weighted average discount rate used to measure obligations for non-U.S. plans at December 31, 2016 was 1.52%, reflecting market interest rates. The discount rates in effect at December 31, 2016 will be used to measure net periodic benefit cost during 2017.

The benefit obligation and the periodic cost of other postretirement medical benefits are also measured based on assumed rates of future increase in the per capita cost of covered health care benefits. As of December 31, 2016, the assumed rate of increase for our U.S. plans was 7.0%, decreasing to 4.5% in 2038 and

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thereafter. A one percentage point change in the health care cost trend rate assumption as of December 31, 2016 would have resulted in a $21 million increase or $14 million decrease in the accumulated other postretirement benefit liability for our non-U.S. plans and would have resulted in an increase or decrease of less than $1 million for U.S. plans. Due to limits on our maximum contribution level under the medical plan, there would have been no significant effect on either our benefit liability or net periodic cost.

The net periodic cost of pension benefits included in expense also is affected by the expected long-term rate of return on plan assets assumption. Investment returns that are recognized currently in net income represent the expected long-term rate of return on plan assets applied to a market-related value of plan assets which, for us, is defined as the market value of assets. The expected rate of return on plan assets is a longer term rate, and is expected to change less frequently than the current assumed discount rate, reflecting long-term market expectations, rather than current fluctuations in market conditions.

The weighted average expected long-term rate of return on assets in our U.S. plans of 8.00% is based on the average level of earnings that our independent pension investment advisor had advised could be expected to be earned over time and 3.37%, for our non-U.S. plan assets is based on an expectation and asset allocation that varies by region. The asset allocations are summarized in Note 16 to the Consolidated Financial Statements. The actual returns in 2016 were gains of 7.22% and 15.81% for our U.S. and non-U.S. plan assets, respectively.

The actual rate of return on plan assets may differ from the expected rate due to the volatility normally experienced in capital markets. Management s goal is to manage the investments over the long term to achieve optimal returns with an acceptable level of risk and volatility.

Net periodic pension cost recognized each year includes the expected asset earnings, rather than the actual earnings or loss. Along with other gains and losses, this unrecognized amount, to the extent it cumulatively exceeds 10% of the projected benefit obligation for the respective plan, is recognized as additional net periodic benefit cost over the average remaining service period of the participants in each plan.

The following table reflects the sensitivity of the benefit obligations and the net periodic benefit costs of our pension plans to changes in the actuarial assumptions:

	Effects on Benefit Obligations in 2016		Effects on Net Periodic Pension Costs in 2017	
Millions of dollars	**U.S.**	**Non-U.S.**	**U.S.**	**Non-U.S.**
Projected benefit obligations at December 31, 2016	$ 1,846	$ 1,491	$	$
Projected net periodic pension costs in 2017			7	56
Discount rate increases by 100 basis points	(166)	(200)	(6)	(4)
Discount rate decreases by 100 basis points	199	246	10	15

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The sensitivity of our postretirement benefit plans obligations and net periodic benefit costs to changes in actuarial assumptions are reflected in the following table:

	Effects on Benefit Obligations in 2016		Effects on Net Periodic Benefit Costs in 2017	
Millions of dollars	U.S.	Non-U.S.	U.S.	Non-U.S.
Projected benefit obligations at December 31, 2016	$ 276	$ 67	$	$
Projected net periodic benefit costs in 2017			12	6
Discount rate increases by 100 basis points	(23)		(2)	
Discount rate decreases by 100 basis points	27		(2)	

Additional information on the key assumptions underlying these benefit costs appears in Note 16 to the Consolidated Financial Statements.

Accruals for Taxes Based on Income The determination of our provision for income taxes and the calculation of our tax benefits and liabilities is subject to management s estimates and judgments due to the complexity of the tax laws and regulations in the tax jurisdictions in which we operate. Uncertainties exist with respect to interpretation of these complex laws and regulations.

Deferred tax assets and liabilities are determined based on temporary differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases, and are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to reverse.

We recognize future tax benefits to the extent that the realization of these benefits is more likely than not. Our current provision for income taxes is impacted by the recognition and release of valuation allowances related to net deferred assets in certain non-U.S. jurisdictions. Further changes to these valuation allowances may impact our future provision for income taxes, which will include no tax benefit with respect to losses incurred and no tax expense with respect to income generated in these countries until the respective valuation allowance is eliminated.

We recognize the financial statement benefits with respect to an uncertain income tax position that we have taken or may take on an income tax return when we believe it is more likely than not that the position will be sustained with the tax authorities. For a position that is likely to be sustained, the benefit recognized in the financial statements is measured at the largest cumulative amount that is greater than 50 percent likely of being realized.

For further information related to our income taxes, see Note 18 to the Consolidated Financial Statements.

ACCOUNTING AND REPORTING CHANGES

For a discussion of the potential impact of new accounting pronouncements on our Consolidated Financial Statements, see Note 2 to the Consolidated Financial Statements.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

See Note 14 to the Consolidated Financial Statements for discussion of LyondellBasell Industries N.V. s management of commodity price risk, foreign currency exposure and interest rate risk through its use of derivative instruments and hedging activities.

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Commodity Price Risk

A substantial portion of our products and raw materials are commodities whose prices fluctuate as market supply and demand fundamentals change. Accordingly, product margins and the level of our profitability tend to fluctuate with changes in the business cycle. We try to protect against such instability through various business strategies. These include provisions in sales contracts allowing us to pass on higher raw material costs through timely price increases, formula price contracts to transfer or share commodity price risk, and increasing the depth and breadth of our product portfolio.

In addition, we use commodity swap and futures contracts with various terms to manage a small portion of the volatility related to raw materials and product purchases and sales. Such contracts are generally limited to durations of one year or less. Hedge accounting has not been elected for most of our commodity contracts in the periods presented. Market risks created by these derivative instruments and the mark-to-market valuations of open positions are considered by management prior to execution and monitored daily.

The estimated fair value and notional amounts of our open commodity futures contracts and swap contracts are shown in the table below:

	December 31, 2016				
		Notional Amounts			
Millions of dollars	**Fair Value**	**Value**	**Volumes**	**Volume Unit**	**Maturity Dates**
Futures and swaps not designated as hedges:					
Heating oil	$ 1	$ 20	12	million gallons	February 2017
Crude oil	(1)	30	23	million gallons	February 2017 - March 2017
Naphtha	1	48	100	million kilograms	January 2017
Swaps designated as cash-flow hedges:					
Ethane	3	58	184	million gallons	January 2017 - December 2019
	$ 4	$ 156			

	December 31, 2015				
		Notional Amounts			
Millions of dollars	**Fair Value**	**Value**	**Volumes**	**Volume Unit**	**Maturity Dates**
Futures and swaps not designated as hedges:					
Heating oil	$	$ 10	9	million gallons	February 2016 - April 2016
Crude oil	7	72	78	million gallons	February 2016 - May 2016
Crude/Distillates	(2)	57	252	million gallons	October 2016
Butane	1	1	8	million gallons	February 2016
	$ 6	$ 140			

We use value at risk (VAR), stress testing and scenario analysis for risk measurement and control purposes.

VAR estimates the maximum potential loss in fair market values, given a certain move in prices over a certain period of time, using specified confidence levels.

Using sensitivity analysis and hypothetical changes in market prices ranging from 14% to 17%, which represent a three month volatility range of the underlying products noted in the table above, the effect on our pretax income would be less than $1 million. The quantitative information about market risk is necessarily limited because it does not take into account the effects of the underlying operating transactions.

Foreign Exchange Risk

We manufacture and market our products in a number of countries throughout the world and, as a result, are exposed to changes in foreign currency exchange rates. We enter into transactions in currencies other than the applicable functional currency.

A significant portion of our reporting entities use the euro as their functional currency. Our reporting currency is the U.S. dollar. The translation gains or losses that result from the process of translating the euro denominated financial statements to U.S. dollars are deferred in accumulated other comprehensive income (AOCI) until such time as those entities may be liquidated or sold. Changes in the value of the U.S. dollar relative to the euro can therefore have a significant impact on comprehensive income.

We have entered into hedging arrangements designated as net investment hedges to reduce the volatility from foreign currency fluctuation associated with our net investments in foreign operations and investments in foreign subsidiaries.

The table below illustrates the impact on Other comprehensive loss of a 10% fluctuation in the foreign currency rate associated with each net investment hedge and the EURIBOR and LIBOR rates associated with basis swaps at December 31, 2016.

		10% Variance on	
Net Investment Hedges	**Notional Amount**	**Foreign Currency Rate**	**Impact on Other Comprehensive Loss**
Basis Swaps	400 million ($444 million)	euro/U.S. dollar rate	$42 million
		EURIBOR and LIBOR rates	Less than $1 million
Forward Exchange Contracts	275 million ($299 million)	euro/U.S. dollar rate	$30 million
Guaranteed Euro Notes Due 2022	750 million	euro/U.S. dollar rate	$79 million

Some of our operations enter into transactions that are not denominated in their functional currency. This results in exposure to foreign currency risk for financial instruments, including, but not limited to third party and intercompany receivables and payables and intercompany loans.

We maintain risk management control practices to monitor the foreign currency risk attributable to our inter-company and third party outstanding foreign currency balances. These practices involve the centralization of our exposure to underlying currencies that are not subject to central bank and/or country specific restrictions. By centralizing most of our foreign currency exposure into one subsidiary, we are able to take advantage of any natural offsets thereby reducing the overall impact of changes in foreign currency rates on our earnings. At December 31, 2016, a 10% fluctuation compared to the U.S. dollar in the underlying currencies that have no central bank or other currency restrictions related to non-hedged monetary net assets would have had a resulting additional impact to earnings of less than $1 million.

Our policy is to maintain an approximately balanced position in foreign currencies to minimize exchange gains and losses arising from changes in exchange rates. To minimize the effects of our net currency exchange exposures, we enter into foreign currency spot and forward contracts and, in some cases, cross-currency swaps.

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We also engage in short-term foreign exchange swaps in order to roll certain hedge positions and to make funds available for intercompany financing. Our net position in foreign currencies is monitored daily.

We have entered into $2,300 million of non-cancellable cross-currency swaps, which we designated as foreign currency cash flow hedges, to reduce the variability in the functional currency equivalent cash flows of certain foreign currency denominated intercompany notes. For a summary of the estimated fair value and notional amounts for our cross-currency swaps outstanding at December 31, 2016, see Note 14 to the Consolidated Financial Statements.

For 2016, 2015, and 2014, Other income, net in the Consolidated Statements of Income reflected losses of $4 million and $7 million and a gain of $15 million, respectively, in net exchange rate gains and losses. For forward contracts, including swap transactions, that economically hedge recognized monetary assets and liabilities in foreign currencies, no hedge accounting is applied. Changes in the fair value of foreign currency forward contracts are reported in the Consolidated Statements of Income and offset the currency exchange results recognized on the assets and liabilities.

Interest Rate Risk

We are exposed to interest rate risk with respect to our fixed and variable rate debt. Fluctuations in interest rates impact the fair value of fixed-rate debt as well as pretax earnings stemming from interest expense on variable-rate debt.

Fixed-rate debt We entered into interest rate swaps as part of our interest rate risk management strategy. At December 31, 2016, the total notional amounts of forward-starting interest rate swaps designated as cash flow hedges and interest rate swaps designated as fair value hedges were $1,000 million and $2,600 million, respectively.

At December 31, 2016, after giving consideration to the $2,600 million of fixed-rate debt that we have effectively converted to floating through these U.S. dollar fixed-for-floating interest rate swaps, approximately 66% of our debt portfolio, on a gross basis, incurred interest at a fixed-rate and the remaining 34% of the portfolio incurred interest at a variable-rate. We estimate that a 10% change in market interest rates as of December 31, 2016 would change the fair value of our interest rate swaps outstanding and would have had a resulting impact on our pretax income of approximately $12 million.

Variable-rate debt Our variable rate debt consists of our $2,500 million Senior Revolving Credit Facility, our $900 million U.S. Receivables Securitization Facility and $500 million outstanding at December 31, 2016 under our Commercial Paper Program. At December 31, 2016, there were no outstanding borrowings under our Senior Revolving Credit Facility and U.S. Receivables Securitization facility. We estimate that a 10% change in interest rates would have had less than a $1 million impact on earnings.

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Item 8. Financial Statements and Supplementary Data.

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MANAGEMENT S REPORT ON INTERNAL CONTROL

OVER FINANCIAL REPORTING

Management of the Company, including the Chief Executive Officer and the Chief Financial Officer, is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rules 13a-15(f) and 15d-15(f) of the Securities Exchange Act of 1934, as amended. Internal control over financial reporting is a process designed by, or under the supervision of, our Chief Executive Officer and Chief Financial Officer, 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. Our internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets; (ii) provide reasonable assurance that transactions are recorded as necessary to permit the preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures are being made only in accordance with authorizations of our management and directors; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

We conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2016 based on the Internal Control Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission in 2013. Based on our evaluation, management has concluded that our internal control over financial reporting was effective as of December 31, 2016.

The effectiveness of our internal control over financial reporting as of December 31, 2016 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is included herein.

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Supervisory Board of Directors and Stockholders of LyondellBasell Industries N.V.:

In our opinion, the accompanying consolidated balance sheets and the related consolidated statements of income, comprehensive income, stockholders equity and cash flows present fairly, in all material respects, the financial position of LyondellBasell Industries N.V. and its subsidiaries at December 31, 2016 and December 31, 2015 and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2016 in conformity with accounting principles generally accepted in the United States of America. 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 s management is responsible for these 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 opinions on these financial statements and on the Company s internal control over financial reporting based on our integrated 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 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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company s assets that could have a material effect on the financial statements.

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

/s/ PricewaterhouseCoopers LLP

Houston, Texas

February 17, 2017

LYONDELLBASELL INDUSTRIES N.V.

CONSOLIDATED STATEMENTS OF INCOME

Millions of dollars, except earnings per share	Year Ended December 31, 2016	2015	2014
Sales and other operating revenues:			
Trade	$ 28,454	$ 31,930	$ 44,714
Related parties	729	805	894
	29,183	32,735	45,608
Operating costs and expenses:			
Cost of sales	23,191	25,683	38,939
Selling, general and administrative expenses	833	828	806
Research and development expenses	99	102	127
	24,123	26,613	39,872
Operating income	5,060	6,122	5,736
Interest expense	(322)	(310)	(352)
Interest income	17	33	33
Other income, net	111	25	38
Income from continuing operations before equity investments and income taxes	4,866	5,870	5,455
Income from equity investments	367	339	257
Income from continuing operations before income taxes	5,233	6,209	5,712
Provision for income taxes	1,386	1,730	1,540
Income from continuing operations	3,847	4,479	4,172
Loss from discontinued operations, net of tax	(10)	(5)	(4)
Net income	3,837	4,474	4,168
Net income (loss) attributable to non-controlling interests	(1)	2	6
Net income attributable to the Company shareholders	$ 3,836	$ 4,476	$ 4,174
Earnings per share:			
Net income (loss) attributable to the Company shareholders			
Basic:			
Continuing operations	$ 9.17	$ 9.63	$ 8.04
Discontinued operations	(0.02)	(0.01)	(0.01)
	$ 9.15	$ 9.62	$ 8.03
Diluted:			
Continuing operations	$ 9.15	$ 9.60	$ 8.00
Discontinued operations	(0.02)	(0.01)	(0.01)
	$ 9.13	$ 9.59	$ 7.99

See Notes to the Consolidated Financial Statements.

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LYONDELLBASELL INDUSTRIES N.V.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

Millions of dollars	Year Ended December 31, 2016	2015	2014
Net income	$ 3,837	$ 4,474	$ 4,168
Other comprehensive income (loss), net of tax			
Financial derivatives:			
Gain (loss) on cash flow hedges arising during the period	(29)	279	13
Reclassification adjustment included in net income	(63)	(207)	(89)
Income tax expense (benefit)	(96)	71	4
Financial derivatives, net of tax	4	1	(80)
Unrealized gains (losses) on available-for-sale securities:			
Unrealized holding gains (losses) arising during the period	7	(6)	
Income tax expense (benefit)	1	(1)	
Unrealized (gains) losses on available-for-sale securities, net of tax	6	(5)	
Defined pension and other postretirement benefit plans:			
Prior service cost arising during the period	4		5
Reclassification adjustment for amortization of prior service cost included in net income	1	5	
Net actuarial loss arising during the period	(188)	(8)	(493)
Reclassification adjustment for net actuarial loss included in net income	31	28	7
Reclassification adjustment for settlement loss included in net income	61		
Income tax expense (benefit)	(21)	4	(172)
Defined pension and other postretirement benefit plans, net of tax	(70)	21	(309)
Foreign currency translations adjustments:			
Unrealized loss arising during the period	(27)	(434)	(733)
Reclassification adjustment included in net income	7		
Income tax benefit	(7)	(5)	
Foreign currency translations, net of tax	(13)	(429)	(733)
Total other comprehensive loss	(73)	(412)	(1,122)
Comprehensive income	3,764	4,062	3,046
Comprehensive (income) loss attributable to non-controlling interests	(1)	2	6
Comprehensive income attributable to the Company shareholders	$ 3,763	$ 4,064	$ 3,052

See Notes to the Consolidated Financial Statements.

LYONDELLBASELL INDUSTRIES N.V.

CONSOLIDATED BALANCE SHEETS

Millions of dollars	December 31, 2016	2015
ASSETS		
Current assets:		
Cash and cash equivalents	$ 875	$ 924
Restricted cash	3	7
Short-term investments	1,147	1,064
Accounts receivable:		
Trade, net	2,716	2,363
Related parties	126	154
Inventories	3,809	4,051
Prepaid expenses and other current assets	923	1,226
Total current assets	9,599	9,789
Property, plant and equipment, net	10,137	8,991
Investments and long-term receivables:		
Investment in PO joint ventures	415	397
Equity investments	1,575	1,608
Other investments and long-term receivables	20	122
Goodwill	528	536
Intangible assets, net	550	640
Other assets	618	674
Total assets	$ 23,442	$ 22,757

See Notes to the Consolidated Financial Statements.

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LYONDELLBASELL INDUSTRIES N.V.

CONSOLIDATED BALANCE SHEETS

Millions of dollars, except shares and par value data	December 31, 2016	2015
LIABILITIES AND EQUITY		
Current liabilities:		
Current maturities of long-term debt	$ 2	$ 4
Short-term debt	594	353
Accounts payable:		
Trade	2,028	1,627
Related parties	501	555
Accrued liabilities	1,415	1,810
Total current liabilities	4,540	4,349
Long-term debt	8,385	7,671
Other liabilities	2,113	2,036
Deferred income taxes	2,331	2,127
Commitments and contingencies		
Stockholders equity:		
Ordinary shares, 0.04 par value, 1,275 million shares authorized, 404,046,331 and 440,150,069 shares outstanding, respectively	31	31
Additional paid-in capital	10,191	10,202
Retained earnings	12,282	9,841
Accumulated other comprehensive loss	(1,511)	(1,438)
Treasury stock, at cost, 174,389,139 and 138,285,201 ordinary shares, respectively	(14,945)	(12,086)
Total Company share of stockholders equity	6,048	6,550
Non-controlling interests	25	24
Total equity	6,073	6,574
Total liabilities and equity	$ 23,442	$ 22,757

See Notes to the Consolidated Financial Statements.

LYONDELLBASELL INDUSTRIES N.V.

CONSOLIDATED STATEMENTS OF CASH FLOWS

Millions of dollars	Year Ended December 31, 2016	2015	2014
Cash flows from operating activities:			
Net income	$ 3,837	$ 4,474	$ 4,168
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	1,064	1,047	1,019
Amortization of debt-related costs	16	16	20
Inventory valuation adjustment	29	548	760
Equity investments			
Equity income	(367)	(339)	(257)
Distribution of earnings, net of tax	385	285	156
Deferred income taxes	357	181	177
Gain on sales of business and equity method investment	(84)		
Gain on sale of assets	(5)		
Changes in assets and liabilities that provided (used) cash:			
Accounts receivable	(383)	780	358
Inventories	123	(240)	(205)
Accounts payable	383	(786)	(378)
Prepaid expenses and other current assets	226	(121)	156
Other, net	25	(3)	74
Net cash provided by operating activities	5,606	5,842	6,048
Cash flows from investing activities:			
Expenditures for property, plant and equipment	(2,243)	(1,440)	(1,499)
Payments for repurchase agreements	(674)	(397)	(425)
Proceeds from repurchase agreements	685	350	75
Purchases of available-for-sale securities	(688)	(2,073)	(3,439)
Proceeds from sales and maturities of available-for-sale securities	674	2,489	1,751
Purchases of held-to-maturity securities	(76)		
Payment for acquisition of business and equity method investment	(65)		
Net proceeds from sales of business and equity method investment	209		
Proceeds from settlement of net investment hedges	1,295		
Payments for settlement of net investment hedges	(1,356)		
Change in restricted cash	4	(5)	8
Other, net	(62)	25	(2)
Net cash used in investing activities	(2,297)	(1,051)	(3,531)

See Notes to the Consolidated Financial Statements.

LYONDELLBASELL INDUSTRIES N.V.

CONSOLIDATED STATEMENTS OF CASH FLOWS Continued

Millions of dollars	Year Ended December 31, 2016	2015	2014
Cash flows from financing activities:			
Repurchases of Company ordinary shares	(2,938)	(4,656)	(5,788)
Dividends paid	(1,395)	(1,410)	(1,403)
Issuance of long-term debt	812	984	992
Net proceeds from commercial paper	177	61	262
Payments of debt issuance costs	(5)	(16)	(18)
Other, net		187	48
Net cash used in financing activities	(3,349)	(4,850)	(5,907)
Effect of exchange rate changes on cash	(9)	(48)	(29)
Decrease in cash and cash equivalents	(49)	(107)	(3,419)
Cash and cash equivalents at beginning of period	924	1,031	4,450
Cash and cash equivalents at end of period	$ 875	$ 924	$ 1,031
Supplemental Cash Flow Information:			
Interest paid	$ 346	$ 310	$ 343
Net income taxes paid	$ 741	$ 1,417	$ 1,167

See Notes to the Consolidated Financial Statements.

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LYONDELLBASELL INDUSTRIES N.V.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS EQUITY

Millions of dollars	Ordinary Shares Issued	Ordinary Shares Treasury	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Company Share of Stockholders Equity	Non-Controlling Interests
Balance, December 31, 2013	$ 31	$ (2,035)	$ 10,382	$ 4,004	$ 96	$ 12,478	$ 36
Net income (loss)				4,174		4,174	(6)
Other comprehensive loss					(1,122)	(1,122)	
Share-based compensation		55	5			60	
Dividends ($2.70 per share)				(1,403)		(1,403)	
Repurchases of Company ordinary shares		(5,873)				(5,873)	
Balance, December 31, 2014	$ 31	$ (7,853)	$ 10,387	$ 6,775	$ (1,026)	$ 8,314	$ 30
Net income (loss)				4,476		4,476	(2)
Other comprehensive loss					(412)	(412)	
Share-based compensation		382	(205)			177	
Dividends ($3.04 per share)				(1,410)		(1,410)	
Repurchases of Company ordinary shares		(4,615)				(4,615)	
Settlement from partner on exit from partnership			20			20	(4)
Balance, December 31, 2015	$ 31	$ (12,086)	$ 10,202	$ 9,841	$ (1,438)	$ 6,550	$ 24
Net income				3,836		3,836	1
Other comprehensive loss					(73)	(73)	
Share-based compensation		55	(11)			44	
Dividends ($3.33 per share)				(1,395)		(1,395)	
Repurchases of Company ordinary shares		(2,914)				(2,914)	
Balance, December 31, 2016	$ 31	$ (14,945)	$ 10,191	$ 12,282	$ (1,511)	$ 6,048	$ 25

See Notes to the Consolidated Financial Statements.

LYONDELLBASELL INDUSTRIES N.V.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

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LYONDELLBASELL INDUSTRIES N.V.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

1. Description of Company and Operations

LyondellBasell Industries N.V. is a limited liability company (*Naamloze Vennootschap*) incorporated under Dutch law by deed of incorporation dated October 15, 2009. Unless otherwise indicated, the Company, we, us, our or similar words are used to refer to LyondellBasell Industries N.V. together with its consolidated subsidiaries (LyondellBasell N.V.).

LyondellBasell N.V. is a worldwide manufacturer of chemicals and polymers, a refiner of crude oil, a significant producer of gasoline blending components and a developer and licensor of technologies for the production of polymers.

2. Summary of Significant Accounting Policies

The following significant accounting policies were applied in the preparation of these Consolidated Financial Statements:

Basis of Preparation and Consolidation

The accompanying Consolidated Financial Statements have been prepared from the books and records of LyondellBasell N.V. under accounting principles generally accepted in the U.S. (U.S. GAAP). Subsidiaries are defined as being those companies over which we, either directly or indirectly, have control through a majority of the voting rights or the right to exercise control or to obtain the majority of the benefits and be exposed to the majority of the risks. Subsidiaries are consolidated from the date on which control is obtained until the date that such control ceases. All intercompany transactions and balances have been eliminated in consolidation.

The Consolidated Financial Statements have been prepared under the historical cost convention, as modified for the accounting of certain financial assets and financial liabilities (including derivative instruments) at fair value through profit or loss. Consolidated financial information, including subsidiaries, equity investments, has been prepared using uniform accounting policies for similar transactions and other events in similar circumstances.

Cash and Cash Equivalents

Cash equivalents consist of highly liquid debt instruments such as certificates of deposit, commercial paper and money market accounts. Cash equivalents include instruments with maturities of three months or less when acquired. Cash equivalents are stated at cost, which approximates fair value. Cash and cash equivalents exclude restricted cash. Our cash equivalents are placed in certificates of deposit, high-quality commercial paper and money market accounts with major international banks and financial institutions.

Although, we have no current requirements for compensating balances in a specific amount at a specific point in time, we maintain compensating balances at our discretion for some of our banking services and products.

Short-Term Investments

We also have investments in marketable securities classified as available-for-sale and held-to-maturity. These securities, which are included in Short-term investments on the Consolidated Balance Sheets, are carried at estimated fair value with unrealized gains and losses recorded as a component of Accumulated other comprehensive income (AOCI). We periodically review our available-for-sale and held-to-maturity securities for other-than-temporary declines in fair value below the cost basis, and when events or changes in

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

circumstances indicate the carrying value of an asset may not be recoverable, the investment is written down to fair value, establishing a new cost basis.

Trade Receivables

Trade receivables are amounts due from customers for merchandise sold or services performed in the ordinary course of business.

We calculate provisions for doubtful accounts receivable based on our estimates of amounts that we believe are unlikely to be collected. Collectability of receivables is reviewed and the provision calculated for doubtful accounts is adjusted at least quarterly, based on aging of specific accounts and other available information about the associated customers. Provisions for doubtful accounts are included in Selling, general and administrative expenses.

Inventories

Inventories are carried at the lower of current market value or cost. Cost is determined using the last-in, first-out (LIFO) method for raw materials, work in progress (WIP) and finished goods, and the moving average cost method for materials and supplies.

Inventory exchange transactions, which involve fungible commodities, are not accounted for as purchases and sales. Any resulting volumetric exchange balances are accounted for as inventory, with cost determined using the LIFO method.

Property, Plant and Equipment

Property, plant and equipment are recorded at historical cost. Historical cost includes expenditures that are directly attributable to the acquisition of the items. Costs may also include borrowing costs incurred on debt during construction or major projects exceeding one year, costs of major maintenance arising from turnarounds of major units relating to betterments and committed decommission costs. Routine maintenance costs are expensed as incurred. Land is not depreciated. Depreciation is computed using the straight-line method over the estimated useful asset lives to their residual values.

The assets residual values and useful lives are reviewed, and adjusted if appropriate, at the end of each reporting period.

We evaluate property, plant and equipment for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Long-lived assets are grouped at the lowest level for which there are identifiable cash flows that are largely independent of the cash flows of other groups of assets, which, for us, is generally at the plant group level (or, at times, individual plants in certain circumstances where we have isolated production units with separately identifiable cash flows). When it is probable that an asset or asset group s undiscounted future cash flows will not be sufficient to recover the carrying amount, the asset is written down to its estimated fair value.

Upon retirement or sale, we remove the cost of the asset and the related accumulated depreciation from the accounts and reflect any resulting gain or loss in the Consolidated Statements of Income.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Equity Investments

We account for equity investments using the equity method of accounting if we have the ability to exercise significant influence over, but not control of, an investee. Significant influence generally exists if we have an ownership interest representing between 20% and 50% of the voting rights. Under the equity method of accounting, investments are stated initially at cost and are adjusted for subsequent additional investments and our proportionate share of profit or losses and distributions.

We record our share of the profits or losses of the equity method investments, net of income taxes, in the Consolidated Statements of Income. When our share of losses in an equity investment equals or exceeds our interest in the equity investment, including any other unsecured receivables, we do not recognize further losses, unless we have incurred obligations or made payments on behalf of the equity investment.

We evaluate our equity method investments for impairment when events or changes in circumstances indicate, in management s judgment, that the carrying value of such investments may have experienced an other-than-temporary decline in value. When evidence of loss in value has occurred, management compares the estimated fair value of investment to the carrying value of investment to determine whether an impairment has occurred. If the estimated fair value is less than the carrying value and management considers the decline in value to be other-than temporary, the excess of the carrying value over the estimated fair value is recognized in the Consolidated Financial Statements as an impairment.

Goodwill

We recorded goodwill upon our application of fresh-start accounting on May 1, 2010. Goodwill is not amortized, but is tested annually for impairment. We assess the recoverability of the carrying value of goodwill during the fourth quarter of each year or whenever events or changes in circumstances indicate that the carrying amount of the goodwill of a reporting unit may not be fully recoverable.

We first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value. Qualitative factors assessed for each of the reporting units include, but are not limited to, changes in long-term commodity prices, discount rates, competitive environments, planned capacity, cost factors such as raw material prices, and financial performance of the reporting units. If the qualitative assessment indicates that it is more likely than not that the carrying value of a reporting unit exceeds its estimated fair value, a two-step quantitative test is required.

In 2016 and 2015, management performed qualitative impairment assessments of our reporting units which indicated that the fair value of our reporting units was greater than their carrying value. Accordingly, a quantitative two-step goodwill impairment test was not required and no goodwill impairment was recognized.

Intangible Assets

Intangible Assets Intangible assets primarily consist of emission allowances, various contracts, in-process research and development and software costs. These assets are amortized using the straight-line method over their estimated useful lives or over the term of the related agreement, if shorter. We evaluate definite-lived intangible assets for impairment whenever events or changes in circumstances indicate that the carrying value of the asset may not be recoverable.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Research and Development Research and development (R&D) costs are expensed when incurred. Subsidies for research and development are included in Other income (expense), net. Depreciation expense related to R&D assets is included as a cost of R&D.

Income Taxes

The income tax for the period comprises current and deferred tax. Income tax is recognized in the Consolidated Statements of Income, except to the extent that it relates to items recognized in other comprehensive income or directly in equity. In these cases, the applicable tax amount is recognized in other comprehensive income or directly in equity, respectively.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes, as well as the net tax effects of net operating loss carryforwards. Valuation allowances are provided against deferred tax assets when it is more likely than not that some portion or all of the deferred tax asset will not be realized.

We recognize uncertain income tax positions in our financial statements when we believe it is more likely than not, based on the technical merits, that the position or a portion thereof will be sustained upon examination.

Employee Benefits

Pension Plans We have both defined benefit (funded and unfunded) and defined contribution plans. For the defined benefit plans, a projected benefit obligation is calculated annually by independent actuaries using the projected unit credit method. Pension costs primarily represent the increase in the actuarial present value of the obligation for pension benefits based on employee service during the year and the interest on this obligation in respect of employee service in previous years, net of expected return on plan assets.

Actuarial gains and losses arising from experience adjustments and changes in actuarial assumptions are charged or credited to equity and are reflected in Accumulated other comprehensive income in the period in which they arise.

Other Post-Employment Obligations Certain employees are entitled to postretirement medical benefits upon retirement. The entitlement to these benefits is usually conditional on the employee remaining in service up to retirement age and the completion of a minimum service period. The expected costs of these benefits are accrued over the period of employment applying the same accounting methodology used for defined benefit plans.

Termination Benefits Contractual termination benefits are payable when employment is terminated due to an event specified in the provisions of a social/labor plan or statutory law. A liability is recognized for one time termination benefits when we are committed to i) make payments and the number of affected employees and the benefits received are known to both parties, and ii) terminating the employment of current employees according to a detailed formal plan without possibility of withdrawal and can reasonably estimate such amount. Benefits falling due more than 12 months after the balance sheet date are discounted to present value.

Other Provisions

Environmental Remediation Costs Environmental remediation liabilities include liabilities related to sites we currently own, sites we no longer own, as well as sites where we have operated that belong to other parties. Liabilities for anticipated expenditures related to investigation and remediation of contaminated sites are accrued

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

when it is probable a liability has been incurred and the amount of the liability can be reasonably estimated. Only ongoing operating and monitoring costs, the timing of which can be determined with reasonable certainty, are discounted to present value. Future legal costs associated with such matters, which generally are not estimable, are not included in these liabilities.

Asset Retirement Obligations At some sites, we are contractually obligated to decommission our plants upon site exit. Asset retirement obligations are recorded at the present value of the estimated costs to retire the asset at the time the obligation is incurred. That cost, which is capitalized as part of the related long-lived asset, is depreciated on a straight-line basis over the remaining useful life of the related asset. Accretion expense in connection with the discounted liability is also recognized over the remaining useful life of the related asset. Such depreciation and accretion expenses are included in Cost of sales.

Foreign Currency Translation

Functional and Reporting Currency Items included in the financial information of each of LyondellBasell N.V. s entities are measured using the currency of the primary economic environment in which the entity operates (the functional currency) and then translated to the U.S. dollar reporting currency through Other comprehensive income.

Transactions and Balances Foreign currency transactions are translated into the functional currency using exchange rates prevailing at the dates of the transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognized in the Consolidated Statements of Income.

In the Consolidated Financial Statements, the results and financial position of all subsidiaries that have a functional currency different from the presentation currency are translated into the reporting currency as follows:

1. Assets and liabilities for each balance sheet presented are translated at the closing rate at the date of that balance sheet;

2. Income and expenses for each income statement are translated at average exchange rates; and

3. All resulting exchange differences are recognized as a separate component within Other comprehensive income (foreign currency translation).

Revenue Recognition

Substantially all of the Company s revenue is derived from product sales. Revenues are recognized when sales are realized or realizable, and the earnings process is complete. Revenue from product sales is recognized when the price is fixed or determinable, collectability is reasonably assured, and the customer has an obligation to pay at the time of transfer of title and risk of loss to the customer, which usually occurs at the time of shipment. Revenue is recognized at the time of delivery if we retain the risk of loss during shipment.

Share-Based Compensation

The Company grants stock-based compensation awards that vest over a specified period upon employees meeting certain service criteria. The fair value of equity instruments issued to employees is measured on the grant date and is recognized over the vesting period.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Contingent share awards are recognized ratably over the vesting period as a liability and re-measured, at fair value, at the balance sheet date.

Leases

We lease land and other assets for use in our operations. All lease agreements are evaluated and classified as either an operating lease or a capital lease. A lease is classified as a capital lease if any of the following criteria are met: transfer of ownership to the lessee by the end of the lease term; the lease contains a bargain purchase option; the lease term is equal to 75% or greater of the asset s useful economic life; or the present value of the future minimum lease payments is equal to or greater than 90% of the asset s fair market value. Capital leases are recorded at the lower of the net present value of the total amount of rent payable under the leasing agreement (excluding finance charges) or fair market value of the leased asset. Capital lease assets are depreciated on a straight-line basis, over a period consistent with our normal depreciation policy for tangible fixed assets, but generally not exceeding the lease term. Operating lease expense is recognized ratably over the entire lease term.

Derivative Financial Instruments and Hedging Activities

We selectively enter into derivative transactions to manage market risk volatility associated with changes in commodity pricing, currency exchange rates and interest rates. We categorize assets and liabilities, measured at fair value, into one of three different levels depending on the observability of the inputs employed in the measurement. Level 1 inputs are quoted prices in active markets for identical assets or liabilities. Level 2 inputs are observable inputs other than quoted prices included within Level 1 for the asset or liability, either directly or indirectly through market corroborated inputs. Level 3 inputs are unobservable inputs for the asset or liability reflecting significant modifications to observable related market data or our assumptions about pricing by market participants. For a discussion related to financial instruments and derivatives policies, see Note 14.

Non-Controlling Interests

Non-controlling interests primarily represent the interests of a subsidiary owning an equity investment in Al-Waha Petrochemicals Ltd.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from those estimates.

Recently Adopted Guidance

Compensation In June 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2014-12*, Stock Compensation (Topic 718): Accounting for Share-Based Payments When the Terms of an Award Provide That a Performance Target Could Be Achieved after the Requisite Service Period*. Under this new guidance, entities are required to treat performance targets that affect vesting and could be achieved after the requisite service period as a performance condition. The amendments in this ASU were effective for annual and interim periods beginning after December 15, 2015. The early adoption of this amendment did not have a material impact on our Consolidated Financial Statements.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Consolidation In February 2015, the FASB issued ASU 2015-02, *Consolidation (Topic 810): Amendments to the Consolidation Analysis*, which amends and changes the consolidation analysis currently required under U.S. GAAP. This ASU modifies the process used to evaluate whether limited partnerships and similar entities are variable interest entities (VIEs) or voting interest entities; affects the analysis performed by reporting entities regarding VIEs, particularly those with fee arrangements and related party relationships; and provides a scope exception for certain investment funds. The amendments in this update were effective for annual and interim periods beginning after December 15, 2015. The adoption of this amendment did not have a material impact on our Consolidated Financial Statements.

Consolidation: Interests Held through Related Parties That Are under Common Control In October, 2016, the FASB issued ASU 2016-17, which amends the consolidation requirements that apply to a single decision maker s evaluation of interests held through related parties that are under common control when it is determining whether it is the primary beneficiary of a variable interest entity (VIE). Entities that already have adopted the amendments in ASU 2015-02 are required to apply amendments in this ASU retrospectively to all relevant periods beginning with the fiscal year in which ASU 2015-02 initially was applied. The application of this amendment did not have a material impact on our Consolidated Financial Statements.

Going Concern In August 2014, the FASB issued ASU 2014-15, *Presentation of Financial Statements Going Concern (Subtopic 205-40): Disclosure of Uncertainties about an Entity s Ability to Continue as a Going Concern.* Under this new guidance, management is required to perform interim and annual assessments of an entity s ability to continue as a going concern within one year of the date the financial statements are issued (or available to be issued when applicable). Additionally, the entity must provide certain disclosures if conditions or events raise substantial doubt about its ability to continue as a going concern. The amendments in this update are effective for annual periods ending after December 15, 2016 and interim periods thereafter. The adoption of this amendment did not have a material impact on our Consolidated Financial Statements.

Derivatives and Hedging In March 2016, the FASB issued ASU 2016-06, *Derivatives and Hedging (Topic 815): Contingent Put and Call Options in Debt Instruments*. The ASU clarifies that in assessing whether an embedded contingent put or call option is clearly and closely related to the debt host, an entity is required to apply only the four-step decision sequence as described in the amended guidance. The ASU is effective for public entities for annual and interim periods beginning after December 15, 2016. The early adoption of this amendment did not have a material impact on our Consolidated Financial Statements.

Investments In March 2016, the FASB issued ASU 2016-07, *Investments Equity Method and Joint Ventures (Topic 323): Simplifying the Transition to the Equity Method of Accounting*. This ASU simplifies the recognition and reporting requirements for investments that become qualified for the equity method of accounting as a result of an increase in the level of ownership interest or degree of influence. The amendments in this ASU are effective for all entities for annual and interim periods beginning after December 15, 2016. Prospective application is required. The early adoption of this amendment did not have a material impact on our Consolidated Financial Statements.

Accounting Guidance Issued But Not Adopted as of December 31, 2016

Revenue Recognition In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606)*, which supersedes the current revenue recognition requirements in Accounting Standard Codification (ASC) 606, *Revenue Recognition.* Under this guidance, entities should recognize revenues to depict the transfer of promised goods or services to customers in an amount that reflects the consideration the entity expects to receive in exchange for those goods or services. This ASU also requires enhanced disclosures. In August 2015,

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the FASB issued ASU 2015-14, *Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date*, which deferred the original effective date for one year to annual and interim periods beginning after December 15, 2017. Retrospective and modified retrospective application is allowed.

Amendments to Revenue Recognition In 2016 the FASB issued several amendments to *Topic 606, Revenue from Contracts with Customers.* ASU 2016-08, *Principal versus Agent Considerations,* contains amendments that clarify the implementation guidance on principal versus agent considerations. ASU 2016-10, *Identifying Performance Obligations and Licensing* clarifies the guidance in the new revenue standard on identifying performance obligations and accounting for licenses of intellectual property. The FASB also issued ASU 2016-12, *Narrow-Scope Improvements and Practical Expedients,* which further clarifies the new revenue guidance primarily in the areas of collectability, noncash consideration, presentation of sales tax, and transition. The FASB also issued ASU 2016-20 *Technical Corrections and Improvements to Topic 606*, which provides numerous improvements related to the Topic 606. All amendments are effective with the same date as ASU 2014-09.

Management is currently assessing the effects of applying the new standard and has preliminarily determined that there will not be a material impact on our Consolidated Financial Statements. We expect to use a modified retrospective transition method.

Inventories In July 2015, the FASB issued ASU 2015-11, *Inventory (Topic 330): Simplifying the Measurement of Inventory*. Under this new guidance, entities that measure inventory using any method other than last-in, first-out or the retail inventory method will be required to measure inventory at the lower of cost and net realizable value. The amendments in this ASU, which should be applied prospectively, are effective for annual and interim periods beginning after December 15, 2016. The application of this amendment is not expected to have a material impact on our Consolidated Financial Statements.

Financial Instruments In January 2016, the FASB issued ASU 2016-01, *Financial Instruments-Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities*. The new guidance in this ASU includes a requirement for equity investments (except those accounted for under the equity method of accounting or those that result in consolidation of the investee) to be measured at fair value with changes in fair value recognized in net income. Prospective application of this ASU is required for public entities for annual and interim periods beginning on or after December 15, 2017. We are currently assessing the impact of this new guidance on our Consolidated Financial Statements.

Leases In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)* which supersedes the existing guidance for lease accounting in ASC 840, *Leases*. Under the new guidance, for leases with a term longer than 12 months a lessee should recognize a liability for lease payments (the lease liability) and a right-of-use asset representing its right to use the underlying asset for the lease term. Topic 842 retains a classification distinction between finance leases and operating leases, with the classification affecting the pattern of expense recognition in the income statement. This ASU also requires enhanced disclosures. A modified retrospective transition approach is required for annual and interim periods beginning on or after December 15, 2018. Early adoption is permitted. We are currently assessing the impact of this new guidance on our Consolidated Financial Statements via an extensive review of numerous existing lease contracts and other purchase obligations that contain embedded lease features, both classified as operating leases under the existing guidance.

Compensation In March 2016, the FASB issued ASU 2016-09, *Compensation Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting*. This ASU simplifies several aspects of the accounting for share-based payment transactions, including the income tax consequences, classification of

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awards as either equity or liabilities, and classification on the statement of cash flows. The amendments in this ASU are effective for public entities for annual and interim periods beginning after December 15, 2016. Various transition methods are prescribed depending on the aspect of accounting impacted by the amended guidance. Adoption of the amendments in this guidance will result in a reclassification of approximately $8 million and $52 million in 2016 and 2015, respectively, from cash flows from operating activities to cash flows from financing activities on our Consolidated Statement of Cash Flows.

Financial Instruments In June 2016, the FASB issued ASU 2016-13, *Financial Instruments Credit Losses (Topic 326)*: *Measurement of Credit Losses on Financial Instruments*. This amendment requires financial assets measured at amortized cost basis to be presented at the net amount expected to be collected, resulting in the use of a current expected credit loss (CECL) model when measuring an impairment of financial instruments. Credit losses related to available-for-sale securities should be recorded in the consolidated income statement through an allowance for credit losses. Estimated credit losses utilizing the CECL model are based on reasonable use of historical experience, current conditions and forecasts that affect the collectability of reported financial assets. This ASU also modifies the impairment model for available-for-sale debt securities by eliminating the concept of other than temporary as well as providing a simplified accounting model for purchased financial assets with credit deterioration since their origination. The guidance will be effective for public entities for annual and interim periods beginning after December 15, 2019. Early adoption is permitted. We are currently assessing the impact of the amendments in this guidance on our Consolidated Financial Statements.

Statement of Cash Flows In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments*. The updated accounting requirement is intended to reduce diversity in practice in the classification of certain transactions in the statement of cash flows. Such transactions include but are not limited to debt prepayment or debt extinguishment costs, settlement of zero coupon debt instruments, contingent consideration payments made after a business combination and distributions received from equity method of investments. The amendments in this ASU are effective for public entities for annual and interim periods beginning after December 15, 2018. Early adoption is permitted. We are currently assessing the impact of this new guidance on our Consolidated Financial Statements.

Income Taxes: Intra-Entity Transfers of Assets Other Than Inventory In October, 2016, the FASB issued Accounting Standards Update 2016-16, *Accounting for Income Taxes: Intra-Entity Asset Transfers of Assets Other than Inventory*. The ASU is aimed at reducing complexity in accounting standards. Under current GAAP, the tax effects of intra-entity asset transfers (intercompany sales) are deferred until the transferred asset is sold to a third party or otherwise recovered through use. The new guidance eliminates the exception for all intra-entity sales of assets other than inventory, and a reporting entity would recognize tax expense from the sale of assets in the seller s tax jurisdiction when the transfer occurs, even though the pre-tax effects of that transaction are eliminated in consolidation. Any deferred tax asset that arises in the buyer s jurisdiction would also be recognized at the time of the transfer. The new guidance will be effective for public entities for annual periods beginning after December 15, 2017. Early adoption is permitted. We are currently assessing the impact of this new guidance on our Consolidated Financial Statements.

Statement of Cash Flows: Restricted Cash In November 2016, the FASB issued ASU 2016-18. The ASU requires entities to include in their cash and cash-equivalent balances in the statement of cash flows those amounts that are deemed to be restricted cash and restricted cash equivalents. The ASU will become effective for public entities for annual periods beginning after December 15, 2017. The adoption of this amendment is not expected to have a material impact on our Consolidated Financial Statements.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Business Combinations: Clarifying the Definition of a Business In January 2017, the FASB issued ASU 2017-01. This ASU clarifies the definition of a business with the objective of adding guidance to assist entities with evaluating whether a transaction should be accounted for as an acquisition (or disposal) of an asset or a business. The amendments will be effective for public entities for annual and interim periods beginning after December 15, 2017. Early adoption is permitted. We are currently assessing the impact of this new guidance on our Consolidated Financial Statements.

Simplifying the Test for Goodwill Impairment: Intangibles Goodwill and Other In January, 2017, the FASB issued ASU 2017-04 to simplify the accounting for goodwill impairment. The guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. Goodwill impairment will now be the amount by which a reporting unit s carrying value exceeds its fair value; however, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. All other goodwill impairment guidance will remain largely unchanged. Entities will continue to have the option to perform a qualitative assessment to determine if a quantitative impairment test is necessary. The same one-step impairment test will be applied to goodwill at all reporting units, even those with zero or negative carrying amounts. Entities will be required to disclose the amount of goodwill at reporting units with zero or negative carrying amounts. The amendments will be effective for public entities for annual and interim goodwill impairment tests in periods beginning after December 15, 2019. Early adoption is permitted for any impairment tests performed after January 1, 2017. We do not believe the adoption of this new guidance will have a material impact on our Consolidated Financial Statements.

3. Discontinued Operations and Dispositions

Discontinued Operations We began reporting the Berre refinery as a discontinued operation in the second quarter of 2012. The impact of this discontinued operation is immaterial to our consolidated results.

Future cash outflows will occur for exit or disposal activities and for payments made to severed employees. Exit and disposal costs are expected to be incurred through the end of 2017. Payments to the affected employees are expected to be substantially complete by 2019.

In May 2016, we received a notice pertaining to the final closure of our Berre refinery from the Prefect of Bouches du Rhone. This notice outlines the requirements to dismantle the refinery facilities. At this time, the estimated cost and associated cash flows to fulfill these requirements are not deemed to be material.

Dispositions Upon the sale of our wholly owned subsidiary, Petroken Petroquimica Ensenada S.A. in February 2016, we received net proceeds of $137 million, which is reflected in Cash flows from investing activities in the Consolidated Statement of Cash Flows. In connection with the sale, we recognized a pretax and after tax gain of $78 million, which is reflected in Other Income, net in the Consolidated Income Statements.

4. Related Party Transactions

We have related party transactions with affiliates of one of our major shareholders, Access Industries (Access) and with the Company s joint venture partners (see Notes 8 and 9).

Access In December 2010, we entered into a tax cooperation agreement with Access which terminated on December 31, 2014. The tax cooperation agreement allowed either party to provide the other with information and support in connection with tax return preparation and audits on a time and materials basis through 2014. No payments were made to or received from Access under this agreement during 2014.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

In December 2010, one of our subsidiaries received demand letters from affiliates of Access demanding (i) indemnity for losses, including attorney s fees and expenses, arising out of a pending lawsuit and (ii) payment of (a) $100 million in management fees under a 2007 management agreement between an Access affiliate and the predecessor of LyondellBasell AF and (b) other unspecified amounts related to advice purportedly given in connection with financing and other strategic transactions. For additional information related to this matter, see Note 19.

Joint Venture Partners We have related party transactions with our equity investees. These related party transactions include the sales and purchases of goods in the normal course of business as well as certain financing arrangements. In addition, under contractual arrangements with certain of our equity investees, we receive certain services, utilities and materials at some of our manufacturing sites and we provide certain services to our equity investees.

We have guaranteed $18 million of the indebtedness of one of our joint ventures as of December 31, 2016. In 2015, we received a $19 million payment for a loan made to our joint venture, Al-Waha Petrochemicals Ltd. in 2010.

Related party transactions are summarized as follows:

	Year Ended December 31,		
Millions of dollars	**2016**	**2015**	**2014**
The Company billed related parties for:			
Sales of products			
Joint venture partners	729	805	894
Shared service agreements			
Joint venture partners	18	19	18
Related parties billed the Company for:			
Sales of products			
Joint venture partners	2,402	2,831	3,507
Shared service agreements			
Joint venture partners	71	73	85

5. Accounts Receivable

We sell our products primarily to other industrial concerns in the petrochemicals and refining industries. We perform ongoing credit evaluations of our customers financial conditions and, in certain circumstances, require letters of credit or corporate guarantees from them. Our allowance for doubtful accounts receivable, which is reflected in the Consolidated Balance Sheets as a reduction of accounts receivable, was $16 million and $24 million at December 31, 2016 and 2015, respectively. We recorded provisions for doubtful accounts receivable, which are reflected in the Consolidated Statements of Income, of less than $1 million in 2016 and 2015, and $1 million in 2014, respectively. In 2014, we wrote off approximately $10 million of accounts receivable reserved in prior years.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

6. Inventories

Inventories consisted of the following components at December 31:

Millions of dollars	2016	2015
Finished goods	$ 2,575	$ 2,668
Work-in-process	154	148
Raw materials and supplies	1,080	1,235
Total inventories	$ 3,809	$ 4,051

At December 31, 2016 and 2015, approximately 85% and 87%, respectively, of our inventories were valued using the last in, first out (LIFO) method and the remaining inventory, consisting primarily of materials and supplies, was valued at the moving average cost method. At December 31, 2016 and 2015, our LIFO cost exceeded current replacement cost under the first-in first-out method. The excess of our inventories at estimated net realizable value over LIFO cost after lower of cost or market charges was approximately $499 million and $73 million at December 31, 2016 and 2015, respectively.

For information related to lower of cost or market (LCM) inventory valuation charges recognized during 2016, 2015 and 2014, see Note 22.

7. Property, Plant and Equipment, Goodwill and Intangible Assets

Property, Plant and Equipment The components of property, plant and equipment, at cost, and the related accumulated depreciation are as follows at December 31:

Millions of dollars	Estimated Useful Lives (in Years)	2016	2015
Land		$ 278	$ 283
Major manufacturing equipment	25	9,061	7,718
Buildings	30	682	672
Light equipment and instrumentation	5-20	1,932	1,689
Office furniture	15	14	13
Major turnarounds	4-7	1,528	1,209
Information system equipment	3-5	58	54
Construction in progress		1,082	1,272
Total property, plant and equipment		14,635	12,910
Less accumulated depreciation		(4,498)	(3,919)
Property, plant and equipment, net		$ 10,137	$ 8,991

Capitalized Interest We capitalize interest costs incurred on funds used to construct property, plant and equipment. In 2016, 2015 and 2014, we capitalized interest of $33 million, $11 million and $25 million, respectively.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Intangible Assets The components of identifiable intangible assets, at cost, and the related accumulated amortization are as follows at December 31:

Millions of dollars	2016 Cost	2016 Accumulated Amortization	2016 Net	2015 Cost	2015 Accumulated Amortization	2015 Net
In-process research and development costs	$ 106	$ (54)	$ 52	$ 104	$ (46)	$ 58
Emission allowances	697	(421)	276	687	(359)	328
Various contracts	518	(306)	212	525	(285)	240
Software costs	70	(60)	10	83	(69)	14
Total intangible assets	$ 1,391	$ (841)	$ 550	$ 1,399	$ (759)	$ 640

Amortization of these identifiable intangible assets for the next five years is expected to be $103 million in 2017, $98 million in 2018, $97 million in 2019, $85 million in 2020 and $32 million in 2021.

Depreciation and Amortization Expense Depreciation and amortization expense is summarized as follows:

Millions of dollars	Year Ended December 31, 2016	2015	2014
Property, plant and equipment	$ 920	$ 875	$ 865
Investment in PO joint ventures	40	28	29
Emission allowances	62	97	69
Various contracts	27	32	38
In-process research and development costs	8	8	10
Software costs	7	7	8
Total depreciation and amortization	$ 1,064	$ 1,047	$ 1,019

Asset Retirement Obligations In certain cases, we are contractually obligated to decommission our plants upon site exit. In such cases, we have accrued the net present value of the estimated costs. The majority of our asset retirement obligations are related to facilities in Europe. The changes in our asset retirement obligations are as follows:

Millions of dollars	Year Ended December 31, 2016	2015
Beginning balance	$ 83	$ 88
Provisions		1
Payments	(4)	(1)
Changes in estimates	(1)	1
Accretion expense	3	3
Effects of exchange rate changes	(4)	(9)
Ending balance	$ 77	$ 83

Although, we may have asset retirement obligations associated with some of our other facilities, the present value of those obligations is not material in the context of an indefinite expected life of the facilities. We continually review the optimal future alternatives for our facilities. Any decision to retire one or more facilities may result in an increase in the present value of such obligations.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Goodwill Goodwill was $528 million at December 31, 2016 and $536 million at December 31, 2015. All movements were due to foreign exchange impacts.

8. Investment in PO Joint Ventures

We, together with Covestro PO LLC, a subsidiary of Covestro AG (collectively Covestro), share ownership in a U.S. propylene oxide (PO) manufacturing joint venture (the U.S. PO joint venture). The U.S. PO joint venture owns a PO/styrene monomer (SM or styrene) and a PO tertiary butyl alcohol (TBA) manufacturing facility. Covestro s ownership interest represents an undivided interest in certain U.S. PO joint venture assets with correlative PO capacity reservation that resulted in ownership of annual in-kind cost-based PO production of approximately 1.5 billion pounds in 2016 and 2015. We take in kind the remaining cost-based PO and co-product production.

In addition, we and Covestro each have a 50% interest in a separate manufacturing joint venture (the European PO joint venture), which owns a PO/SM plant at Maasvlakte near Rotterdam, The Netherlands. In substance, each partner s ownership interest represents an undivided interest in all of the European PO joint venture assets with correlative capacity reservation that resulted in ownership of annual in-kind cost-based PO and SM production.

We and Covestro do not share marketing or product sales under the U.S. PO joint venture. We operate the U.S. PO joint venture s and the European PO joint venture s (collectively the PO joint ventures) plants and arrange and coordinate the logistics of product delivery. The partners share in the cost of production and logistics is based on their product offtake.

We account for both the U.S. PO joint venture and the European PO joint venture using the equity method. We report the cost of our product offtake as inventory and equity loss as cost of sales in our Consolidated Financial Statements. Related production cash flows are reported in the operating cash flow section of the Consolidated Statements of Cash Flows.

Our equity investment in the PO joint ventures represents our share of the manufacturing plants and is decreased by recognition of our share of equity loss, which is equal to the depreciation and amortization of the assets of the PO joint ventures. Other changes in the investment balance are principally due to our additional capital contributions to the PO joint ventures to fund capital expenditures. Such contributions are reported in the investing cash flow section of the Consolidated Statements of Cash Flows.

Our product offtake was 6,024 million, 6,270 million and 5,878 million pounds of PO and its co-products for the years ended December 31, 2016, 2015 and 2014, respectively.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Changes in our investments in the U.S. and European PO joint ventures for 2016 and 2015 are summarized below:

Millions of dollars	U.S. PO Joint Venture	European PO Joint Venture	Total PO Joint Ventures
Investments in PO joint ventures January 1, 2016	$ 296	$ 101	$ 397
Cash contributions	52	9	61
Depreciation and amortization	(32)	(8)	(40)
Effect of exchange rate changes		(3)	(3)
Investments in PO joint ventures December 31, 2016	$ 316	$ 99	$ 415
Investments in PO joint ventures January 1, 2015	$ 259	$ 125	$ 384
Cash contributions	(1)	(2)	(3)
Prior years adjustment related to capital expenditures previously reported in property, plant and equipment	57		57
Depreciation and amortization	(19)	(9)	(28)
Effect of exchange rate changes		(13)	(13)
Investments in PO joint ventures December 31, 2015	$ 296	$ 101	$ 397

In 2015, we reclassified a total of $57 million related to cash contributions in prior years associated with turnaround and other investment activities that were previously classified in property, plant and equipment.

9. Equity Investments

Our PO joint ventures, which are also accounted for using the equity method of accounting, are discussed in Note 8 to the accompanying Consolidated Financial Statements and are, therefore, not included in the following discussion.

Our remaining principal direct and indirect equity investments are as follows at December 31:

Percent of Ownership	2016	2015
Basell Orlen Polyolefins Sp. Z.o.o.	50.00%	50.00%
PolyPacific Pty. Ltd.	50.00%	50.00%
SunAllomer Ltd.	%	50.00%
Saudi Polyolefins Company	25.00%	25.00%
Saudi Ethylene & Polyethylene Company Ltd.	25.00%	25.00%
Al-Waha Petrochemicals Ltd.	20.95%	20.95%
Polymirae Co. Ltd.	50.00%	42.59%
HMC Polymers Company Ltd.	28.56%	28.56%
Indelpro S.A. de C.V.	49.00%	49.00%
Ningbo ZRCC Lyondell Chemical Co. Ltd.	26.65%	26.65%
Ningbo ZRCC Lyondell Chemical Marketing Co.	50.00%	50.00%
NOC Asia Ltd.	40.00%	40.00%
Geosel	27.00%	27.00%

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The changes in our equity investments are as follows:

Millions of dollars	Year Ended December 31, 2016	2015
Beginning balance	$ 1,608	$ 1,636
Income from equity investments	367	339
Distribution of earnings, net of tax	(385)	(285)
Purchase of additional ownership interest in Polymirae Co. Ltd.	38	
Sale of ownership interest in SunAllomer Ltd.	(58)	
Currency exchange effects	8	(63)
Other	(3)	(19)
Ending balance	$ 1,575	$ 1,608

In September 2016, we received proceeds of $72 million from the sale of our ownership interest in SunAllomer Ltd., our joint venture in Japan. Also in September 2016, we purchased a net additional 7.41% interest in Polymirae Co. Ltd., our joint venture in Korea, for $36 million.

The subsidiary that holds the Company s equity interest in Al-Waha Petrochemicals Ltd. has a minority shareholder, which holds 16.21% of its equity. The equity interest held by the minority shareholder can be called by the Company or can be put to the Company by the minority interest shareholder at any time. The price of the call option is the nominal value of the shares (initial $18 million investment) plus accrued interest based on LIBOR plus 40 basis points, less paid dividends. The price of the put option is 1 plus the minority shareholder s undistributed pro-rata earnings. On November 9, 2016, Basell International Holdings, B.V. notified the minority shareholder of its intention to exercise the option to purchase all of the minority shareholders shares. The effective date of transfer is scheduled for April 2017 at an Option price of $21 million, which is based on the option valuation as of June 30, 2016.

Summarized balance sheet information of the Company s investments accounted for under the equity method are as follows at December 31:

Millions of dollars	Year Ended December 31, 2016	2015
Current assets	$ 2,436	$ 2,750
Noncurrent assets	4,687	5,032
Total assets	7,123	7,782
Current liabilities	2,008	2,153
Noncurrent liabilities	1,668	1,963
Net assets	$ 3,447	$ 3,666

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Summarized income statement information of the Company s investments accounted for under the equity method are set forth below:

	Year Ended December 31,		
Millions of dollars	**2016**	**2015**	**2014**
Revenues	$ 6,608	$ 8,017	$ 9,824
Cost of sales	(4,933)	(6,370)	(8,366)
Gross profit	1,675	1,647	1,458
Net operating expenses	(229)	(196)	(220)
Operating income	1,446	1,451	1,238
Interest income	8	7	6
Interest expense	(79)	(66)	(83)
Foreign currency translation	(13)	(29)	(13)
Other income, net	23	44	27
Income before income taxes	1,385	1,407	1,175
Provision for income taxes	(303)	(299)	(229)
Net income	$ 1,082	$ 1,108	$ 946

The difference between our carrying value and the underlying equity in the net assets of our equity investments are assigned to the investment s assets and liabilities based on an analysis of the factors giving rise to the basis difference. The amortization of the basis difference is included in Income from equity investments in the Consolidated Statements of Income.

10. Prepaid Expenses and Other Current Assets and Other Assets

The components of Prepaid expenses and other current assets were as follows at December 31:

Millions of dollars	**2016**	**2015**
Repurchase agreements	$ 369	$ 289
Renewable identification numbers	123	301
Advances to suppliers	37	54
Income taxes	82	315
VAT receivables	95	113
Prepaid insurance	28	33
Financial derivatives	61	20
Other taxes	9	12
Other	119	89
Total prepaid expenses and other current assets	$ 923	$ 1,226

For information related to our repurchase agreements, see Note 14. The renewable identification numbers reflected above represent a U.S. government established credit used to show compliance in meeting the Environmental Protection Agency s Renewable Fuel Standard.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The components of Other assets were as follows at December 31:

Millions of dollars	2016	2015
Deferred tax assets	$ 192	$ 205
Debt issuance costs	19	23
Company-owned life insurance	55	54
Financial derivatives	296	326
Pension assets	13	12
Other	43	54
Total other assets	$ 618	$ 674

11. Accrued Liabilities

Accrued liabilities consisted of the following components at December 31:

Millions of dollars	2016	2015
Payroll and benefits	$ 334	$ 415
Renewable identification numbers	136	322
Product sales rebates	147	165
Taxes other than income taxes	177	217
Income taxes	311	319
Interest	142	132
Share repurchases	21	45
Deferred revenues	22	57
Restructuring	12	20
Priority and administrative claims	10	10
Other	103	108
Total accrued liabilities	$ 1,415	$ 1,810

For information related to the increase in income taxes, see Note 18. For information related to share repurchases, see Note 20.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

12. Debt

Long-term loans, notes and other long-term debt net of unamortized discount and debt issuance cost consisted of the following as of December 31:

Millions of dollars	**2016**	**2015**
Senior Notes due 2019, $2,000 million, 5.0% ($10 million of debt issuance cost)	$ 1,906	$ 1,943
Senior Notes due 2021, $1,000 million, 6.0% ($9 million of debt issuance cost)	988	989
Senior Notes due 2024, $1,000 million, 5.75% ($9 million of debt issuance cost)	991	990
Senior Notes due 2055, $1,000 million, 4.625% ($16 million of discount; $12 million of debt issuance cost)	972	972
Guaranteed Notes due 2044, $1,000 million, 4.875% ($11 million of discount; $10 million of debt issuance cost)	979	979
Guaranteed Notes due 2043, $750 million, 5.25% ($22 million of discount; $7 million of debt issuance cost)	721	721
Guaranteed Notes due 2023, $750 million, 4% ($7 million of discount; $4 million of debt issuance cost)	739	737
Guaranteed Notes due 2027, $300 million, 8.1%	300	300
Guaranteed Notes due 2022, 750 million, 1.875% ($3 million of discount; $3 million of debt issuance cost)	785	
Other	6	44
Total	8,387	7,675
Less current maturities	(2)	(4)
Long-term debt	$ 8,385	$ 7,671

Our 5% Senior Notes due 2019 include gains of $42 million and $35 million for the years ended December 31, 2016 and 2015, respectively, related to adjustments for our fixed-for-floating interest rate swaps, which are recognized in Interest expense in the Consolidated Statements of Income. Since inception in 2014, we have recognized net gains of $84 million related to adjustments for these fixed-for-floating interest rate swaps. Our 6% Senior Notes due 2021 also includes a $3 million gain related to our fixed-for-floating interest rate swaps. This gain is also recognized in interest expense.

Short-term loans, notes and other short-term debt consisted of the following:

Millions of dollars	**2016**	**2015**
$2,500 million Senior Revolving Credit Facility	$	$
$900 million U.S. Receivables Securitization Facility		
450 million European Receivables Securitization Facility		
Commercial paper	500	323
Financial payables to equity investees	2	4
Precious metal financings	90	26
Other	2	
Total short-term debt	$ 594	$ 353

Aggregate maturities of debt during the next five years are $596 million in 2017, $1 million in 2018, $2,001 million in 2019, $1,000 million in 2021 and $5,593 million thereafter. There are no scheduled maturities of debt in 2020.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Long-Term Debt

Guaranteed Notes due 2022 In March 2016, LYB International Finance II B.V. (LYB Finance II), a direct, 100% owned finance subsidiary of LyondellBasell Industries N.V., as defined in Rule 3-10(b) of Regulation S-X, issued 750 million of 1.875% guaranteed notes due 2022 at a discounted price of 99.607%.

These unsecured notes, which are fully and unconditionally guaranteed by LyondellBasell Industries N.V., rank equally in right of payment to all of LYB Finance II s existing and future unsecured indebtedness and to all of LyondellBasell N.V. s existing and future unsubordinated indebtedness. There are no significant restrictions that would impede LyondellBasell N.V., as guarantor, from obtaining funds by dividend or loan from its subsidiaries.

The indenture governing these notes contains limited covenants, including those restricting our ability and the ability of our subsidiaries to incur indebtedness secured by significant property or by capital stock of subsidiaries that own significant property, enter into certain sale and lease-back transactions with respect to any significant property or enter into consolidations, mergers or sales of all or substantially all of our assets.

The notes may be redeemed before the date that is three months prior to the scheduled maturity date at a redemption price equal to the greater of 100% of the principal amount of the notes redeemed and the sum of the present values of the remaining scheduled payments of principal and interest (discounted at the applicable Comparable Government Bond Rate plus 35 basis points) on the notes to be redeemed. The notes may also be redeemed on or after the date that is three months prior to the scheduled maturity date of the notes at a redemption price equal to 100% of the principal amount of the notes redeemed plus accrued and unpaid interest. The notes are also redeemable upon certain tax events.

Senior Notes due 2055 In March 2015, we issued $1,000 million of 4.625% Notes due 2055 at a discounted price of 98.353%.

These unsecured notes rank equally in right of payment to all of LyondellBasell N.V. s existing and future unsubordinated indebtedness.

The indenture governing these notes contains limited covenants, including those restricting our ability and the ability of our subsidiaries to incur indebtedness secured by significant property or by capital stock of subsidiaries that own significant property, enter into certain sale and lease-back transactions with respect to any significant property or enter into consolidations, mergers or sales of all or substantially all of our assets.

The notes may be redeemed before the date that is six months prior to the scheduled maturity date at a redemption price equal to the greater of 100% of the principal amount of the notes redeemed and the sum of the present values of the remaining scheduled payments of principal and interest (discounted at the applicable Treasury Yield plus 35 basis points) on the notes to be redeemed. The notes may also be redeemed on or after the date that is six months prior to the final maturity date of the notes at a redemption price equal to 100% of the principal amount of the notes redeemed plus accrued and unpaid interest.

Guaranteed Notes due 2044 In February 2014, LYB International Finance B.V. (LYB Finance), a direct, 100% owned finance subsidiary of LyondellBasell Industries N.V., as defined in Rule 3-10(b) of Regulation S-X, issued $1,000 million of 4.875% guaranteed notes due 2044 at a discounted price of 98.831%.

These unsecured notes, which are fully and unconditionally guaranteed by LyondellBasell Industries N.V., rank equally in right of payment to all of LYB Finance s existing and future unsecured indebtedness and to all of LyondellBasell s existing and future unsubordinated indebtedness. There are no significant restrictions that

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

would impede the Guarantor from obtaining funds by dividend or loan from its subsidiaries. Subsidiaries are generally prohibited from entering into arrangements that would limit their ability to make dividends to or enter into loans with the Guarantor.

The indenture governing these notes contains limited covenants, including those restricting our ability and the ability of our subsidiaries to incur indebtedness secured by significant property or by capital stock of subsidiaries that own significant property, enter into certain sale and lease-back transactions with respect to any significant property or enter into consolidations, mergers or sales of all or substantially all of our assets.

The notes may be redeemed before the date that is six months prior to the scheduled maturity date at a redemption price equal to the greater of 100% of the principal amount of the notes redeemed and the sum of the present values of the remaining scheduled payments of principal and interest (discounted at the applicable Treasury Yield plus 20 basis points) on the notes to be redeemed. The notes may also be redeemed on or after the date that is six months prior to the final maturity date of the notes at a redemption price equal to 100% of the principal amount of the notes redeemed plus accrued and unpaid interest.

Guaranteed Notes due 2023 and 2043 In July 2013, LYB Finance issued $750 million of 4% guaranteed notes due 2023 and $750 million of 5.25% Notes due 2043 at discounted prices of 98.678% and 97.004%, respectively.

These unsecured notes, which are fully and unconditionally guaranteed by LyondellBasell Industries N.V., rank equally in right of payment to all of LYB Finance s existing and future unsecured indebtedness and to all of LyondellBasell s existing and future unsubordinated indebtedness. There are no significant restrictions that would impede the Guarantor from obtaining funds by dividend or loan from its subsidiaries. Subsidiaries are generally prohibited from entering into arrangements that would limit their ability to make dividends to or enter into loans with the Guarantor.

The indenture governing these notes contains limited covenants, including those restricting our ability and the ability of our subsidiaries to incur indebtedness secured by significant property or by capital stock of subsidiaries that own significant property, enter into certain sale and lease-back transactions with respect to any significant property or enter into consolidations, mergers or sales of all or substantially all of our assets.

The notes may be redeemed and repaid, in whole or in part, at any time and from time to time prior to maturity at a redemption price equal to the greater of 100% of the principal amount of the notes redeemed, and the sum of the present values of the remaining scheduled payments of principal and interest on the notes to be redeemed. Such interest will be discounted to the date of redemption on a semi-annual basis at the applicable Treasury Yield plus 25 basis points in the case of the 4% Notes due 2023 and plus 30 basis points in the case of the 5.25% Notes due 2043.

Senior Notes due 2019, 2021 and 2024 In April 2012, we issued $2,000 million aggregate principal amount of 5% senior notes due 2019 and $1,000 million aggregate principal amount of 5.75% senior notes due 2024, each at an issue price of 100%. In November 2011, we issued $1,000 million of 6% senior notes due 2021.

The indentures governing the 5%, 5.75% and 6% Senior Notes contain limited covenants, including those restricting our ability and the ability of our subsidiaries to incur indebtedness secured by any property or assets, enter into certain sale and lease-back transactions with respect to any assets or enter into consolidations, mergers or sales of all or substantially all of our assets.

These notes may be redeemed and repaid, in whole or in part, at any time and from time to time prior to the date that is 90 days prior to the scheduled maturity date of the notes at a redemption price equal to 100% of the

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principal amount of the notes redeemed plus a premium for each note redeemed equal to the greater of 1.00% of the then outstanding principal amount of the note and the excess of: (a) the present value at such redemption date of (i) the principal amount of the note at maturity plus (ii) all required interest payments due on the note through maturity (excluding accrued but unpaid interest), computed using a discount rate equal to the Treasury Rate as of such redemption date plus 50 basis points; over (b) the outstanding principal amount of the note. These notes may also be redeemed, in whole or in part, at any time on or after the date which is 90 days prior to the final maturity date of the notes, at a redemption price equal to 100% of the principal amount of the notes redeemed plus accrued and unpaid interest.

Guaranteed Notes due 2027 We have outstanding $300 million aggregate principal amount of 8.1% Guaranteed Notes due 2027. These notes, which are guaranteed by LyondellBasell Industries Holdings B.V., a subsidiary of LyondellBasell N.V., contain certain restrictions with respect to the level of maximum debt that can be incurred and security that can be granted by certain operating companies that are direct or indirect wholly owned subsidiaries of LyondellBasell Industries Holdings B.V.

The 2027 Notes contain customary provisions for default, including, among others, the non-payment of principal and interest, certain failures to perform or observe obligations under the Agreement on the notes the occurrence of certain defaults under other indebtedness, failure to pay certain indebtedness and the insolvency or bankruptcy of certain LyondellBasell N.V. subsidiaries.

Short-Term Debt

Senior Revolving Credit Facility In June 2016, the term of our revolving credit facility was extended for one year to June 2021 pursuant to a consent agreement. We also amended the revolving credit facility in June 2016 to increase its size to $2,500 million. All other material terms of the revolving credit facility remained unchanged.

The revolving credit facility may be used for dollar and euro denominated borrowings, has a $500 million sublimit for dollar and euro denominated letters of credit, a $1,000 million uncommitted accordion feature, and supports our commercial paper program. The aggregate balance of outstanding borrowings and letters of credit under the facility may not exceed $2,500 million at any given time. Borrowings under the facility bear interest at a Base Rate or LIBOR, plus an applicable margin. Additional fees are incurred for the average daily unused commitments.

The facility contains customary covenants and warranties, including specified restrictions on indebtedness and liens. In addition, we are required to maintain a leverage ratio at the end of every quarter of 3.50 to 1.00 or less for the period covering the most recent four quarters. We are in compliance with these covenants as of December 31, 2016.

At December 31, 2016, we had $500 million of outstanding commercial paper, no outstanding letters of credit and no outstanding borrowings under the facility.

Commercial Paper Program In June 2016, in connection with the increase of our revolving credit facility, we increased the size of our commercial paper program to $2,500 million. We may issue up to $2,500 million of privately placed, unsecured, short-term promissory notes (commercial paper) under this program, which is backed by our $2,500 million Senior Revolving Credit Facility. Proceeds from the issuance of commercial paper may be used for general corporate purposes, including dividends and share repurchases. Interest rates on the commercial paper outstanding at December 31, 2016 are based on the term of the notes and range from 75 to 100 basis points.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

U.S. Receivables Securitization Facility Our $900 million U.S. accounts receivable securitization facility, which expires in 2018, has a purchase limit of $900 million and a $300 million uncommitted accordion feature. This facility provides liquidity through the sale or contribution of trade receivables by certain of our U.S. subsidiaries to a wholly owned, bankruptcy-remote subsidiary on an ongoing basis and without recourse. The bankruptcy-remote subsidiary may then, at its option and subject to a borrowing base of eligible receivables, sell undivided interests in the pool of trade receivables to financial institutions participating in the facility. In the event of liquidation, the bankruptcy-remote subsidiary s assets will be used to satisfy the claims of its creditors prior to any assets or value in the bankruptcy-remote subsidiary becoming available to us. We are responsible for servicing the receivables. This facility also provides for the issuance of letters of credit up to $200 million. The term of the securitization facility may be extended in accordance with the provisions of the agreement.

The facility is also subject to customary warranties and covenants, including limits and reserves and the maintenance of specified financial ratios. We are required to maintain a leverage ratio at the end of every fiscal quarter of 3.50 to 1.00 or less for the period covering the most recent four quarters. Performance obligations under the facility are guaranteed by our parent company.

At December 31, there were no borrowings or letters of credit outstanding under the facility.

European Receivables Securitization Facility Our 450 million European receivables securitization facility expired in April 2016.

Precious Metal Financings We enter into lease agreements for precious metals which are used in our production processes. All precious metal borrowings are classified as Short-term debt.

Weighted Average Interest Rate At December 31, 2016 and 2015, our weighted average interest rates on outstanding short-term debt were 0.9% and 0.7%, respectively.

Debt Discount and Issuance Costs Amortization of debt discount and debt issuance costs resulted in amortization expense of $16 million for each year ended December 31, 2016 and 2015, and $20 million for the year ended December 31, 2014, which is included in Interest expense in the Consolidated Statements of Income.

Other Information On December 28, 2016, LYB International Finance III, LLC was formed as a private company with limited liability in Delaware. LYB International Finance III, LLC is a direct, 100% owned finance subsidiary of LyondellBasell N.V., as defined in Rule 3-10(b) of Regulation S-X. Any debt securities issued by LYB International Finance III, LLC will be fully and unconditionally guaranteed by LyondellBasell N.V.

13. Lease Commitments

We lease office facilities, railcars, vehicles, and other equipment under operating leases. Some leases contain renewal provisions, purchase options and escalation clauses.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The aggregate future estimated payments under these commitments are:

Millions of dollars	
2017	$ 341
2018	286
2019	211
2020	173
2021	146
Thereafter	493
Total minimum lease payments	$ 1,650

Rental expense for the years ended December 31, 2016, 2015 and 2014 was $426 million, $422 million and $412 million, respectively.

14. Financial Instruments

Cash Concentration Our cash equivalents are placed in high-quality commercial paper, money market funds, marketable securities with maturities less than three months and time deposits with major international banks and financial institutions.

Market Risks We are exposed to market risks, such as changes in commodity pricing, currency exchange rates and interest rates. To manage the volatility related to these exposures, we selectively enter into derivative transactions pursuant to our risk management policies. Derivative instruments are recorded at fair value on the balance sheet. Gains and losses related to changes in the fair value of derivative instruments not designated as hedges are recorded in earnings. For derivatives that have been designated as fair value hedges, the gains and losses of the derivatives and hedged instruments are recorded in earnings. For derivatives designated as cash flow and net investment hedges, the effective portion of the gains and losses is recorded in Other comprehensive income (loss). The ineffective portion of cash flow and net investment hedges is recorded in earnings.

Marketable Securities We invest cash in investment-grade securities for periods generally not exceeding three years. Investments in securities with original maturities of three months or less are classified as Cash and cash equivalents. At December 31, 2016 and 2015, we had marketable securities classified as Cash and cash equivalents of $351 million and $575 million, respectively.

We also have investments in marketable securities classified as available-for-sale and held-to-maturity. These securities are included in Short-term investments on the Consolidated Balance Sheets. Investments classified as available-for-sale are carried at estimated fair value with unrealized gains and losses recorded as a component of Accumulated other comprehensive income (AOCI). Investments classified as held-to-maturity are carried at amortized cost. We periodically review our available-for-sale and held-to-maturity securities for other-than-temporary declines in fair value below the cost basis, and when events or changes in circumstances indicate the carrying value of an asset may not be recoverable, the investment is written down to fair value, establishing a new cost basis.

Repurchase Agreements We invest in tri-party repurchase agreements. Under these agreements, we make cash purchases of securities according to a pre-agreed profile from our counterparties. The counterparties have an obligation to repurchase, and we have an obligation to sell, the same or substantially the same securities at a pre-defined date for a price equal to the purchase price plus interest. These securities, which pursuant to our

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internal policies are held by a third-party custodian and must generally have a minimum collateral value of 102%, secure the counterparty s obligation to repurchase the securities. Depending upon maturity, these tri-party repurchase agreements are treated as short-term loans receivable and are reflected in Prepaid expenses and other current assets or as long-term loans receivable reflected in Other investments and long-term receivables on our Consolidated Balance Sheets. The balance of our investment at December 31, 2016 and 2015 was $369 million and $387 million, respectively.

Commodity Prices We are exposed to commodity price volatility related to purchases of natural gas liquids, crude oil and other raw materials and sales of our products. We selectively use over-the-counter commodity swaps, options and exchange traded futures contracts with various terms to manage the volatility related to these risks. In addition, we are exposed to volatility on the prices of precious metals to the extent that we have obligations, classified as embedded derivatives, tied to the price of precious metals associated with secured borrowings. At December 31, 2016, the outstanding commodity derivatives designated as cash-flow hedges mature from January 2017 to December 2019.

Foreign Currency Rates We have significant worldwide operations. The functional currencies of our consolidated subsidiaries through which we operate are primarily the U.S. dollar and the euro. We enter into transactions denominated in currencies other than our designated functional currencies. As a result, we are exposed to foreign currency risk on receivables and payables. We maintain risk management control policies intended to monitor foreign currency risk attributable to our outstanding foreign currency balances. These control policies involve the centralization of foreign currency exposure management, the offsetting of exposures and the estimating of expected impacts of changes in foreign currency rates on our earnings. We enter into foreign currency forward contracts to reduce the effects of our net currency exchange exposures. At December 31, 2016, foreign currency forward contracts in the notional amount of $39 million, maturing in January 2017 to March 2017, were outstanding.

For forward contracts that economically hedge recognized monetary assets and liabilities in foreign currencies and that are not designated as net investment hedges, hedge accounting is not applied. Changes in the fair value of foreign currency forward contracts, which are reported in the Consolidated Statements of Income, are offset in part by the currency translation results recognized on the assets and liabilities.

Foreign Currency Gain (Loss) Other income, net, in the Consolidated Statements of Income reflected losses of $4 million and $7 million in 2016 and 2015, respectively, and a gain of $15 million in 2014.

Basis Swaps In September 2015, we entered into 850 million of cross-currency floating-to-floating interest rate swaps (basis swaps) to reduce the volatility in stockholders equity resulting from changes in currency exchange rates of our foreign subsidiaries with respect to the U.S. dollar. Under the terms of these contracts, which have been designated as net investment hedges, we will make interest payments in euros at 3 Month EURIBOR plus basis and will receive interest in U.S. dollars at 3 Month LIBOR. Upon the maturities of these contracts, we will pay the principal amount in euros and receive U.S. dollars from our counterparties.

We use the long-haul method to assess hedge effectiveness using a regression analysis approach under the hypothetical derivative method. We perform the regression analysis of our basis swap contracts at least on a quarterly basis over an observation period of three years, utilizing data that is relevant to the hedge duration. We use the forward method to measure ineffectiveness.

The effective portion of the unrealized gains and losses on these basis swap contracts is reported within Foreign currency translation adjustments in Accumulated other comprehensive loss and reclassified to earnings only

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when realized upon the sale or upon complete or substantially complete liquidation of the investment in the foreign entity. Cash flows from basis swaps are reported in Cash flows from investing activities in the Consolidated Statement of Cash Flows.

In September 2016, 450 million of our basis swaps expired. Upon settlement of these basis swap contracts, which had a notional value of $500 million, we paid 450 million ($506 million at the expiry spot rate) to our counterparties and received $500 million from our counterparties. The $6 million loss is reflected in foreign currency translation adjustments in Accumulated other comprehensive loss. Cash flows from the settlement of these basis swap contracts are reported in Cash flows from investing activities in the Consolidated Statements of Cash Flows.

There was no ineffectiveness recorded during the years ended December 31, 2016 and 2015 related to these basis swaps.

The following table summarizes the notional and fair value of our basis swaps outstanding:

	December 31, 2016		December 31, 2015	
Millions of dollars	Notional Value	Fair Value	Notional Value	Fair Value
Basis swaps expiring in 2016	$	$	$ 500	$ 10
Basis swaps expiring in 2017	305	15	305	6
Basis swaps expiring in 2018	139	6	139	2

Forward Exchange Contracts In October 2016, we entered into forward exchange contracts with an aggregate notional value of 275 million ($299 million) to mitigate the risk associated with the fluctuations in the Euro to U.S. Dollar exchange rate related to our investments in foreign subsidiaries. There was no ineffectiveness recorded during the year ended December 31, 2016 related to these forward exchange contracts.

We use the critical terms match to assess both prospective and retrospective hedge effectiveness by comparing the spot rate change in the Euro notes and the spot rate change in the designated net investment. We use the hypothetical derivative method to measure hedge ineffectiveness.

In December 2015, we entered into forward exchange contracts with an aggregate notional value of 750 million ($795 million) to mitigate the risk associated with the fluctuations in the Euro to U.S. Dollar exchange rate related to our investments in foreign subsidiaries. We elected to designate these forward exchange contracts as net investment hedges. The effective portion of the gains or losses was recorded within foreign currency translations adjustments in Accumulated other comprehensive income (loss). In periods where the hedging relationship was deemed ineffective, changes in the fair value were recorded directly to Other income, net in the Consolidated Statements of Income. Cash flows from these forward exchange contracts are reported in Cash flows from investing activities in the Consolidated Statement of Cash Flows.

On March 31, 2016, the forward exchange contracts entered into in December 2015 expired. Upon settlement of these contracts, we paid 750 million ($850 million at the expiry spot rate) to our counterparties and received $795 million from our counterparties. The $55 million difference, which includes a $30 million loss in the first quarter of 2016, is reflected within foreign currency translations adjustments in Accumulated other comprehensive loss. Cash flows from these forward exchange contracts are reported in Cash flows from investing activities in the Consolidated Statement of Cash Flows. There was no ineffectiveness recorded for this hedging relationship in 2016. In 2015, we recognized a $1 million loss related to ineffectiveness.

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Guaranteed Euro Notes Due 2022 In 2016, we issued euro denominated notes payable due 2022 (Euro notes) with notional amounts totaling 750 million. To mitigate the risk to our investments in foreign subsidiaries associated with fluctuations in the euro to U.S. dollar exchange rate, we designated these Euro notes as a net investment hedge.

We use the critical terms match to assess both prospective and retrospective hedge effectiveness by comparing the spot rate change in the Euro notes and the spot rate change in the designated net investment. We use the hypothetical derivative method to measure hedge ineffectiveness.

The effective portion of the gain or loss is recorded within foreign currency translation adjustments in Accumulated other comprehensive loss and will be reclassified to earnings only when realized upon the sale of or the complete or substantially complete liquidation of the investment in the foreign entity. In periods where the hedging relationship is deemed ineffective, changes in remeasurement of the Euro notes due to changes in the spot exchange rate will be recorded directly to Other income, net in the Consolidated Statements of Income. Cash flows related to our Euro notes are reported in Cash flows from financing activities and related interest payments are reported in Cash flows from operating activities in the Consolidated Statement of Cash Flows.

There was no ineffectiveness recorded for this hedging relationship in the year ended December 31, 2016.

Cross-Currency Swaps We have cross-currency swap contracts that reduce our exposure to the foreign currency exchange risk associated with certain intercompany loans. Under the terms of these contracts, which have been designated as cash flow hedges, we make interest payments in euros and receive interest in U.S. dollars. Upon the maturities of these contracts, we will pay the principal amount of the loans in euros and receive U.S. dollars from our counterparties.

We use the long-haul method to assess hedge effectiveness using a regression analysis approach under the hypothetical derivative method. We perform the regression analysis over an observation period of three years, utilizing data that is relevant to the hedge duration. We use the dollar offset method under the hypothetical derivative method to measure ineffectiveness.

The effective portion of the unrealized gains and losses on these cross-currency swap contracts is reported in Accumulated other comprehensive loss and reclassified to earnings over the period that the hedged intercompany loans affect earnings based on changes in spot rates. The ineffective portion of the unrealized gains and losses is recorded directly to Other income, net in the Consolidated Statements of Income. In addition, the swaps are marked-to-market each reporting period with the euro notional values measured based on the current foreign exchange spot rate. There was no ineffectiveness recorded during the years ended December 31, 2016, 2015 and 2014.

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The following table summarizes our cross-currency swaps outstanding:

Millions of dollars, except expiration date and rates	Expiration Date	Average Interest Rate	December 31, 2016 Notional Value	December 31, 2016 Fair Value	December 31, 2015 Notional Value	December 31, 2015 Fair Value
Pay Euro	2021	4.55%	$ 1,000	$ 146	$ 1,000	$ 141
Receive U.S. dollars		6.00%				
Pay Euro	2024	4.37%	1,000	134	1,000	145
Receive U.S. dollars		5.75%				
Pay Euro	2027	3.69%	300	5	300	14
Receive U.S. dollars		5.49%				

Forward-Starting Interest Rate Swaps In March 2015, we entered into forward-starting interest rate swaps to mitigate the risk of adverse changes in the benchmark interest rates on the anticipated refinancing of our senior notes due 2019. These interest rate swaps will be terminated upon debt issuance. The total notional amount of these forward-starting interest rate swaps was $1,000 million at December 31, 2015. The ineffectiveness recorded for this hedging relationship was less than $1 million during each of the years ended December 31, 2016 and 2015.

In January 2015, we entered into forward-starting interest rate swaps with a total notional value of $750 million to mitigate the risk of adverse changes in the benchmark interest rates on the Company s planned issuance of fixed-rate debt in 2015. These forward-starting interest rate swaps were terminated upon issuance of the $1,000 million senior notes due 2055 in March 2015. The ineffectiveness recorded for this hedging relationship was less than $1 million during the year ended December 31, 2015.

In February 2014, we entered into forward-starting interest rate swaps with a total notional value of $500 million to hedge the risk of adverse changes in the benchmark interest rates for anticipated fixed-rate debt issuances in 2014. The swap was terminated upon issuance of the $1,000 million of guaranteed notes due 2044.

We elected to designate these forward-starting interest rate swaps as cash flow hedges. The effective portion of the gains or losses is recorded in Accumulated other comprehensive loss. In periods where the hedging relationship is deemed ineffective, the ineffective portion of the changes in the fair value will be recorded as Interest expense in the Consolidated Statements of Income. The related deferred gains and losses recognized in Accumulated other comprehensive loss are amortized to interest expense over the original term of the related swaps using the effective interest method.

We use a regression analysis approach under the hypothetical derivative method to assess both prospective and retrospective hedge effectiveness. We use the dollar-offset method under the hypothetical derivative method to measure hedge ineffectiveness.

In 2016, there was no settlement of our forward-starting swap agreements. In 2015 and 2014, we recognized a gain of $15 million and a loss of $17 million, respectively, in Accumulated other comprehensive loss related to the settlement of our forward-starting interest rate swap agreements.

As of December 31, 2016, less than $1 million (on a pretax basis) is scheduled to be reclassified as an increase to interest expense over the next twelve months.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Commodity swaps designated as cash-flow hedges We have commodity swaps designated as cash-flow hedges to manage the volatility of the commodity price related to anticipated purchases of raw materials. We enter into over-the-counter commodity swaps with one or more counterparties whereby these commodity swaps require us to pay a predetermined fixed price and receive a price based on the average monthly forward rate of a specified index for the specified nominated volumes.

We use the long-haul method to assess hedge effectiveness using a regression analysis approach under the hypothetical derivative method. We perform the regression analysis monthly. We use the dollar offset method under the hypothetical derivative method to measure ineffectiveness.

The effective portion of the unrealized gains and losses on these commodity swaps designated as cash-flow hedges is reported in Accumulated other comprehensive loss and reclassified to earnings in the same period or periods that the hedged forecasted transaction affects earnings. The ineffective portion of the unrealized gains and losses is recorded directly to Other income, net in the Consolidated Statements of Income. There was no ineffectiveness recorded during the year ended December 31, 2016.

As of December 31, 2016, less than $1 million (on a pretax basis) is scheduled to be reclassified as an increase to cost of sales over the next twelve months.

Fixed-for-Floating Interest Rate Swaps In 2016, we entered into U.S. dollar fixed-for-floating interest rate swaps with third party financial institutions to mitigate changes in the fair value of our $1,000 million 6% senior notes due 2021 associated with the risk of variability in the 1 Month USD LIBOR rate (the benchmark interest rate).

In 2014, we entered into U.S. dollar fixed-for-floating interest rate swaps with third party financial institutions to mitigate changes in the fair value of our $2,000 million 5% senior notes due 2019 associated with the risk of variability in the 3 Month USD LIBOR rate (the benchmark interest rate).

These interest rate swaps are used as part of our current interest rate risk management strategy to achieve a desired proportion of variable versus fixed rate debt.

Under these arrangements, we exchange fixed-rate for floating-rate interest payments to effectively convert our fixed-rate debt to floating-rate debt. The fixed and variable cash payments related to the interest rate swaps related to our 5% senior notes due 2019 are net settled semi-annually. The fixed and variable payments for the interest rate swaps related to our 6% senior notes due 2021 are settled semi-annually and monthly, respectively. These payments are classified as Other, net, in the Cash flows from operating activities section of the Consolidated Statements of Cash Flows.

We elected to designate these fixed-for-floating interest rate swaps as fair value hedges. We use the long-haul method to assess hedge effectiveness using a regression analysis approach. We perform the regression analysis over an observation period of three years, utilizing data that is relevant to the hedge duration. We use the dollar offset method to measure ineffectiveness.

Changes in the fair value of the derivatives and changes in the value of the hedged items based on changes in the benchmark interest rate are recorded as Interest expense in our Consolidated Statements of Income. We evaluate the effectiveness of the hedging relationship quarterly and calculate the changes in the fair value of the derivatives and the underlying hedged items separately. During the years ended December 31, 2016, 2015 and 2014, we recognized net gains of $32 million, $44 million and $17 million, respectively, related to the ineffectiveness of our hedging relationships.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

At December 31, 2016, we had outstanding interest rate swap agreements with notional amounts of totaling $600 million, maturing on November 15, 2021, and notional amounts of $2,000 million, maturing on April 15, 2019.

Investments in marketable securities The following table summarizes our investments in marketable securities at December 31:

Millions of dollars	2016	2015
Short-term investments:		
Available-for-sale securities, at fair value	$ 1,073	$ 1,064
Held-to-maturity securities, at cost	74	
Total	$ 1,147	$ 1,064

The following table summarizes the amortized cost, gross unrealized gains and losses, and fair value of our available-for-sale and held-to-maturity securities that are outstanding as of December 31, 2016 and 2015. Refer to Note 15 for additional information regarding the fair value of these available-for-sale and held-to-maturity securities.

	December 31, 2016			
Millions of dollars	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Available-for-sale securities:				
Commercial paper	$ 232	$	$	$ 232
Bonds	141			141
Certificates of deposit	347	1		348
Limited partnership investments	350	2		352
Total available-for-sale securities	$ 1,070	$ 3	$	$ 1,073
Held-to-maturity securities:				
Time deposits	$ 74	$	$	$ 74

	December 31, 2015			
Millions of dollars	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Available-for-sale securities:				
Commercial paper	$ 329	$	$	$ 329
Bonds	175			175
Certificates of deposit	215			215
Limited partnership investments	350		(5)	345
Total available-for-sale securities	$ 1,069	$	$ (5)	$ 1,064

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Our limited partnership investments include investments in, among other things, equities and equity related securities, debt securities, credit instruments, global interest rate products, currencies, commodities, futures, options, warrants and swaps. These investments, which include both long and short positions, may be redeemed at least monthly with advance notice ranging up to ninety days. The fair value of these funds is estimated using the net asset value (NAV) per share of the respective pooled fund investment.

No losses related to other-than-temporary impairments of our available-for-sale and held-to-maturity investments have been recorded in Accumulated other comprehensive loss during the years ended December 31, 2016, 2015 and 2014.

As of December 31, 2016, our available-for-sale securities had the following maturities: commercial paper securities held by the Company had maturities between one and six months; bonds had maturities between one and thirty eight months; certificates of deposit mature between one and fifteen months; and limited partnership investments mature between one and three months. Our time deposits classified as held-to-maturity securities had maturities between three and six months.

The proceeds from maturities and sales of our available-for-sale securities during the years ended December 31, 2016, 2015 and 2014 are summarized in the following table:

	Year Ended December 31,		
Millions of dollars	**2016**	**2015**	**2014**
Proceeds from maturities of securities	$ 674	$ 2,288	$ 1,730
Proceeds from sales of securities		201	21

No gain or loss was realized in connection with the sales of our available-for-sale securities during the year ended December 31, 2016. We recognized realized gains of less than $1 million in connection with the sale of securities during the years ended December 31, 2015 and 2014.

The specific identification method was used to identify the cost of the securities sold and the amounts reclassified out of Accumulated other comprehensive loss into earnings.

During the year ended December 31, 2016, we had no sales or maturities of our held-to-maturity securities and no transfers of investments classified as held-to-maturity to available-for-sale.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table summarizes the fair value and unrealized losses related to available-for-sale and held-to-maturity securities that were in a continuous unrealized loss position for less than and greater than twelve months as of December 31, 2016 and 2015.

	December 31, 2016			
	Less than 12 months		Greater than 12 months	
Millions of dollars	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Available-for-sale securities:				
Limited partnership investments	$	$	$ 105	$ (3)

	December 31, 2015			
	Less than 12 months		Greater than 12 months	
Millions of dollars	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Available-for-sale securities:				
Limited partnership investments	$ 345	$ (5)	$	$

Financial Instruments The following table summarizes financial instruments outstanding as of December 31, 2016 and 2015 that are measured at fair value on a recurring basis. Refer to Note 15, *Fair Value Measurement,* for additional information regarding the fair value of financial instruments.

		December 31, 2016		December 31, 2015	
Millions of dollars	Balance Sheet Classification	Notional Amount	Fair Value	Notional Amount	Fair Value
Assets					
Derivatives designated as net investment hedges:					
Basis swaps	Prepaid expenses and other current assets	$ 305	$ 15	$ 500	$ 10
	Other assets	139	6	444	8
Forward exchange contracts	Prepaid expenses and other current assets	299	10		
Derivatives designated as cash flow hedges:					
Cross-currency swaps	Other assets	2,300	276	2,300	291
Cross-currency swaps	Prepaid expenses and other current assets		9		9
Commodity swaps	Other assets	54	3		
Commodity swaps	Prepaid expenses and other current assets	4			
Forward-starting interest rate swaps	Other assets	200	1	600	8
Derivatives designated as fair value hedges:					
Fixed-for-floating interest rate swaps	Other assets	2,000	10	2,000	19
Fixed-for-floating interest rate swaps	Prepaid expenses and other current assets		5		6

Derivatives not designated as hedges:					
Commodities	Prepaid expenses and other current assets	68	2	73	8

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		December 31, 2016		December 31, 2015	
Millions of dollars	Balance Sheet Classification	Notional Amount	Fair Value	Notional Amount	Fair Value
Embedded derivatives	Prepaid expenses and other current assets	17	1	42	4
Foreign currency	Prepaid expenses and other current assets	11		105	1
Non-derivatives:					
Available-for-sale securities	Short-term investments	1,069	1,073	1,073	1,064
		$ 6,466	$ 1,411	$ 7,137	$ 1,428
Liabilities					
Derivatives designated as net investment hedges:					
Forward exchange contracts	Accrued liabilities	$	$	$ 795	$ 24
Derivatives designated as cash flow hedges:					
Forward-starting interest rate swaps	Other liabilities	800	16	400	6
Derivatives designated as fair value hedges:					
Fixed-for-floating interest rate swaps	Other liabilities	600	4		
Derivatives not designated as hedges:					
Commodities	Accrued liabilities	30	1	67	2
Embedded derivatives	Accrued liabilities	73	10	21	
Foreign currency	Accrued liabilities	28	1	75	3
Non-derivatives:					
Performance share awards	Accrued liabilities	19	19	23	23
Performance share awards	Other liabilities	22	22	17	17
		$ 1,572	$ 73	$ 1,398	$ 75

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table summarizes the pretax effect of derivative instruments and non-derivative instruments designated as net investment hedges charged directly to income:

	Effect of Financial Instruments Year Ended December 31, 2016			
Millions of dollars	**Gain (Loss) Recognized in AOCI**	**Gain (Loss) Reclassified from AOCI to Income**	**Additional Gain (Loss) Recognized in Income**	**Income Statement Classification**
Derivatives designated as net investment hedges:				
Basis swaps	$ 6	$	$	Other income, net
Forward exchange contracts	(21)			Other income, net
Derivatives designated as cash-flow hedges:				
Cross-currency swaps	(15)	(63)		Other income, net
Forward-starting interest rate swaps	(17)			Interest expense
Commodity swaps	3			Cost of sales
Derivatives designated as fair value hedges:				
Fixed-for-floating interest rate swaps			8	Interest expense
Derivatives not designated as hedges:				
Commodities			12	Sales and other operating revenues
Commodities			4	Cost of sales
Embedded derivatives			2	Cost of sales
Foreign currency			16	Other income, net
Non-derivatives designated as net investment hedges:				
Euro notes payable	58			Other income, net
	$ 14	$ (63)	$ 42	

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	Effect of Financial Instruments Year Ended December 31, 2015			
Millions of dollars	Gain (Loss) Recognized in AOCI	Gain (Loss) Reclassified from AOCI to Income	Additional Gain (Loss) Recognized in Income	Income Statement Classification
Derivatives designated as net investment hedges:				
Basis swaps	$ 19	$	$	Other income, net
Forward exchange contracts	(24)		(1)	Other income, net
Derivatives designated as cash-flow hedges:				
Cross-currency swaps	262	(207)		Other income, net
Forward-starting interest rate swaps	17			Interest expense
Derivatives designated as fair value hedges:				
Fixed-for-floating interest rate swaps			38	Interest expense
Derivatives not designated as hedges:				
Commodities			(14)	Sales and other operating revenues
Commodities			34	Cost of sales
Embedded derivatives			16	Cost of sales
Foreign currency			(24)	Other income, net
	$ 274	$ (207)	$ 49	

	Year Ended December 31, 2014			
Millions of dollars	Gain (Loss) Recognized in AOCI	Gain (Loss) Reclassified from AOCI to Income	Additional Gain (Loss) Recognized in Income	Income Statement Classification
Derivatives designated as cash-flow hedges:				
Cross-currency swaps	$ 30	$ (89)	$	Other income, net
Forward-starting interest rate swaps	(17)		(1)	Interest expense
Derivatives designated as fair value hedges:				
Fixed-for-floating interest rate swaps			16	Interest expense
Derivatives not designated as hedges:				
Commodities			(8)	Cost of sales
Embedded derivatives			2	Cost of sales
Foreign currency			(54)	Other income, net
	$ 13	$ (89)	$ (45)	

For the years ended December 31, 2016, 2015 and 2014, the pretax effect of additional gain (loss) recognized in income for the fixed-for-floating interest rate swaps includes the net value for accrued interest of $21 million, $29 million and $6 million, respectively.

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15. Fair Value Measurement

The following table presents the financial instruments outstanding as of December 31, 2016 and 2015 that are measured at fair value on a recurring basis.

	December 31, 2016			
Millions of dollars	**Fair Value**	**Level 1**	**Level 2**	**Level 3**
Assets				
Derivatives:				
Basis swaps	$ 21	$	$ 21	$
Cross-currency swaps	285		285	
Forward exchange contracts	10	$	10	
Forward-starting interest rate swaps	1		1	
Fixed-for-floating interest rate swaps	15		15	
Commodities	5	2	3	
Embedded derivatives	1		1	
Non-derivatives:				
Available-for-sale securities	738		738	
Available-for-sale securities measured at net asset value*	335			
	$ 1,411	$ 2	$ 1,074	$
Liabilities				
Derivatives:				
Forward-starting interest rate swaps	$ 16	$	$ 16	$
Fixed-for-floating interest rate swaps	4		4	
Commodities	1	1		
Embedded derivatives	10		10	
Foreign currency	1		1	
Non-derivatives:				
Performance share awards	41	41		
	$ 73	$ 42	$ 31	$

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

	December 31, 2015			
Millions of dollars	**Fair Value**	**Level 1**	**Level 2**	**Level 3**
Assets				
Derivatives:				
Basis swaps	$ 18	$	$ 18	$
Cross-currency swaps	300		300	
Forward-starting interest rate swaps	8		8	
Fixed-for-floating interest rate swaps	25		25	
Commodities	8	8		
Embedded derivatives	4		4	
Foreign currency	1		1	
Non-derivatives:				
Available-for-sale securities	719		719	
Available-for-sale securities measured at net asset value*	345			
	$ 1,428	$ 8	$ 1,075	$
Liabilities				
Derivatives:				
Forward exchange contracts	$ 24	$	$ 24	$
Forward-starting interest rate swaps	6		6	
Commodities	2		2	
Foreign currency	3		3	
Non-derivatives:				
Performance share awards	40	40		
	$ 75	$ 40	$ 35	$

* In accordance with Fair Measurement Topic 820, Subtopic 10, certain investments measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. The amounts presented in this table are intended to facilitate reconciliation to the Consolidated Balance Sheets.

The fair value of the commodities assets classified as Level 2 is associated with our commodity swaps designated as cash-flow hedges. The fair values of the commodities assets and liabilities classified as Level 1 are associated with our commodity derivatives not designated as hedges.

There were no transfers between Level 1 and Level 2 during the years ended December 31, 2016 and 2015.

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The following table presents the carrying value and estimated fair value of our financial instruments that are not measured at fair value on a recurring basis as of December 31, 2016 and 2015. Short-term and long-term loans receivable, which represent our repurchase agreements, and short-term and long-term debt are recorded at amortized cost in the Consolidated Balance Sheets. The carrying and fair values of short-term and long-term debt exclude capital leases.

	December 31, 2016				
Millions of dollars	**Carrying Value**	**Fair Value**	**Level 1**	**Level 2**	**Level 3**
Non-derivatives:					
Assets:					
Short-term loans receivable	$ 369	$ 369	$	$ 369	$
Liabilities:					
Short-term debt	$ 90	$ 98	$	$ 98	$
Long-term debt	8,382	9,147		9,146	1
Total	$ 8,472	$ 9,245	$	$ 9,244	$ 1

	December 31, 2015				
Millions of dollars	**Carrying Value**	**Fair Value**	**Level 1**	**Level 2**	**Level 3**
Non-derivatives:					
Assets:					
Short-term loans receivable	$ 289	$ 289	$	$ 289	$
Long-term loans receivable	98	98		98	
Total	$ 387	$ 387	$	$ 387	$
Liabilities:					
Short-term debt	$ 26	$ 23	$	$ 23	$
Long-term debt	7,671	8,034		8,032	2
Total	$ 7,697	$ 8,057	$	$ 8,055	$ 2

The fair value of all non-derivative financial instruments included in Current assets described below, Current liabilities, including Short-term debt excluding precious metal financings, and Accounts payable, approximates the applicable carrying value due to the short maturity of those instruments. Current assets include Cash and cash equivalents, Restricted cash, held-to-maturity time deposits and Accounts receivable.

We use the following inputs and valuation techniques to estimate the fair value of our financial instruments:

Basis Swaps The fair value of our basis swap contracts is calculated using the present value of future cash flows discounted using observable inputs such as known notional value amounts, yield curves, and spot and forward exchange rates.

Cross-Currency Swaps The fair value of our cross-currency swaps is calculated using the present value of future cash flows discounted using observable inputs with the foreign currency leg revalued using published spot and future exchange rates on the valuation date.

Forward-Starting Interest Rate Swaps The fair value of our forward-starting interest rate swaps is calculated using the present value of future cash flows method and based on observable inputs such as benchmark interest rates.

Fixed-for-Floating Interest Rate Swaps The fair value of our fixed-for-floating interest rate swaps is calculated using the present value of future cash flows method and based on observable inputs such as interest rates and market yield curves.

Commodity and Embedded Derivatives The fair values of our commodity derivatives classified as Level 1 and embedded derivatives are measured using closing market prices at the end of the reporting period obtained from the New York Mercantile Exchange and from third-party broker quotes and pricing providers.

The fair value of our commodity swaps classified as Level 2 in 2015 is determined using a combination of observable and unobservable inputs. The observable inputs consist of future market values of various crude and heavy fuel oils, which are readily available through public data sources. The unobservable input, which is the estimated discount or premium used in the market pricing, is calculated using an internally-developed, multi-linear regression model based on the observable prices of the known components and their relationships to historical prices. A significant change in this unobservable input would not have a material impact on the fair value measurement of our Level 2 commodity swaps.

Foreign Currency Derivatives and Forward Exchange Contracts The fair value of our foreign currency derivatives is based on forward market rates.

Available-for-Sale Securities Fair value is calculated using observable market data for similar securities and broker quotes from recognized purveyors of market data or the net asset value for limited partnership investments provided by the fund administrator.

Performance Share Awards Fair value is determined using the quoted market price of our stock.

Short-Term and Long-Term Loans Receivable Valuations are based on discounted cash flows, which consider prevailing market rates for the respective instrument maturity in addition to corroborative support from the minimum underlying collateral requirements.

Short-Term Debt Fair values of short-term borrowings related to precious metal financing arrangements are determined based on the current market price of the associated precious metal.

Long-Term Debt Fair value is calculated using pricing data obtained from well-established and recognized vendors of market data for debt valuations.

16. Pension and Other Postretirement Benefits

We have defined benefit pension plans which cover employees in the U.S. and various non-U.S. countries. We also sponsor postretirement benefit plans other than pensions that provide medical benefits to certain of our U.S., Canadian, and French employees. In addition, we provide other postemployment benefits such as early retirement and deferred compensation severance benefits to employees of certain non-U.S. countries. We use a measurement date of December 31 for all of our benefit plans.

For 2016, the actual returns on the assets of our U.S. and non-U.S. defined benefit pension plans were a gain of 7.22% and 15.81%, respectively.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table provides a reconciliation of projected benefit obligations, plan assets and the funded status of our U.S. and non-U.S. defined benefit pension plans:

	Year Ended December 31,			
	2016		2015	
Millions of dollars	**U.S.**	**Non-U.S.**	**U.S.**	**Non-U.S.**
Change in benefit obligation:				
Benefit obligation, beginning of period	$ 2,066	$ 1,317	$ 2,178	$ 1,408
Service cost	44	32	45	32
Interest cost	88	32	85	37
Actuarial loss (gain)	15	254	(109)	8
Plan amendments		(4)		
Benefits paid	(79)	(33)	(120)	(56)
Participant contributions		1		1
Settlement	(288)	(25)	(13)	(1)
Business divestiture		(11)		
Foreign exchange effects		(72)		(112)
Benefit obligation, end of period	1,846	1,491	2,066	1,317
Change in plan assets:				
Fair value of plan assets, beginning of period	1,789	723	1,898	735
Actual return on plan assets	100	146	(27)	63
Company contributions	49	65	51	56
Benefits paid	(79)	(33)	(120)	(56)
Participant contributions		1		1
Settlement	(288)	(25)	(13)	(1)
Foreign exchange effects		(53)		(75)
Fair value of plan assets, end of period	1,571	824	1,789	723
Funded status of continuing operations, end of period	$ (275)	$ (667)	$ (277)	$ (594)

	December 31, 2016		December 31, 2015	
Millions of dollars	**U.S.**	**Non-U.S.**	**U.S.**	**Non-U.S.**
Amounts recognized in the Consolidated Balance Sheets consist of:				
Prepaid benefit cost, long-term	$ 3	$ 10	$ 1	$ 10
Accrued benefit liability, current		(18)		(19)
Accrued benefit liability, long-term	(278)	(659)	(278)	(585)
Funded status, end of period	$ (275)	$ (667)	$ (277)	$ (594)

December 31, 2016	December 31, 2015

Millions of dollars	U.S.	Non-U.S.	U.S.	Non-U.S.
Amounts recognized in Accumulated other comprehensive loss:				
Actuarial and investment loss	$ 376	$ 346	$ 400	$ 225
Prior service cost (credit)	2	(1)	3	3
Balance, end of period	$ 378	$ 345	$ 403	$ 228

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following additional information is presented for our U.S. and non-U.S. pension plans as of December 31:

	December 31, 2016		December 31, 2015	
Millions of dollars	**U.S.**	**Non-U.S.**	**U.S.**	**Non-U.S.**
Accumulated benefit obligation for defined benefit plans	$ 1,816	$ 1,382	$ 2,040	$ 1,215

Pension plans with projected benefit obligations in excess of the fair value of assets are summarized as follows at December 31:

	December 31, 2016		December 31, 2015	
Millions of dollars	**U.S.**	**Non-U.S.**	**U.S.**	**Non-U.S.**
Projected benefit obligations	$ 1,703	$ 943	$ 2,004	$ 864
Fair value of assets	1,425	265	1,726	260

Pension plans with accumulated benefit obligations in excess of the fair value of assets are summarized as follows at December 31:

	December 31, 2016		December 31, 2015	
Millions of dollars	**U.S.**	**Non-U.S.**	**U.S.**	**Non-U.S.**
Accumulated benefit obligations	$ 1,676	$ 725	$ 1,897	$ 665
Fair value of assets	1,425	135	1,643	132

The following table provides the components of net periodic pension costs:

	U.S. Plans Year Ended December 31,		
Millions of dollars	**2016**	**2015**	**2014**
Net Periodic Pension Cost:			
Service cost	$ 44	$ 45	$ 43
Interest cost	88	85	88
Actual return on plan assets	(100)	27	(65)
Less return in excess of (less than) expected return	(39)	(175)	(90)
Expected return on plan assets	(139)	(148)	(155)
Settlement loss	58	2	2
Prior service cost (benefit) amortization	1		
Actuarial and investment loss amortization	20	13	
Net periodic benefit cost (credit)	$ 72	$ (3)	$ (22)

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Millions of dollars	Non-U.S. Plans Year Ended December 31, 2016	2015	2014
Net Periodic Pension Cost:			
Service cost	$ 32	$ 32	$ 29
Interest cost	32	37	48
Actual return on plan assets	(146)	(63)	(117)
Less return in excess of (less than) expected return	122	39	91
Expected return on plan assets	(24)	(24)	(26)
Settlement loss	3		1
Prior service cost amortization		2	
Actuarial and investment loss amortization	8	8	4
Net periodic benefit cost	$ 51	$ 55	$ 56

Lump sum benefit payments of $288 million were made from existing plan assets in 2016. These payments in total exceeded annual service and interest cost, resulting in pension settlement expense of $58 million. A significant portion of the lump sum payments were due to a voluntary lump sum program to certain former employees in select U.S. pension plans.

Our goal is to manage pension investments over the longer term to achieve optimal returns with an acceptable level of risk and volatility. The assets are externally managed by professional investment firms and performance is evaluated continuously against specific benchmarks.

The actual and target asset allocations for our plans are as follows:

	2016		2015	
Millions of dollars	**Actual**	**Target**	**Actual**	**Target**
Canada				
Equity securities	49%	50%	47%	50%
Fixed income	51%	50%	53%	50%
United Kingdom Lyondell Chemical Plans				
Equity securities	50%	50%	50%	50%
Fixed income	50%	50%	50%	50%
United Kingdom Basell Plans				
Equity securities	58%	60%	56%	60%
Fixed income	42%	40%	44%	40%
United States				
Equity securities	33%	32%	52%	51%
Fixed income	47%	38%	32%	30%
Alternatives	20%	30%	16%	19%
Netherlands Lyondell Chemical Plans				
Fixed income	100%	100%	100%	100%
Netherlands Basell Plans				
Equity securities	7%	10%	9%	10%
Fixed income	93%	90%	91%	90%

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We estimate the following contributions to our pension plans in 2017:

Millions of dollars	U.S.	Non-U.S.
Defined benefit plans	$ 47	$ 64
Multi-employer plans		7
Total	$ 47	$ 71

As of December 31, 2016, future expected benefit payments by our pension plans which reflect expected future service, as appropriate, are as follows:

Millions of dollars	U.S.	Non-U.S.
2017	$ 144	$ 54
2018	144	52
2019	142	48
2020	139	47
2021	135	48
2022 through 2026	640	263

The following tables set forth the principal assumptions on discount rates, projected rates of compensation increase and expected rates of return on plan assets, where applicable. These assumptions vary for the different plans, as they are determined in consideration of local conditions.

The assumptions used in determining the net benefit liabilities for our pension plans were as follows at December 31:

	2016		2015	
	U.S.	Non-U.S.	U.S.	Non-U.S.
Weighted average assumptions:				
Discount rate	4.20%	1.52%	4.38%	2.70%
Rate of compensation increase	4.00%	2.93%	4.00%	3.15%

The assumptions used in determining net benefit costs for our pension plans were as follows:

	Year Ended December 31,					
	2016		2015		2014	
	U.S.	Non-U.S.	U.S.	Non-U.S.	U.S.	Non-U.S.
Weighted average assumptions for the year:						
Discount rate	4.38%	2.70%	4.04%	2.84%	4.73%	3.78%
Expected return on plan assets	8.00%	3.37%	8.00%	3.63%	8.00%	4.12%
Rate of compensation increase	4.00%	3.15%	4.00%	3.19%	4.00%	3.37%

The discount rate assumptions reflect the rates at which the benefit obligations could be effectively settled, based on the yields of high quality long-term bonds where the term closely matches the term of the benefit obligations. At the beginning of 2017, we will change the approach used to measure service and interest costs for pension and other postretirement benefits under significant U.S. plans. For 2016, we measured service and interest costs utilizing a single weighted-average discount rate derived from the yield curve used to measure the plan obligations. For 2017,

we will measure service and interest costs by applying the specific spot rates along that

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

same yield curve to the plans projected cash flows. We believe the new approach provides a more precise measurement of service and interest costs. This change does not affect the measurement of our plan obligations. We will account for this change as a change in accounting estimate and, accordingly, will account for it on a prospective basis. The weighted average expected long-term rate of return on assets in our U.S. plans of 8.00% is based on the average level of earnings that our independent pension investment advisor had advised could be expected to be earned over a fifteen to twenty year time period consistent with the plans target asset allocation, historical capital market performance, historical plan performance (since the 1997 inception of the U.S. Master Trust) and a forecast of expected future asset returns. The weighted average expected long-term rate of return on assets in our non-U.S. plans of 3.37% is based on expectations and asset allocations that vary by region. We review these long-term assumptions on a periodic basis.

In the U.S. plans, the expected rate of return was derived based on the target asset allocation of 32.5% equity securities (8.8% expected return), 37.5% fixed income securities (4.9% expected return), and 30% alternative investments (8.1% expected return). In the non-U.S. plans, the investments consist primarily of fixed income securities whose expected rates of return range from 2.45% to 5.75%.

The following table reflects the actual annualized total returns for the periods ended December 31, 2016:

			Annualized		
	December 31, 2016	**One Year**	**Three Years**	**Five Years**	**Ten Years**
U.S. plan assets	7.22%	7.22%	3.25%	8.14%	4.78%
Non-U.S. plan assets	15.81%	15.81%	14.18%	7.79%	4.13%

Actual rates of return may differ from the expected rate due to the volatility normally experienced in capital markets. The goal is to manage the investments over the long term to achieve optimal returns with an acceptable level of risk and volatility in order to meet the benefit obligations of the plans as they come due.

Our pension plans have not directly invested in securities of LyondellBasell N.V., and there have been no significant transactions between any of the pension plans and the Company or related parties thereof.

In accordance with ASC 820, *Fair Value Measurements and Disclosures*, fair value measurements are classified using the following hierarchy:

Level 1 Quoted prices for identical instruments in active markets.

Level 2 Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs or significant value-drivers are observable in active markets.

Level 3 Model-derived valuations in which one or more significant inputs or significant value-drivers are unobservable.

When available, quoted market prices are used to determine fair value and such measurements are classified within Level 1. In some cases where market prices are not available, observable market-based inputs are used to calculate fair value, in which case the measurements are classified within Level 2. If quoted or observable market prices are not available, fair value is based upon internally-developed models that use, where possible, current market-based parameters such as interest rates, yield curves and currency rates. These measurements are classified within Level 3.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Fair value measurements are classified according to the lowest level input or value-driver that is significant to the valuation. A measurement may therefore be classified within Level 3 even though there may be significant inputs that are readily observable.

Changes in fair value levels Management reviews the disclosures regarding fair value measurements annually at year end. If an instrument classified as Level 1 subsequently ceases to be actively traded, it is transferred out of Level 1. In such cases, instruments are reclassified as Level 2, unless the measurement of its fair value requires the use of significant unobservable inputs, in which case it is reclassified as Level 3.

The major classes of the pension assets are measured at fair value using the following valuation methodologies:

Common and preferred stock Valued at the closing price reported on the market on which the individual securities are traded.

Fixed income securities Certain securities that are not traded on an exchange are valued at the closing price reported by pricing services. Other securities are valued based on yields currently available on comparable securities of issuers with similar credit ratings.

Commingled funds Valued based upon the unit values of such collective trust funds held at year end by the pension plans. Unit values are based on the fair value of the underlying assets of the fund derived from inputs principally from, or corroborated by, observable market data by correlation or other means.

Real estate Valued on the basis of a discounted cash flow approach, which includes the future rental receipts, expenses, and residual values as the highest and best use of the real estate from a market participant view as rental property.

Hedge funds Valued based upon the unit values of such alternative investments held at year end by the pension plans. Unit values are based on the fair value of the underlying assets of the fund.

Private equity Valued based upon the unit values of such alternative investments held at year end by the pension plans. Unit values are based on the fair value of the underlying assets of the fund. Certain securities held in the fund are valued at the closing price reported on the exchange or other established quotation service for over-the-counter securities. Other assets held in the fund are valued based on the most recent financial statements prepared by the fund manager.

Convertible securities Valued at the quoted prices for similar assets or liabilities in active markets.

U.S. government securities Certain securities are valued at the closing price reported on the active market on which the individual securities are traded. Other securities are valued based on yields currently available on comparable securities of issuers with similar credit ratings.

Cash and cash equivalents Valued at the quoted prices for similar assets or liabilities in active markets.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The pension investments that are measured at fair value as of December 31, 2016 and 2015 are summarized below:

		December 31, 2016		
Millions of dollars	**Fair Value**	**Level 1**	**Level 2**	**Level 3**
U.S.				
Common and preferred stock	$ 394	$ 394	$	$
Commingled funds measured at net asset value*	215			
Fixed income securities	215	114	101	
Real estate measured at net asset value*	100			
Hedge funds measured at net asset value*	126			
Private equity measured at net asset value*	77			
U.S. government securities	138	136	2	
Cash and cash equivalents	294	294		
Total U.S. Pension Assets	$ 1,559	$ 938	$ 103	$

		December 31, 2016		
Millions of dollars	**Fair Value**	**Level 1**	**Level 2**	**Level 3**
Non-U.S.				
Common stock	$ 2	$ 2	$	$
Commingled funds measured at net asset value*	337			
Fixed income securities	463		463	
Cash and cash equivalents	21	21		
Total Non-U.S. Pension Assets	$ 823	$ 23	$ 463	$

		December 31, 2015		
Millions of dollars	**Fair Value**	**Level 1**	**Level 2**	**Level 3**
U.S.				
Common and preferred stock	$ 643	$ 640	$ 3	$
Commingled funds measured at net asset value*	573			
Fixed income securities	230		230	
Real estate measured at net asset value*	97			
Hedge funds measured at net asset value*	140			
Private equity measured at net asset value*	60			
U.S. government securities	36	34	2	
Cash and cash equivalents	32	32		
Total U.S. Pension Assets	$ 1,811	$ 706	$ 235	$

		December 31, 2015		
Millions of dollars	**Fair Value**	**Level 1**	**Level 2**	**Level 3**
Non-U.S.				
Common stock	$ 2	$ 2	$	$

Commingled funds measured at net asset value*	317			
Fixed income securities	375		375	
Cash and cash equivalents	28	28		
Total Non-U.S. Pension Assets	$ 722	$ 30	$ 375	$

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* In accordance with Fair Value Measurement Topic 820, Subtopic 10, certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy.

The fair value measurements of the investments in certain entities that calculate net asset value per share as of December 31, 2016 are as follows:

Millions of dollars	Fair Value	Unfunded Commitments	Remaining Life	Redemption Frequency (if currently eligible)	Trade to Settlement Terms	Redemption Notice Period
U.S.						
Commingled fund investing in Domestic Equity	$ 78	$	N/A	daily	1 to 3 days	3 to 4 days
Commingled fund investing in International Equity	47		N/A	daily	1 to 3 days	3 days
Commingled fund investing in Fixed Income	90		N/A	daily	1 to 3 days	3 to 7 days
Real Estate	100	9	10 years	quarterly	15 to 25 days	45 to 90 days
Hedge Funds	126		N/A	quarterly	10 to 30 days	20 to 90 days
Private Equity	77	96	10 years	Not Eligible	N/A	N/A
Total U.S.	$ 518	$ 105				

Millions of dollars	Fair Value	Unfunded Commitments	Remaining Life	Redemption Frequency (if currently eligible)	Trade to Settlement Terms	Redemption Notice Period
Non-U.S.						
Commingled fund investing in Domestic Equity	$ 27	$	N/A	1 to 7 days	1 to 3 days	1 to 3 days
Commingled fund investing in International Equity	125		N/A	1 to 7 days	1 to 3 days	1 to 3 days
Commingled fund investing in Fixed Income	185		N/A	daily	1 to 3 days	3 days
Total Non-U.S.	$ 337	$				

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The fair value measurements of the investments in certain entities that calculate net asset value per share as of December 31, 2015 are as follows:

Millions of dollars	Fair Value	Unfunded Commitments	Remaining Life	Redemption Frequency (if currently eligible)	Trade to Settlement Terms	Redemption Notice Period
U.S.						
Commingled fund investing in Domestic Equity	$ 72	$	N/A	daily	1 to 3 days	3 to 4 days
Commingled fund investing in International Equity	216		N/A	daily	1 to 3 days	3 days
Commingled fund investing in Fixed Income	285		N/A	daily	1 to 3 days	3 to 7 days
Real Estate	97	10	10 years	quarterly	15 to 25 days	45 to 90 days
Hedge Funds	140		N/A	quarterly	10 to 30 days	20 to 90 days
Private Equity	60	90	10 years	Not eligible	N/A	N/A
Total U.S.	$ 870	$ 100				

Millions of dollars	Fair Value	Unfunded Commitments	Remaining Life	Redemption Frequency (if currently eligible)	Trade to Settlement Terms	Redemption Notice Period
Non-U.S.						
Commingled fund investing in Domestic Equity	$ 27	$	N/A	1 to 7 days	1 to 3 days	1 to 3 days
Commingled fund investing in International Equity	116		N/A	1 to 7 days	1 to 3 days	1 to 3 days
Commingled fund investing in Fixed Income	174		N/A	daily	1 to 3 days	3 days
Total Non-U.S.	$ 317	$				

The preceding methods described may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. The redemption frequency may be subject to market conditions and/or contractual obligations. Furthermore, although the Company believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

Multi-employer Plan The Company participates in a multi-employer arrangement with Pensionskasse der BASF WaG V.VaG (Pensionskasse) which provides for benefits to the majority of our employees in Germany. Up to a certain salary level, the benefit obligations are covered by contributions of the Company and the employees to the plan. Contributions made to the multi-employer plan are expensed as incurred.

The following table provides disclosure related to the Company s multi-employer plan:

Company Contributions

Millions of dollars	2016	2015	2014
Pensionskasse[(a)]	$ 7	$ 7	$ 7

(a) The Company-specific plan information for the Pensionskasse is not publicly available and the plan is not subject to a collective-bargaining agreement. The plan provides fixed, monthly retirement payments on the basis of the credits earned by the participating employees. To the extent that the Pensionskasse is

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

underfunded, the future contributions to the plan may increase and may be used to fund retirement benefits for employees related to other employers. The Pensionskasse financial statements for the years ended December 31, 2015 and 2014 indicated total assets of $7,560 million and $7,485 million, respectively; total actuarial present value of accumulated plan benefits of $7,232 million and $7,146 million, respectively; and total contributions for all participating employers of $244 million and $245 million, respectively. Our plan contributions did not exceed 5 percent of the total contributions in 2016, 2015 or 2014.

Other Postretirement Benefits We sponsor unfunded health care and life insurance plans covering certain eligible retired employees and their eligible dependents. Generally, the medical plans pay a stated percentage of medical expenses reduced by deductibles and other coverage. Life insurance benefits are generally provided by insurance contracts. We retain the right, subject to existing agreements, to modify or eliminate these benefits.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table provides a reconciliation of benefit obligations of our unfunded other postretirement benefit plans:

	Year Ended December 31,			
	2016		2015	
Millions of dollars	U.S.	Non-U.S.	U.S.	Non-U.S.
Change in benefit obligation:				
Benefit obligation, beginning of period	$ 285	$ 56	$ 347	$ 60
Service cost	3	2	4	1
Interest cost	11	2	13	2
Actuarial (gain) loss	(7)	9	(64)	
Benefits paid	(23)	(1)	(22)	(1)
Participant contributions	7		7	
Foreign exchange effects		(1)		(6)
Benefit obligation, end of period	276	67	285	56
Change in plan assets:				
Fair value of plan assets, beginning of period				
Employer contributions	16	1	15	1
Participant contributions	7		7	
Benefits paid	(23)	(1)	(22)	(1)
Fair value of plan assets, end of period				
Funded status, end of period	$ (276)	$ (67)	$ (285)	$ (56)

	December 31, 2016		December 31, 2015	
Millions of dollars	U.S.	Non-U.S.	U.S.	Non-U.S.
Amounts recognized in the Consolidated Balance Sheets consist of:				
Accrued benefit liability, current	$ (18)	$ (1)	$ (19)	$ (1)
Accrued benefit liability, long-term	(258)	(66)	(266)	(55)
Funded status, end of period	$ (276)	$ (67)	$ (285)	$ (56)

	December 31, 2016		December 31, 2015	
Millions of dollars	U.S.	Non-U.S.	U.S.	Non-U.S.
Amounts recognized in Accumulated other comprehensive loss:				
Actuarial and investment income (loss)	$ 25	$ (37)	$ 18	$ (30)
Balance, end of period	$ 25	$ (37)	$ 18	$ (30)

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The following table provides the components of net periodic other postretirement benefit costs:

Millions of dollars	U.S. Plans Year Ended December 31, 2016	2015	2014
Net Periodic Other Postretirement Cost:			
Service cost	$ 3	$ 4	$ 4
Interest cost	11	13	15
Actuarial loss amortization		2	2
Net periodic benefit cost	$ 14	$ 19	$ 21

Millions of dollars	Non-U.S. Plans Year Ended December 31, 2016	2015	2014
Net Periodic Other Postretirement Cost:			
Service cost	$ 2	$ 1	$ 1
Interest cost	2	2	1
Actuarial loss amortization	2	3	1
Net periodic benefit cost	$ 6	$ 6	$ 3

The following table sets forth the assumed health care cost trend rates:

	U.S. Plans December 31, 2016	2015
Assumed heath care trend rate:		
Immediate trend rate	7.0%	7.3%
Ultimate trend rate (the rate to which the cost trend rate is assumed to decline)	4.5%	4.5%
Year that the rate reaches the ultimate trend rate	2038	2038

	Non-U.S. Plans			
	Canada December 31,		France December 31,	
	2016	2015	2016	2015
Assumed heath care trend rate:				
Immediate trend rate	6.0%	6.5%	4.6%	4.9%
Ultimate trend rate (the rate to which the cost trend rate is assumed to decline)	4.5%	5.0%	4.6%	4.9%
Year that the rate reaches the ultimate trend rate	2021	2018		

The health care cost trend rate assumption does not typically have a significant effect on the amounts reported due to limits on maximum contribution levels to the medical plans. However, changing the assumed health care cost trend rates by one percentage point in each year would increase or decrease the accumulated other postretirement benefit liability as of December 31, 2016 by $21 million and $14 million, respectively, for non-U.S. plans and by less than $1 million for U.S. plans and would not have a material effect on the aggregate service and

interest cost components of the net periodic other postretirement benefit cost for the year then ended.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The assumptions used in determining the net benefit liabilities for our other postretirement benefit plans were as follows:

	December 31,			
	2016		2015	
	U.S.	Non-U.S.	U.S.	Non-U.S.
Weighted average assumptions:				
Discount rate	4.07%	1.69%	4.23%	2.69%
Rate of compensation increase	4.00%		4.00%	

The assumptions used in determining the net benefit costs for our other postretirement benefit plans were as follows:

	Year Ended December 31,					
	2016		2015		2014	
	U.S.	Non-U.S.	U.S.	Non-U.S.	U.S.	Non-U.S.
Weighted average assumptions for the year:						
Discount rate	4.23%	2.69%	3.85%	2.92%	4.53%	3.99%
Rate of compensation increase	4.00%		4.00%		4.00%	3.00%

As of December 31, 2016, future expected benefit payments by our other postretirement benefit plans, which reflect expected future service, as appropriate, were as follows:

Millions of dollars	U.S.	Non-U.S.
2017	$ 19	$ 1
2018	20	1
2019	21	1
2020	21	1
2021	21	1
2022 through 2026	101	7

Accumulated Other Comprehensive Loss The following pretax amounts were recognized in Accumulated other comprehensive loss as of and for the years ended December 31, 2016 and 2015:

	Pension Benefits		Other Benefits	
Millions of dollars	Actuarial (Gain) Loss	Prior Service Cost (Credit)	Actuarial (Gain) Loss	Prior Service Cost (Credit)
December 31, 2014	$ 578	$ 11	$ 79	$
Arising during the period	71		(63)	
Amortization	(24)	(5)	(4)	
December 31, 2015	625	6	12	
Arising during the period	186	(4)	2	
Amortization	(28)	(1)	(2)	
Settlement loss	(61)			

December 31, 2016	$ 722	$ 1	$ 12	$

In 2016, $186 million of pension benefits actuarial loss primarily reflects $265 million of losses due to changes in discount rate assumption of