CATERPILLAR INC
Form 10-K
February 14, 2019
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

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

For the fiscal year ended December 31, 2018

OR

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

For the transition period from to .

Commission File No. 1-768

CATERPILLAR INC.
(Exact name of Registrant as specified in its charter)

Delaware	37-0602744
(State or other jurisdiction of incorporation)	(IRS Employer I.D. No.)
510 Lake Cook Road, Suite 100, Deerfield, Illinois	60015
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: (224) 551-4000

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

Title of each class	Name of each exchange on which registered
Common Stock ($1.00 par value) [1]	New York Stock Exchange
9 3/8% Debentures due March 15, 2021	New York Stock Exchange
8% Debentures due February 15, 2023	New York Stock Exchange
5.3% Debentures due September 15, 2035	New York Stock Exchange

(1) In addition to the New York Stock Exchange, Caterpillar common stock is also listed on stock exchanges in France and Switzerland.

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 ý No o

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 o No ý

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 ý No o

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

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

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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	x	Accelerated filer	o
Non-accelerated filer	o	Smaller reporting company	o
		Emerging growth company	o

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. o
Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).
Yes o No ý

As of June 30, 2018, there were 594,325,388 shares of common stock of the Registrant outstanding, and the aggregate market value of the voting stock held by non-affiliates of the Registrant (assuming only for purposes of this computation that directors and executive officers may be affiliates) was approximately $81.2 billion.

As of December 31, 2018, there were 575,542,738 shares of common stock of the Registrant outstanding.

Documents Incorporated by Reference

Portions of the documents listed below have been incorporated by reference into the indicated parts of this Form 10-K, as specified in the responses to the item numbers involved.

Part III	2019 Annual Meeting Proxy Statement (Proxy Statement) to be filed with the Securities and Exchange Commission (SEC) within 120 days after the end of the calendar year.

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PART I

Item 1. Business.

General

Originally organized as Caterpillar Tractor Co. in 1925 in the State of California, our company was reorganized as Caterpillar Inc. in 1986 in the State of Delaware. As used herein, the term "Caterpillar," "we," "us," "our" or "the company" refers to Caterpillar Inc. and its subsidiaries unless designated or identified otherwise.

Overview

With 2018 sales and revenues of $54.722 billion, Caterpillar is the world's leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines and diesel-electric locomotives. The company principally operates through its three primary segments - Construction Industries, Resource Industries and Energy & Transportation - and also provides financing and related services through its Financial Products segment. Caterpillar is also a leading U.S. exporter. Through a global network of independent dealers and direct sales of certain products, Caterpillar builds long-term relationships with customers around the world.

Currently, we have six operating segments, of which four are reportable segments and are described below.

Categories of Business Organization

1. Machinery, Energy & Transportation — Represents the aggregate total of Construction Industries, Resource Industries, Energy & Transportation and All Other operating segments and related corporate items and eliminations.

2. Financial Products — Primarily includes the company's Financial Products Segment. This category includes Caterpillar Financial Services Corporation (Cat Financial), Caterpillar Insurance Holdings Inc. (Insurance Services) and their respective subsidiaries.

Other information about our operations in 2018, including certain risks associated with our operations, is included in Part II, Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations."

Construction Industries

Our Construction Industries segment is primarily responsible for supporting customers using machinery in infrastructure, forestry and building construction. The majority of machine sales in this segment are made in the heavy and general construction, rental, quarry and aggregates markets and mining.

The nature of customer demand for construction machinery varies around the world. Customers in developing economies often prioritize purchase price in making their investment decisions, while customers in developed economies generally weigh productivity and other performance criteria that contribute to lower owning and operating costs over the lifetime of the machine. To meet customer expectations in developing economies, Caterpillar developed differentiated product offerings that target customers in those markets, including our SEM brand machines. We believe that these customer-driven product innovations enable us to compete more effectively in developing economies. The majority of Construction Industries' research and development spending in 2018 focused on the next generation of construction machines.

The competitive environment for construction machinery is characterized by some global competitors and many regional and specialized local competitors. Examples of global competitors include CASE (part of CNH Industrial N.V.), Deere Construction & Forestry (part of Deere & Company), Doosan Infracore Co., Ltd., Hitachi Construction Machinery Co., Ltd., Hyundai Construction Equipment Co., Ltd., J.C. Bamford Excavators Ltd., Kobelco Construction Machinery (part of Kobe Steel, Ltd), Komatsu Ltd., Kubota Farm & Industrial Machinery (part of Kubota Corporation), and Volvo Construction Equipment (part of the Volvo Group). As an example of regional and local competitors, our competitors in China also include Guangxi LiuGong Machinery Co., Ltd., Longking Holdings Ltd., Sany Heavy Industry Co., Ltd., XCMG Group, Shandong Lingong Construction Machinery Co., Ltd. (SDLG, part of the Volvo Group) and Shantui Construction Machinery Co., Ltd., (part of Shandong Heavy Industry Group Co.). Each of these companies has varying product lines that compete with Caterpillar products, and each has varying degrees of regional focus.

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The Construction Industries product portfolio includes the following machines and related parts and work tools:

- asphalt pavers
- backhoe loaders
- compactors
- cold planers
- compact track and multi-terrain loaders
- mini, small, medium and large excavators
- forestry excavators
- feller bunchers
- harvesters
- knuckleboom loaders
- motorgraders
- pipelayers
- road reclaimers
- site prep tractors
- skidders
- skid steer loaders
- telehandlers
- small and medium track-type tractors
- track-type loaders
- wheel excavators
- compact, small and medium wheel loaders
- utility vehicles

Resource Industries

The Resource Industries segment is primarily responsible for supporting customers using machinery in mining, quarry and aggregates, heavy construction, waste and material handling applications. Caterpillar offers a broad product range and services to deliver comprehensive solutions for our mining customers. We manufacture high productivity equipment for both surface and underground mining operations around the world. Our equipment is used to extract and haul copper, iron ore, coal, oil sands, aggregates, gold and other minerals and ores. In addition to equipment, Resource Industries also develops and sells technology products and services to provide customers fleet management systems, equipment management analytics and autonomous machine capabilities.

Customers in most markets place an emphasis on equipment that is highly productive, reliable and provides the lowest total cost of ownership over the life of the equipment. In some developing markets, customers often prioritize purchase price in making their investment decisions. We believe our ability to control the integration and design of key machine components represents a competitive advantage. Our research and development efforts remain focused on providing customers the lowest total cost of ownership enabled through the highest quality, most productive products and services in the industry.
The competitive environment for Resource Industries consists of a few larger global competitors that compete in several of the markets that we serve and a substantial number of smaller companies that compete in a more limited range of products, applications, and regional markets. Our global surface competitors include Deere Construction & Forestry (part of Deere & Company), Epiroc AB, Hitachi Construction Machinery Co., Ltd., Komatsu Ltd., Liebherr-International AG, Sandvik AB, and Volvo Construction Equipment. Our global underground competitors include Epiroc AB, Komatsu Ltd., Sandvik AB and Zhengzhou Coal Mining Machinery Group Co., Ltd.

The Resource Industries product portfolio includes the following machines and related parts:

- electric rope shovels
- draglines
- hydraulic shovels
- rotary drills
- hard rock vehicles
- large track-type tractors
- large mining trucks
- longwall miners
- large wheel loaders
- off-highway trucks
- articulated trucks
- wheel tractor scrapers
- wheel dozers
- landfill compactors
- soil compactors
- machinery components
- electronics and control systems
- select work tools
- hard rock continuous mining systems

Energy & Transportation

Our Energy & Transportation segment supports customers in oil and gas, power generation, marine, rail and industrial applications, including Cat® machines. The product and services portfolio includes reciprocating engines, generator sets, marine propulsion systems, gas turbines and turbine-related services, the remanufacturing of Caterpillar engines and components and remanufacturing services for other companies, diesel-electric locomotives and other rail-related products and services and product support of on-highway vocational trucks for North America.

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Regulatory emissions standards require us to continue to make investments as new products and new regulations are introduced. On-going compliance with these regulations remains a focus. Emissions compliance in developing markets is complex due to rapidly evolving and unique requirements where enforcement processes can often vary. We employ robust product development and manufacturing processes to help us comply with these regulations.

The competitive environment for reciprocating engines in marine, oil and gas, industrial and electric power generation systems along with turbines in oil and gas and electric power generation consists of a few larger global competitors that compete in a variety of markets that Caterpillar serves, and a substantial number of smaller companies that compete in a limited-size product range, geographic region and/or application. Principal global competitors include Cummins Inc., Deutz AG, GE Power, Rolls-Royce Power Systems, Siemens Power and Gas, and Wärtsilä Corp. Other competitors, such as Baker Hughes, a GE company, CNH Industrial Powertrain, INNIO, MAN Energy Solutions, Mitsubishi Heavy Industries Ltd., Volvo Penta, Weichai Power Co., Ltd.,and other emerging market competitors compete in certain markets in which Caterpillar competes. An additional set of competitors, including Aggreko plc, Generac Power Systems, Inc., Kohler Co., Inc., and others, are primarily packagers who source engines and/or other components from domestic and international suppliers and market products regionally and internationally through a variety of distribution channels. In rail-related businesses, our global competitors include Alstom Transport SA, Bombardier Transportation, GE Transportation, Greenbrier, Siemens AG, Voestalpine AG, Vossloh, and Wabtec Freight. We also compete with other companies on a more limited range of products, services and/or geographic regions.

The Energy & Transportation portfolio includes the following products and related parts:

- reciprocating engine powered generator sets
- reciprocating engines supplied to the industrial industry as well as Caterpillar machinery
- integrated systems used in the electric power generation industry
- turbines, centrifugal gas compressors and related services
- reciprocating engines and integrated systems and solutions for the marine and oil and gas industries
- remanufactured reciprocating engines and components
- diesel-electric locomotives and components and other rail-related products and services

Financial Products Segment

The business of our Financial Products segment is primarily conducted by Cat Financial, a wholly owned finance subsidiary of Caterpillar. Cat Financial’s primary business is to provide retail and wholesale financing alternatives for Caterpillar products to customers and dealers around the world. Retail financing is primarily comprised of the financing of Caterpillar equipment, machinery and engines. Cat Financial also provides financing for vehicles, power generation facilities and marine vessels that, in most cases, incorporate Caterpillar products. In addition to retail financing, Cat Financial provides wholesale financing to Caterpillar dealers and purchases short-term trade receivables from Caterpillar and its subsidiaries. The various financing plans offered by Cat Financial are primarily designed to increase the opportunity for sales of Caterpillar products and generate financing income for Cat Financial. A significant portion of Cat Financial’s activity is conducted in North America, with additional offices and subsidiaries in Latin America, Asia/Pacific, Europe, Africa and Middle East.

For over 35 years, Cat Financial has been providing financing in the various markets in which it participates, contributing to its knowledge of asset values, industry trends, product structuring and customer needs.

In certain instances, Cat Financial’s operations are subject to supervision and regulation by state, federal and various foreign governmental authorities, and may be subject to various laws and judicial and administrative decisions

imposing various requirements and restrictions which, among other things, (i) regulate credit granting activities and the administration of loans, (ii) establish maximum interest rates, finance charges and other charges, (iii) require disclosures to customers and investors, (iv) govern secured transactions, (v) set collection, foreclosure, repossession and other trade practices and (vi) regulate the use and reporting of information related to a borrower's credit experience. Cat Financial's ability to comply with these and other governmental and legal requirements and restrictions affects its operations.

Cat Financial's retail loans (totaling 49 percent*) include:

- Loans that allow customers and dealers to use their Caterpillar equipment or other assets as collateral to obtain financing (26 percent*).

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- Installment sale contracts, which are equipment loans that enable customers to purchase equipment with a down payment or trade-in and structure payments over time (23 percent*).

Cat Financial's retail leases (totaling 34 percent*) include:

- Tax leases that are classified as either operating or finance leases for financial accounting purposes, depending on the characteristics of the lease. For tax purposes, Cat Financial is considered the owner of the equipment (12 percent*).

- Finance (non-tax) leases, where the lessee for tax purposes is considered to be the owner of the equipment during the term of the lease, that either require or allow the customer to purchase the equipment for a fixed price at the end of the term (21 percent*).

- Governmental lease-purchase plans in the U.S. that offer low interest rates and flexible terms to qualified non-federal government agencies (1 percent*).

Cat Financial's wholesale loans and leases (2 percent*) include inventory/rental programs, which provide assistance to dealers by financing their new Caterpillar inventory and rental fleets.

Cat Financial also purchases short-term receivables from Caterpillar at a discount (15 percent*).

*Indicates the percentage of Cat Financial's total portfolio at December 31, 2018. We define total portfolio as total finance receivables (net of unearned income and allowance for credit losses) plus equipment on operating leases, less accumulated depreciation. For more information on the above and Cat Financial's concentration of credit risk, please refer to Note 7 — "Cat Financial Financing Activities" of Part II, Item 8 "Financial Statements and Supplementary Data."

Cat Financial operates in a highly competitive environment, with financing for users of Caterpillar equipment available through a variety of sources, principally commercial banks and finance and leasing companies. Cat Financial's competitors include Wells Fargo Equipment Finance Inc. and various other banks and finance companies. In addition, many of our manufacturing competitors own financial subsidiaries, such as John Deere Capital Corporation, Komatsu Financial L.P. and Volvo Financial Services, which utilize below-market interest rate programs (funded by the manufacturer) to assist machine sales. Caterpillar and Cat Financial work together to provide a broad array of financial merchandising programs around the world to meet these competitive offers.

Cat Financial's financial results are largely dependent upon the ability of Caterpillar dealers to sell equipment and customers' willingness to enter into financing or leasing agreements. It is also affected by, among other things, the availability of funds from its financing sources, general economic conditions such as inflation and market interest rates and its cost of funds relative to its competitors.

Cat Financial has a match-funding policy that addresses interest rate risk by aligning the interest rate profile (fixed or floating rate) of its debt portfolio with the interest rate profile of its receivables portfolio within predetermined ranges on an ongoing basis. In connection with that policy, Cat Financial uses interest rate derivative instruments to modify the debt structure to match assets within the receivables portfolio. This matched funding reduces the volatility of margins between interest-bearing assets and interest-bearing liabilities, regardless of which direction interest rates move. For more information regarding match funding, please see Note 4 — "Derivative financial instruments and risk management" of Part II, Item 8 "Financial Statements and Supplementary Data." See also the risk factors associated with our financial products business included in Item 1 A. of this Form 10-K.

In managing foreign currency risk for Cat Financial's operations, the objective is to minimize earnings volatility resulting from conversion and the remeasurement of net foreign currency balance sheet positions, and future transactions denominated in foreign currencies. This policy allows the use of foreign currency forward, option and cross currency contracts to offset the risk of currency mismatch between the assets and liabilities, and exchange rate risk associated with future transactions denominated in foreign currencies.

Cat Financial provides financing only when certain criteria are met. Credit decisions are based on a variety of credit quality factors including prior payment experience, customer financial information, credit-rating agency ratings, loan-to-value ratios and other internal metrics. Cat Financial typically maintains a security interest in retail-financed equipment and requires physical damage insurance coverage on financed equipment. Cat Financial finances a significant portion of Caterpillar dealers'

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sales and inventory of Caterpillar equipment throughout the world. Cat Financial's competitive position is improved by marketing programs offered in conjunction with Caterpillar and/or Caterpillar dealers. Under these programs, Caterpillar, or the dealer, funds an amount at the outset of the transaction, which Cat Financial then recognizes as revenue over the term of the financing. We believe that these marketing programs provide Cat Financial a significant competitive advantage in financing Caterpillar products.

Caterpillar Insurance Company, a wholly owned subsidiary of Caterpillar Insurance Holdings Inc., is a U.S. insurance company domiciled in Missouri and primarily regulated by the Missouri Department of Insurance. Caterpillar Insurance Company is licensed to conduct property and casualty insurance business in 50 states, the District of Columbia and Guam, and as such, is also regulated in those jurisdictions. The State of Missouri acts as the lead regulatory authority and monitors Caterpillar Insurance Company's financial status to ensure that it is in compliance with minimum solvency requirements, as well as other financial ratios prescribed by the National Association of Insurance Commissioners. Caterpillar Insurance Company is also licensed to conduct insurance business through a branch in Zurich, Switzerland and, as such, is regulated by the Swiss Financial Market Supervisory Authority.

Caterpillar Life Insurance Company, a wholly owned subsidiary of Caterpillar, is a U.S. insurance company domiciled in Missouri and primarily regulated by the Missouri Department of Insurance. Caterpillar Life Insurance Company is licensed to conduct life and accident and health insurance business in 26 states and the District of Columbia and, as such, is also regulated in those jurisdictions. The State of Missouri acts as the lead regulatory authority and it monitors the financial status to ensure that it is in compliance with minimum solvency requirements, as well as other financial ratios prescribed by the National Association of Insurance Commissioners. Caterpillar Life Insurance Company provides stop loss insurance protection to a Missouri Voluntary Employees' Beneficiary Association (VEBA) trust used to fund medical claims of salaried retirees of Caterpillar under the VEBA.

Caterpillar Insurance Co. Ltd., a wholly owned subsidiary of Caterpillar Insurance Holdings Inc., is a captive insurance company domiciled in Bermuda and regulated by the Bermuda Monetary Authority. Caterpillar Insurance Co. Ltd. is a Class 2 insurer (as defined by the Bermuda Insurance Amendment Act of 1995), which primarily insures its parent and affiliates. The Bermuda Monetary Authority requires an Annual Financial Filing for purposes of monitoring compliance with solvency requirements.

Caterpillar Product Services Corporation (CPSC), a wholly owned subsidiary of Caterpillar, is a warranty company domiciled in Missouri. CPSC previously conducted a machine extended service contract program in Germany and France by providing machine extended warranty reimbursement protection to dealers in Germany and France. The program was discontinued effective January 1, 2013, though CPSC continues to provide extended warranty reimbursement protection under existing contracts.

Caterpillar Insurance Services Corporation, a wholly owned subsidiary of Caterpillar Insurance Holdings Inc., is a Tennessee insurance brokerage company licensed in all 50 states, the District of Columbia and Guam. It provides brokerage services for all property and casualty and life and health lines of business.

Caterpillar's insurance group provides protection for claims under the following programs:

- Contractual Liability Insurance to Caterpillar and its affiliates, Caterpillar dealers and original equipment manufacturers (OEMs) for extended service contracts (parts and labor) offered by Caterpillar, third party dealers and OEMs.

- Cargo insurance for the worldwide cargo risks of Caterpillar products.

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Contractors' Equipment Physical Damage Insurance for equipment manufactured by Caterpillar or OEMs, which is leased, rented or sold by third party dealers to customers.

- General liability, employer's liability, auto liability and property insurance for Caterpillar.

- Retiree Medical Stop Loss Insurance for medical claims under the VEBA.

- Brokerage services for property and casualty and life and health business.

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Acquisitions

Information related to acquisitions appears in Note 24 — “Acquisitions” of Part II, Item 8 "Financial Statements and Supplementary Data."

Competitive Environment

Caterpillar products and product support services are sold worldwide into a variety of highly competitive markets. In all markets, we compete on the basis of product performance, customer service, quality and price. From time to time, the intensity of competition results in price discounting in a particular industry or region. Such price discounting puts pressure on margins and can negatively impact operating profit. Outside the United States, certain competitors enjoy competitive advantages inherent to operating in their home countries or regions.

Raw Materials and Component Products

We source our raw materials and manufactured components from suppliers both domestically and internationally. These purchases include unformed materials and rough and finished parts. Unformed materials include a variety of steel products, which are then cut or formed to shape and machined in our facilities. Rough parts include various sized steel and iron castings and forgings, which are machined to final specification levels inside our facilities. Finished parts are ready to assemble components, which are made either to Caterpillar specifications or to supplier developed specifications. We machine and assemble some of the components used in our machines, engines and power generation units and to support our after-market dealer parts sales. We also purchase various goods and services used in production, logistics, offices and product development processes. We maintain global strategic sourcing models to meet our global facilities’ production needs while building long-term supplier relationships and leveraging enterprise spend. We expect our suppliers to maintain, at all times, industry-leading levels of quality and the ability to timely deliver raw materials and component products for our machine and engine products. However, increases in demand have led to parts and components constraints across some products. We use a variety of agreements with suppliers to protect our intellectual property and processes to monitor and mitigate risks of the supply base causing a business disruption. The risks monitored include supplier financial viability, the ability to increase or decrease production levels, business continuity, quality and delivery.

Patents and Trademarks

We own a number of patents and trademarks, which have been obtained over a period of years and relate to the products we manufacture and the services we provide. These patents and trademarks are generally considered beneficial to our business. We do not regard our business as being dependent upon any single patent or group of patents.

Order Backlog

The dollar amount of backlog believed to be firm was approximately $16.5 billion at December 31, 2018 and $15.8 billion at December 31, 2017. Compared with year-end 2017, the order backlog increased about $0.7 billion. The increase was in Energy & Transportation and Construction Industries, partially offset by a decrease in Resource Industries. Of the total backlog at December 31, 2018, approximately $3.3 billion was not expected to be filled in 2019.

Dealers and Distributors

Our machines are distributed principally through a worldwide organization of dealers (dealer network), 47 located in the United States and 121 located outside the United States, serving 193 countries. Reciprocating engines are sold principally through the dealer network and to other manufacturers for use in products. Some of the reciprocating engines manufactured by our subsidiary Perkins Engines Company Limited are also sold through its worldwide network of 90 distributors covering 177 countries. The FG Wilson branded electric power generation systems primarily manufactured by our subsidiary Caterpillar Northern Ireland Limited are sold through its worldwide network of 150 distributors covering 109 countries. Some of the large, medium speed reciprocating engines are also sold under the MaK brand through a worldwide network of 20 distributors covering 130 countries.

Our dealers do not deal exclusively with our products; however, in most cases sales and servicing of our products are the dealers' principal business. Some products, primarily turbines and locomotives, are sold directly to end customers through sales forces employed by the company. At times, these employees are assisted by independent sales representatives.

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While the large majority of our worldwide dealers are independently owned and operated, we own and operate a dealership in Japan that covers approximately 80% of the Japanese market: Nippon Caterpillar Division. We are currently operating this Japanese dealer directly and its results are reported in the All Other operating segments. There are also three independent dealers in the Southern Region of Japan.

For Caterpillar branded products, the company's relationship with each of its independent dealers is memorialized in standard sales and service agreements. Pursuant to these agreements, the company grants the dealer the right to purchase and sell its products and to service the products in a specified geographic service territory. Prices to dealers are established by the company after receiving input from dealers on transactional pricing in the marketplace. The company also agrees to defend its intellectual property and to provide warranty and technical support to the dealer. The agreement further grants the dealer a non-exclusive license to use the company's trademarks, service marks and brand names. In some instances, a separate trademark agreement exists between the company and a dealer.

In exchange for these rights, the agreement obligates the dealer to develop and promote the sale of the company's products to current and prospective customers in the dealer's service territory. Each dealer agrees to employ adequate sales and support personnel to market, sell and promote the company's products, demonstrate and exhibit the products, perform the company's product improvement programs, inform the company concerning any features that might affect the safe operation of any of the company's products and maintain detailed books and records of the dealer's financial condition, sales and inventories and make these books and records available at the company's reasonable request.

These sales and service agreements are terminable at will by either party primarily upon 90 days written notice.

Employment

As of December 31, 2018, we employed about 104,000 full-time persons of whom approximately 59,400 were located outside the United States. In the United States, we employed approximately 44,600 employees, most of whom are at-will employees and, therefore, not subject to any type of employment contract or agreement. At select business units, certain highly specialized employees have been hired under employment contracts that specify a term of employment, pay and other benefits.

Full-Time Employees at Year-End

	2018	2017
Inside U.S.	44,600	42,200
Outside U.S.	59,400	56,200
Total	104,000	98,400
By Region:		
North America	44,900	42,400
EAME	18,000	18,100
Latin America	17,300	15,000
Asia/Pacific	23,800	22,900
Total	104,000	98,400

As of December 31, 2018, there were approximately 9,560 U.S. hourly production employees who were covered by collective bargaining agreements with various labor unions, including The United Automobile, Aerospace and Agricultural Implement Workers of America (UAW), The International Association of Machinists and The United Steelworkers. Approximately 7,980 of such employees are covered by collective bargaining agreements with the UAW that expire on December 17, 2020 and March 1, 2023. Outside the United States, the company enters into

employment contracts and agreements in those countries in which such relationships are mandatory or customary. The provisions of these agreements generally correspond in each case with the required or customary terms in the subject jurisdiction.

Environmental Matters

The company is regulated by federal, state and international environmental laws governing our use, transport and disposal of substances and control of emissions. In addition to governing our manufacturing and other operations, these laws often impact the development of our products, including, but not limited to, required compliance with air emissions standards applicable to internal combustion engines. We have made, and will continue to make, significant research and development and capital expenditures to comply with these emissions standards.

We are engaged in remedial activities at a number of locations, often with other companies, pursuant to federal and state laws. When it is probable we will pay remedial costs at a site, and those costs can be reasonably estimated, the investigation, remediation, and operating and maintenance costs of the remedial action are accrued against our earnings. Costs are accrued based on consideration of currently available data and information with respect to each individual site, including available technologies, current applicable laws and regulations, and prior remediation experience. Where no amount within a range of estimates is more likely, we accrue the minimum. Where multiple potentially responsible parties are involved, we consider our proportionate share of the probable costs. In formulating the estimate of probable costs, we do not consider amounts expected to be recovered from insurance companies or others. We reassess these accrued amounts on a quarterly basis. The amount recorded for environmental remediation is not material and is included in the line item "Accrued expenses" in Statement 3 — "Consolidated Financial Position at December 31" of Part II, Item 8 "Financial Statements and Supplementary Data." There is no more than a remote chance that a material amount for remedial activities at any individual site, or at all the sites in the aggregate, will be required.

Available Information

The company files electronically with the Securities and Exchange Commission (SEC) required reports on Form 8-K, Form 10-Q, Form 10-K and Form 11-K; proxy materials; ownership reports for insiders as required by Section 16 of the Securities Exchange Act of 1934 (Exchange Act); registration statements on Forms S-3 and S-8, as necessary; and other forms or reports as required. The SEC maintains a website (www.sec.gov) that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. The company maintains a website (www.Caterpillar.com) and copies of our annual report 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 with the SEC are available free of charge through our website (www.Caterpillar.com/secfilings) as soon as reasonably practicable after filing with the SEC. Copies of our board committee charters, our board’s Guidelines on Corporate Governance Issues, Worldwide Code of Conduct and other corporate governance information are available on our website (www.Caterpillar.com/governance). The information contained on the company’s website is not included in, or incorporated by reference into, this annual report on Form 10-K.

Additional company information may be obtained as follows:

Current information -

- view additional financial information on-line at www.caterpillar.com/en/investors/financial-information.html

- request, view or download materials on-line or register for email alerts at www.Caterpillar.com/materialsrequest

Historical information -

- view/download on-line at www.Caterpillar.com/historical

Item 1A. Risk Factors.

The statements in this section describe the most significant risks to our business and should be considered carefully in conjunction with Part II, Item 7 “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and the “Notes to Consolidated Financial Statements” of Part II, Item 8 "Financial Statements and Supplementary Data" to this Form 10-K. In addition, the statements in this section and other sections of this Form 10-K, including in Part II, Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations," include “forward-looking statements” as that term is defined in the Private Securities Litigation Reform Act of 1995 and involve uncertainties that could significantly impact results. Forward-looking statements give current expectations or forecasts of future events about the company or our outlook. You can identify forward-looking statements by the fact they do not relate to historical or current facts and by the use of words such as “believe,” “expect,” “estimate,” “anticipate,” “will be,” “should,” “plan,” “forecast,” “target,” “guide,” “project,” “intend,” “could” and similar wor expressions.

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Forward-looking statements are based on assumptions and on known risks and uncertainties. Although we believe we have been prudent in our assumptions, any or all of our forward-looking statements may prove to be inaccurate, and we can make no guarantees about our future performance. Should known or unknown risks or uncertainties materialize or underlying assumptions prove inaccurate, actual results could materially differ from past results and/or those anticipated, estimated or projected.

We undertake no obligation to publicly update forward-looking statements, whether as a result of new information, future events or otherwise. You should, however, consult any subsequent disclosures we make in our filings with the SEC on Form 10-Q or Form 8-K.

The following is a cautionary discussion of risks, uncertainties and assumptions that we believe are significant to our business. In addition to the factors discussed elsewhere in this report, the following are some of the important factors that, individually or in the aggregate, we believe could make our actual results differ materially from those described in any forward-looking statements. It is impossible to predict or identify all such factors and, as a result, you should not consider the following factors to be a complete discussion of risks, uncertainties and assumptions.

MACROECONOMIC RISKS

Our business and the industries we serve are highly sensitive to global and regional economic conditions.

Our results of operations are materially affected by economic conditions globally and regionally and in the particular industries we serve. The demand for our products and services tends to be cyclical and can be significantly reduced in periods of economic weakness characterized by lower levels of government and business investment, lower levels of business confidence, lower corporate earnings, high real interest rates, lower credit activity or tighter credit conditions, perceived or actual industry overcapacity, higher unemployment and lower consumer spending. A prolonged period of economic weakness may also result in increased expenses due to higher allowances for doubtful accounts and potential goodwill and asset impairment charges. Economic conditions vary across regions and countries, and demand for our products and services generally increases in those regions and countries experiencing economic growth and investment. Slower economic growth or a change in the global mix of regions and countries experiencing economic growth and investment could have an adverse effect on our business, results of operations and financial condition.

The energy, transportation and mining industries are major users of our products, including the coal, iron ore, gold, copper, oil and natural gas industries. Customers in these industries frequently base their decisions to purchase our products and services on the expected future performance of these industries, which in turn are dependent in part on commodity prices. Prices of commodities in these industries are frequently volatile and can change abruptly and unpredictably in response to general economic conditions and trends, government actions, regulatory actions, commodity inventories, production and consumption levels, technological innovations, commodity substitutions, market expectations and any disruptions in production or distribution or changes in consumption. Economic conditions affecting the industries we serve may in the future also lead to reduced capital expenditures by our customers. Reduced capital expenditures by our customers are likely to lead to a decrease in the demand for our products and services and may also result in a decrease in demand for aftermarket parts as customers are likely to extend preventative maintenance schedules and delay major overhauls when possible.

The rates of infrastructure spending, commercial construction and housing starts also play a significant role in our results. Our products are an integral component of these activities, and as these activities decrease, demand for our products may be significantly impacted, which could negatively impact our results.

Commodity price changes, material price increases, fluctuations in demand for our products, significant disruptions to our supply chains or significant shortages of material may adversely impact our financial results or our ability to meet commitments to customers.

We are a significant user of steel and many other commodities required for the manufacture of our products. Increases in the prices of such commodities would increase our costs, negatively impacting our business, results of operations and financial condition if we are unable to fully offset the effect of these increased costs through price increases, productivity improvements or cost reduction programs.

We rely on suppliers to produce or secure material required for the manufacture of our products. Production challenges at suppliers, a disruption in deliveries to or from suppliers or decreased availability of raw materials or commodities could have an adverse effect on our ability to meet our commitments to customers or increase our operating costs. The increase in demand in

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2018 has led to challenges for certain products due to supplier constraints. Despite improvements in material flows, parts and components constraints remain across some products, which could impact our sales in 2019 as global suppliers continue to increase production to meet demand. On the other hand, in circumstances where demand for our products is less than we expect, we may experience excess inventories and be forced to incur additional costs and our profitability may suffer. Our business, competitive position, results of operations or financial condition could be negatively impacted if supply is insufficient for our operations, if we experience excess inventories or if we are unable to adjust our production schedules or our purchases from suppliers to reflect changes in customer demand and market fluctuations on a timely basis.

Changes in government monetary or fiscal policies may negatively impact our results.

Most countries where our products and services are sold have established central banks to regulate monetary systems and influence economic activities, generally by adjusting interest rates. Interest rate changes affect overall economic growth, which affects demand for residential and nonresidential structures, as well as energy and mined products, which in turn affects sales of our products and services that serve these activities. Interest rate changes may also affect our customers' ability to finance machine purchases, can change the optimal time to keep machines in a fleet and can impact the ability of our suppliers to finance the production of parts and components necessary to manufacture and support our products. Increases in interest rates could negatively impact sales and create supply chain inefficiencies.

Central banks and other policy arms of many countries may take actions to vary the amount of liquidity and credit available in an economy. The impact from a change in liquidity and credit policies could negatively affect the customers and markets we serve or our suppliers, which could adversely impact our business, results of operations and financial condition.

Changes in monetary and fiscal policies, along with other factors, may cause currency exchange rates to fluctuate. Actions that lead the currency exchange rate of a country where we manufacture products to increase relative to other currencies could reduce the competitiveness of products made in that country, which could adversely affect our competitive position, results of operations and financial condition.

Government policies on taxes and spending also affect our business. Throughout the world, government spending finances a significant portion of infrastructure development, such as highways, airports, sewer and water systems and dams. Tax regulations determine asset depreciation lives and impact the after-tax returns on business activity and investment, both of which influence investment decisions. Unfavorable developments, such as decisions to reduce public spending or increase taxes, could negatively impact our results.

Our global operations are exposed to political and economic risks, commercial instability and global events beyond our control in the countries in which we operate.

Our global operations are dependent upon products manufactured, purchased and sold in the U.S. and internationally, including in countries with political and economic instability or uncertainty. This includes, for example, the uncertainty related to the United Kingdom's withdrawal from the European Union (commonly known as "Brexit"). Some countries have greater political and economic volatility and greater vulnerability to infrastructure and labor disruptions than others. Our business could be negatively impacted by adverse fluctuations in freight costs, limitations on shipping and receiving capacity, and other disruptions in the transportation and shipping infrastructure at important geographic points of exit and entry for our products. Operating in different regions and countries exposes us to a number of risks, including:

- multiple and potentially conflicting laws, regulations and policies that are subject to change;

- imposition of currency restrictions, restrictions on repatriation of earnings or other restraints;
- imposition of new or additional tariffs or quotas;
- withdrawal from or modification of trade agreements or the negotiation of new trade agreements;
- imposition of new or additional trade and economic sanctions laws imposed by the U.S. or foreign governments;
- war or terrorist acts; and
- political and economic instability or civil unrest that may severely disrupt economic activity in affected countries.

The occurrence of one or more of these events may negatively impact our business, results of operations and financial condition.

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OPERATIONAL RISKS

The success of our business depends on our ability to develop, produce and market quality products that meet our customers’ needs.

Our business relies on continued global demand for our brands and products. To achieve business goals, we must develop and sell products that appeal to our dealers, OEMs and end-user customers. This is dependent on a number of factors, including our ability to maintain key dealer relationships, our ability to produce products that meet the quality, performance and price expectations of our customers and our ability to develop effective sales, advertising and marketing programs. In addition, our continued success in selling products that appeal to our customers is dependent on leading-edge innovation, with respect to both products and operations, and on the availability and effectiveness of legal protection for our innovations. Failure to continue to deliver high quality, innovative, competitive products to the marketplace, to adequately protect our intellectual property rights, to supply products that meet applicable regulatory requirements, including engine exhaust emission requirements, or to predict market demands for, or gain market acceptance of, our products, could have a negative impact on our business, results of operations and financial condition.

We operate in a highly competitive environment, which could adversely affect our sales and pricing.

We operate in a highly competitive environment. We compete on the basis of a variety of factors, including product performance, customer service, quality and price. There can be no assurance that our products will be able to compete successfully with other companies’ products. Thus, our share of industry sales could be reduced due to aggressive pricing or product strategies pursued by competitors, unanticipated product or manufacturing difficulties, our failure to price our products competitively, our failure to produce our products at a competitive cost or an unexpected buildup in competitors’ new machine or dealer-owned rental fleets, which could lead to downward pressure on machine rental rates and/or used equipment prices.

Lack of customer acceptance of price increases we announce from time to time, changes in customer requirements for price discounts, changes in our customers’ behavior or a weak pricing environment could have an adverse impact on our business, results of operations and financial condition.

In addition, our results and ability to compete may be impacted negatively by changes in our geographic and product mix of sales.

Increased information technology security threats and more sophisticated computer crime pose a risk to our systems, networks, products and services.

We rely upon information technology systems and networks, some of which are managed by third parties, in connection with a variety of business activities. Additionally, we collect and store data that is sensitive to Caterpillar. Operating these information technology systems and networks and processing and maintaining this data, in a secure manner, are critical to our business operations and strategy. Data we collect, store and process is subject to a variety of U.S. and international laws and regulations, such as the European Union's General Data Protection Regulation that became effective in May 2018, which carry, in many cases, significant potential penalties for noncompliance. Information technology security threats -- from user error to cybersecurity attacks designed to gain unauthorized access to our systems, networks and data -- are increasing in frequency and sophistication. Cybersecurity attacks may range from random attempts to coordinated and targeted attacks, including sophisticated computer crime and advanced persistent threats. These threats pose a risk to the security of our systems and networks and the confidentiality, availability and integrity of our data. Cybersecurity attacks could also include attacks targeting customer data or the security, integrity and/or reliability of the hardware and software installed in our products. While,

to date, no cybersecurity attack has had a material impact on our financial condition, results of operations or liquidity, we have experienced cybersecurity attacks that have resulted in unauthorized parties gaining access to our information technology systems and networks, and we could in the future experience similar or more serious attacks. While we actively manage information technology security risks within our control, such actions may not be sufficient to mitigate all potential risks to our systems, networks and data. Further, the amount of insurance coverage we maintain may be inadequate to cover claims or liabilities relating to a cybersecurity attack. The potential consequences of a material cybersecurity attack include reputational damage, litigation with third parties, government enforcement actions, penalties, disruption to systems, unauthorized release of confidential or otherwise protected information, corruption of data, diminution in the value of our investment in research, development and engineering, and increased cybersecurity protection and remediation costs, which in turn could adversely affect our competitiveness, results of operations and financial condition.

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Our business is subject to the inventory management decisions and sourcing practices of our dealers and our OEM customers.

We sell finished products primarily through an independent dealer network and directly to OEMs and are subject to risks relating to their inventory management decisions and operational and sourcing practices. Both carry inventories of finished products as part of ongoing operations and adjust those inventories based on their assessments of future needs and market conditions, including levels of used equipment inventory and machine rental usage rates. Such adjustments may impact our results positively or negatively. If the inventory levels of our dealers and OEM customers are higher than they desire, they may postpone product purchases from us, which could cause our sales to be lower than the end-user demand for our products and negatively impact our results. Similarly, our results could be negatively impacted through the loss of time-sensitive sales if our dealers and OEM customers do not maintain inventory levels sufficient to meet customer demand.

We may not realize all of the anticipated benefits of our acquisitions, joint ventures or divestitures, or these benefits may take longer to realize than expected.

In pursuing our business strategy, we routinely evaluate targets and enter into agreements regarding possible acquisitions, divestitures and joint ventures. We often compete with others for the same opportunities. To be successful, we conduct due diligence to identify valuation issues and potential loss contingencies, negotiate transaction terms, complete complex transactions and manage post-closing matters such as the integration of acquired businesses. Further, while we seek to mitigate risks and liabilities of such transactions through, among other things, due diligence, there may be risks and liabilities that such due diligence efforts fail to discover, that are not accurately or completely disclosed to us or that we inadequately assess. We may incur unanticipated costs or expenses following a completed acquisition, including post-closing asset impairment charges, expenses associated with eliminating duplicate facilities, litigation, and other liabilities. Risks associated with our past or future acquisitions also include the following:

- the business culture of the acquired business may not match well with our culture;
- technological and product synergies, economies of scale and cost reductions may not occur as expected;
- unforeseen expenses, delays or conditions may be imposed upon the acquisition, including due to required regulatory approvals or consents;
- we may acquire or assume unexpected liabilities or be subject to unexpected penalties or other enforcement actions;
- faulty assumptions may be made regarding the macroeconomic environment or the integration process;
- unforeseen difficulties may arise in integrating operations, processes and systems;
- higher than expected investments may be required to implement necessary compliance processes and related systems, including IT systems, accounting systems and internal controls over financial reporting;
- we may fail to retain, motivate and integrate key management and other employees of the acquired business;
- higher than expected costs may arise due to unforeseen changes in tax, trade, environmental, labor, safety, payroll or pension policies in any jurisdiction in which the acquired business conducts its operations; and

- we may experience problems in retaining customers and integrating customer bases.

Many of these factors will be outside of our control and any one of them could result in increased costs, decreases in the amount of expected revenues and diversion of management's time and attention. They may also delay the realization of the benefits we anticipate when we enter into a transaction.

In order to conserve cash for operations, we may undertake acquisitions financed in part through public offerings or private placements of debt or equity securities, or other arrangements. Such acquisition financing could result in a decrease in our earnings and adversely affect other leverage measures. If we issue equity securities or equity-linked securities, the issued securities may have a dilutive effect on the interests of the holders of our common shares.

Failure to implement our acquisition strategy, including successfully integrating acquired businesses, could have an adverse effect on our business, financial condition and results of operations. Furthermore, we make strategic divestitures from time to time. In the case of divestitures, we may agree to indemnify acquiring parties for certain liabilities arising from our former businesses. These divestitures may also result in continued financial involvement in the divested businesses, including through

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guarantees or other financial arrangements, following the transaction. Lower performance by those divested businesses could affect our future financial results.

Union disputes or other labor matters could adversely affect our operations and financial results.

Some of our employees are represented by labor unions in a number of countries under various collective bargaining agreements with varying durations and expiration dates. There can be no assurance that any current or future issues with our employees will be resolved or that we will not encounter future strikes, work stoppages or other types of conflicts with labor unions or our employees. We may not be able to satisfactorily renegotiate collective bargaining agreements in the United States and other countries when they expire. If we fail to renegotiate our existing collective bargaining agreements, we could encounter strikes or work stoppages or other types of conflicts with labor unions. In addition, existing collective bargaining agreements may not prevent a strike or work stoppage at our facilities in the future. We may also be subject to general country strikes or work stoppages unrelated to our business or collective bargaining agreements. A work stoppage or other limitations on production at our facilities for any reason could have an adverse effect on our business, results of operations and financial condition. In addition, many of our customers and suppliers have unionized work forces. Strikes or work stoppages experienced by our customers or suppliers could have an adverse effect on our business, results of operations and financial condition.

Unexpected events, including natural disasters, may increase our cost of doing business or disrupt our operations.

The occurrence of one or more unexpected events, including war, terrorist acts or violence, civil unrest, fires, tornadoes, tsunamis, hurricanes, earthquakes, floods and other forms of severe weather in the United States or in other countries in which we operate or in which our suppliers are located could adversely affect our operations and financial performance. Natural disasters, pandemic illness, equipment failures, power outages or other unexpected events could result in physical damage to and complete or partial closure of one or more of our manufacturing facilities or distribution centers, temporary or long-term disruption in the supply of component products from some local and international suppliers, disruption in the transport of our products to dealers and end-users and delay in the delivery of our products to our distribution centers. Existing insurance coverage may not provide protection for all of the costs that may arise from such events.

FINANCIAL RISKS

Disruptions or volatility in global financial markets could limit our sources of liquidity, or the liquidity of our customers, dealers and suppliers.

Continuing to meet our cash requirements over the long-term requires substantial liquidity and access to varied sources of funds, including capital and credit markets. Global economic conditions may cause volatility and disruptions in the capital and credit markets. Market volatility, changes in counterparty credit risk, the impact of government intervention in financial markets and general economic conditions may also adversely impact our ability to access capital and credit markets to fund operating needs. Global or regional economic downturns could cause financial markets to decrease the availability of liquidity, credit and credit capacity for certain issuers, including certain customers, dealers and suppliers. An inability to access capital and credit markets may have an adverse effect on our business, results of operations, financial condition and competitive position. Furthermore, changes in global economic conditions, including material cost increases and decreases in economic activity in key markets we serve, and the success of plans to manage cost increases, inventory and other important elements of our business may significantly impact our ability to generate funds from operations.

In addition, demand for our products generally depends on customers’ ability to pay for our products, which, in turn, depends on their access to funds. Changes in global economic conditions may result in customers experiencing

increased difficulty in generating funds from operations. Capital and credit market volatility and uncertainty may cause financial institutions to revise their lending standards, resulting in customers' decreased access to capital. If capital and credit market volatility occurs, customers' liquidity may decline which, in turn, would reduce their ability to purchase our products.

Failure to maintain our credit ratings would increase our cost of borrowing and could adversely affect our cost of funds, liquidity, competitive position and access to capital markets.

Each of Caterpillar's and Cat Financial's costs of borrowing and their respective ability to access the capital markets are affected not only by market conditions but also by the short- and long-term credit ratings assigned to their respective debt by the major credit rating agencies. These ratings are based, in significant part, on each of Caterpillar's and Cat Financial's performance as measured by financial metrics such as net worth, interest coverage and leverage ratios, as well as transparency with rating agencies and timeliness of financial reporting. There can be no assurance that Caterpillar or Cat Financial will be able to maintain their credit ratings. We receive debt ratings from the major credit rating agencies. Moody's

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long- and short-term ratings of Caterpillar and Cat Financial are A3 and Prime-2 (“low-A”), while other major credit rating agencies maintain a “mid-A” debt rating. A downgrade of our credit rating by any of the major credit rating agencies would result in increased borrowing costs and could adversely affect Caterpillar’s and Cat Financial’s liquidity, competitive position and access to the capital markets, including restricting, in whole or in part, access to the commercial paper market. There can be no assurance that the commercial paper market will continue to be a reliable source of short-term financing for Cat Financial or an available source of short-term financing for Caterpillar. An inability to access the capital markets could have an adverse effect on our cash flow, results of operations and financial condition.

Our Financial Products segment is subject to risks associated with the financial services industry.

Cat Financial is significant to our operations and provides financing support to a significant share of our global sales. The inability of Cat Financial to access funds to support its financing activities to our customers could have an adverse effect on our business, results of operations and financial condition.

Continuing to meet Cat Financial's cash requirements over the long-term could require substantial liquidity and access to sources of funds, including capital and credit markets. Cat Financial has continued to maintain access to key global medium term note and commercial paper markets, but there can be no assurance that such markets will continue to represent a reliable source of financing. If global economic conditions were to deteriorate, Cat Financial could face materially higher financing costs, become unable to access adequate funding to operate and grow its business and/or meet its debt service obligations as they mature, and be required to draw upon contractually committed lending agreements and/or seek other funding sources. However, there can be no assurance that such agreements and other funding sources would be available or sufficient under extreme market conditions. Any of these events could negatively impact Cat Financial’s business, as well as our and Cat Financial's results of operations and financial condition.

Market disruption and volatility may also lead to a number of other risks in connection with these events, including but not limited to:

- Market developments that may affect customer confidence levels and cause declines in the demand for financing and adverse changes in payment patterns, causing increases in delinquencies and default rates, which could impact Cat Financial’s write-offs and provision for credit losses.

- The process Cat Financial uses to estimate losses inherent in its credit exposure requires a high degree of management’s judgment regarding numerous subjective qualitative factors, including forecasts of economic conditions and how economic predictors might impair the ability of its borrowers to repay their loans. Financial market disruption and volatility may impact the accuracy of these judgments.

- Cat Financial’s ability to engage in routine funding transactions or borrow from other financial institutions on acceptable terms or at all could be adversely affected by disruptions in the capital markets or other events, including actions by rating agencies and deteriorating investor expectations.

- As Cat Financial’s lending agreements are primarily with financial institutions, their ability to perform in accordance with any of its underlying agreements could be adversely affected by market volatility and/or disruptions in financial markets.

Changes in interest rates or market liquidity conditions could adversely affect Cat Financial's and our earnings and/or cash flow.

Changes in interest rates and market liquidity conditions could have an adverse impact on Cat Financial's and our earnings and cash flows. Because a significant number of the loans made by Cat Financial are made at fixed interest rates, its business results are subject to fluctuations in interest rates. Certain loans made by Cat Financial and financing extended to Cat Financial are made at variable rates that use LIBOR as a benchmark for establishing the interest rate. LIBOR is the subject of recent proposals for reform. On July 27, 2017, the United Kingdom’s Financial Conduct Authority announced that it intends to stop persuading or compelling banks to submit LIBOR rates after 2021. These reforms may cause LIBOR to cease to exist, new methods of calculating LIBOR to be established or the establishment of an alternative reference rate(s). These consequences cannot be entirely predicted and could have an adverse impact on the market value for or value of LIBOR-linked securities, loans, and other financial obligations or extensions of credit held by or due to Cat Financial. Changes in market interest rates may influence Cat Financial’s financing costs, returns on financial investments and the valuation of derivative contracts and could reduce its and our earnings and cash flows. Cat Financial manages interest rate and market liquidity risks through a variety of techniques that include a match funding program, the selective use of derivatives and a broadly diversified funding

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program. There can be no assurance, however, that fluctuations in interest rates and market liquidity conditions will not have an adverse impact on its and our earnings and cash flows. If any of the variety of instruments and strategies Cat Financial uses to hedge its exposure to these types of risk is ineffective, we may have an adverse impact on our earnings and cash flows. With respect to Insurance Services' investment activities, changes in the equity and bond markets could result in a decline in value of its investment portfolio, resulting in an unfavorable impact to earnings.

An increase in delinquencies, repossessions or net losses of Cat Financial customers could adversely affect its results.

Inherent in the operation of Cat Financial is the credit risk associated with its customers. The creditworthiness of each customer and the rate of delinquencies, repossessions and net losses on customer obligations are directly impacted by several factors, including relevant industry and economic conditions, the availability of capital, the experience and expertise of the customer's management team, commodity prices, political events and the sustained value of the underlying collateral. Any increase in delinquencies, repossessions and net losses on customer obligations could have a material adverse effect on Cat Financial's and our earnings and cash flows. In addition, although Cat Financial evaluates and adjusts its allowance for credit losses related to past due and non-performing receivables on a regular basis, adverse economic conditions or other factors that might cause deterioration of the financial health of its customers could change the timing and level of payments received and necessitate an increase in Cat Financial's estimated losses, which could also have a material adverse effect on Cat Financial's and our earnings and cash flows.

Currency exchange rate fluctuations affect our results of operations.

We conduct operations in many countries involving transactions denominated in a variety of currencies. We are subject to currency exchange rate risk to the extent that our costs are denominated in currencies other than those in which we earn revenues. Fluctuations in currency exchange rates have had, and will continue to have, an impact on our results as expressed in U.S. dollars. There can be no assurance that currency exchange rate fluctuations will not adversely affect our results of operations, financial condition and cash flows. While the use of currency hedging instruments may provide us with protection from adverse fluctuations in currency exchange rates, by utilizing these instruments we potentially forego the benefits that might result from favorable fluctuations in currency exchange rates. In addition, our outlooks do not assume fluctuations in currency exchange rates. Adverse fluctuations in currency exchange rates from the date of our outlooks could cause our actual results to differ materially from those anticipated in our outlooks and adversely impact our business, results of operations and financial condition.

We also face risks arising from the imposition of exchange controls and currency devaluations. Exchange controls may limit our ability to convert foreign currencies into U.S. dollars or to remit dividends and other payments by our foreign subsidiaries or businesses located in or conducted within a country imposing controls. Currency devaluations result in a diminished value of funds denominated in the currency of the country instituting the devaluation.

Restrictive covenants in our debt agreements could limit our financial and operating flexibility.

We maintain a number of credit facilities to support general corporate purposes (facilities) and have issued debt securities to manage liquidity and fund operations (debt securities). The agreements relating to a number of the facilities and the debt securities contain certain restrictive covenants applicable to us and certain subsidiaries, including Cat Financial. These covenants include maintaining a minimum consolidated net worth (defined as the consolidated shareholder’s equity including preferred stock but excluding the pension and other post-retirement benefits balance within accumulated other comprehensive income (loss)), limitations on the incurrence of liens and certain restrictions on consolidation and merger. Cat Financial has also agreed under certain of these agreements not to exceed a certain leverage ratio (consolidated debt to consolidated net worth, calculated (1) on a monthly basis as the average of the leverage ratios determined on the last day of each of the six preceding calendar months and (2) at each December 31), to maintain a minimum interest coverage ratio (profit excluding income taxes, interest expense and net

gain/(loss) from interest rate derivatives to interest expense, calculated at the end of each calendar quarter for the rolling four quarter period then most recently ended) and not to terminate, amend or modify its support agreement with us.

A breach of one or more of the covenants could result in adverse consequences that could negatively impact our business, results of operations and financial condition. These consequences may include the acceleration of amounts outstanding under certain of the facilities, triggering of an obligation to redeem certain debt securities, termination of existing unused commitments by our lenders, refusal by our lenders to extend further credit under one or more of the facilities or to enter into new facilities or the lowering or modification of our credit ratings or those of one or more of our subsidiaries.

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Sustained increases in funding obligations under our pension plans may impair our liquidity or financial condition.

We maintain certain defined benefit pension plans for our employees, which impose on us certain funding obligations. In determining our future payment obligations under the plans, we assume certain rates of return on the plan assets and a certain level of future benefit payments. Significant adverse changes in credit or capital markets could result in actual rates of return being materially lower than projected and result in increased contribution requirements. Our assumptions for future benefit payments may also change over time and could be materially higher than originally projected. We are expecting to make contributions to our pension plans in the future, and may be required to make contributions that could be material. We may fund contributions through the use of cash on hand, the proceeds of borrowings, shares of our common stock or a combination of the foregoing, as permitted by applicable law. Our assumptions for future benefit payments may also be materially higher than projected. These factors could significantly increase our payment obligations under the plans, and as a result, adversely affect our business and overall financial condition.

LEGAL & REGULATORY RISKS

Our global operations are subject to extensive trade and anti-corruption laws and regulations.

Due to the international scope of our operations, we are subject to a complex system of import- and export-related laws and regulations, including U.S. regulations issued by Customs and Border Protection, the Bureau of Industry and Security, the Office of Antiboycott Compliance, the Directorate of Defense Trade Controls and the Office of Foreign Assets Control, as well as the counterparts of these agencies in other countries. Any alleged or actual violations may subject us to government scrutiny, investigation and civil and criminal penalties, and may limit our ability to import or export our products or to provide services outside the United States. Furthermore, embargoes and sanctions imposed by the U.S. and other governments restricting or prohibiting sales to specific persons or countries or based on product classification may expose us to potential criminal and civil sanctions. We cannot predict the nature, scope or effect of future regulatory requirements to which our operations might be subject or in certain locations the manner in which existing laws might be administered or interpreted.

In addition, the U.S. Foreign Corrupt Practices Act and similar foreign anti-corruption laws generally prohibit companies and their intermediaries from making improper payments or providing anything of value to improperly influence foreign government officials for the purpose of obtaining or retaining business, or obtaining an unfair advantage. Recent years have seen a substantial increase in the global enforcement of anti-corruption laws. Our operations outside the United States, including in developing countries, could increase the risk of such violations. Violations of anti-corruption laws or regulations by our employees, by intermediaries acting on our behalf, or by our joint venture partners may result in severe criminal or civil sanctions, could disrupt our business, and result in an adverse effect on our reputation, business and results of operations or financial condition.

International trade policies may impact demand for our products and our competitive position.

Government policies on international trade and investment such as import quotas, capital controls or tariffs, whether adopted by individual governments or addressed by regional trade blocs, can affect the demand for our products and services, impact the competitive position of our products or prevent us from being able to sell products in certain countries. The implementation of more restrictive trade policies, such as more detailed inspections, higher tariffs or new barriers to entry, in countries where we sell large quantities of products and services could negatively impact our business, results of operations and financial condition. For example, a government’s adoption of “buy national” policies or retaliation by another government against such policies could have a negative impact on our results of operations.

We may incur additional tax expense or become subject to additional tax exposure.

We are subject to income taxes in the United States and numerous other jurisdictions. Our future results of operations could be adversely affected by changes in the effective tax rate as a result of a change in the mix of earnings between U.S. and non-U.S. jurisdictions or among jurisdictions with differing statutory tax rates, changes in our overall profitability, changes in tax laws or treaties or in their application or interpretation, changes in tax rates, changes in generally accepted accounting principles, changes in the valuation of deferred tax assets and liabilities, changes in the amount of earnings indefinitely reinvested in certain non-U.S. jurisdictions, the results of audits and examinations of previously filed tax returns and continuing assessments of our tax exposures. We are also subject to the continuous examination of our income tax returns by the U.S. Internal Revenue Service and other tax authorities. We regularly assess the likelihood of an adverse outcome resulting from these examinations. If our effective tax rates were to increase, or if the ultimate determination of our taxes owed is for an amount in excess of amounts previously accrued, our operating results, cash flows and financial condition could be adversely affected. For information regarding additional legal matters related to our taxes, please see Note 6 — "Income taxes" and Note 22 —

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"Environmental and legal matters" of Part II, Item 8 "Financial Statements and Supplementary Data" to this Annual Report on Form 10-K.

Costs associated with lawsuits or investigations or adverse rulings in enforcement or other legal proceedings may have an adverse effect on our results of operations.

We are subject to a variety of legal proceedings and legal compliance risks in virtually every part of the world. We face risk of exposure to various types of claims, lawsuits and government investigations. We are involved in various claims and lawsuits related to product design, manufacture and performance liability (including claimed asbestos and welding fumes exposure), contracts, employment issues, environmental matters, intellectual property rights, tax, securities and other legal proceedings that arise in and outside of the ordinary course of our business. The industries in which we operate are also periodically reviewed or investigated by regulators, which could lead to enforcement actions, fines and penalties or the assertion of private litigation claims. It is not possible to predict with certainty the outcome of claims, investigations and lawsuits, and we could in the future incur judgments, fines or penalties or enter into settlements of lawsuits and claims that could have an adverse effect on our business, results of operations and financial condition in any particular period.

The global and diverse nature of our operations means that legal and compliance risks will continue to exist and additional legal proceedings and other contingencies, the outcome of which cannot be predicted with certainty, may arise from time to time. In addition, subsequent developments in legal proceedings may affect our assessment and estimates of loss contingencies recorded as a reserve and require us to make payments in excess of our reserves, which could have an adverse effect on our results of operations and financial condition.

New regulations or changes in financial services regulation could adversely impact Caterpillar and Cat Financial.

Cat Financial’s operations are highly regulated by governmental authorities in the locations where it operates, which can impose significant additional costs and/or restrictions on its business. In the U.S., for example, certain Cat Financial activities are subject to the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank), which includes extensive provisions regulating the financial services industry. Certain aspects of Dodd-Frank remain to be implemented under the rulemaking and regulatory authority of the SEC, the CFTC and federal banking regulators. As such, Cat Financial has become and could continue to become subject to additional regulatory costs that could be significant and have an adverse effect on Cat Financial's and our results of operations and financial condition. Changes in regulations or additional regulations in the U.S. or internationally impacting the financial services industry could also add significant cost or operational constraints that might have an adverse effect on Cat Financial's and our results of operations and financial condition.

We are subject to stringent environmental laws and regulations that impose significant compliance costs.

Our facilities, operations and products are subject to increasingly stringent environmental laws and regulations globally, including laws and regulations governing emissions to noise, air, releases to soil and discharges to water and the generation, handling, storage, transportation, treatment and disposal of non-hazardous and hazardous waste materials. Some environmental laws impose strict, retroactive and joint and several liability for the remediation of the release of hazardous substances, even for conduct that was lawful at the time it occurred, or for the conduct of, or conditions caused by, prior operators, predecessors or other third parties. Failure to comply with environmental laws could expose us to penalties or clean-up costs, civil or criminal liability and sanctions on certain of our activities, as well as damage to property or natural resources. The potential liabilities, sanctions, damages and remediation efforts related to any non-compliance with such laws and regulations could negatively impact our ability to conduct our operations and our financial condition and results of operations. In addition, there can be no assurances that we will not be adversely affected by costs, liabilities or claims with respect to existing or subsequently acquired operations or

under present laws and regulations or those that may be adopted or imposed in the future.

Environmental laws and regulations may change from time to time, as may related interpretations and other guidance. Changes in environmental laws or regulations could result in higher expenses and payments, and uncertainty relating to environmental laws or regulations may also affect how we conduct our operations and structure our investments and could limit our ability to enforce our rights. Changes in environmental and climate change laws or regulations, including laws relating to greenhouse gas emissions, could lead to new or additional investment in product designs and could increase environmental compliance expenditures. Changes in climate change concerns, or in the regulation of such concerns, including greenhouse gas emissions, could subject us to additional costs and restrictions, including increased energy and raw materials costs. If environmental laws or regulations are either changed or adopted and impose significant operational restrictions and compliance requirements upon us or our products, they could negatively impact our business, capital expenditures, results of operations, financial condition and competitive position.

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Item 1B. Unresolved Staff Comments.

None.

Item 1C. Executive Officers of the Registrant.

Name and age	Present Caterpillar Inc. position and date of initial election	Principal positions held during the past five years if other than Caterpillar Inc. position currently held
D. James Umpleby, III (60)	Chairman of the Board (2018) and Chief Executive Officer (2017)	Group President (2013-2016)
Andrew R.J. Bonfield (56)	Chief Financial Officer (2018)	Group Chief Financial Officer for a multinational electricity and gas utility company (2010-2018)
Bob De Lange (49)	Group President (2017)	Vice President (2015-2016), Worldwide Product Manager, Medium Wheel Loaders, (2013-2014)
Denise C. Johnson (52)	Group President (2016)	Vice President (2012-2016)
Thomas A. Pellette (56)	Group President (2015)	Vice President (2013-2015)
Ramin Younessi (54)	Group President (2018)	Vice President (2013-2018)
Suzette M. Long (53)	General Counsel and Corporate Secretary (2017)	Interim Executive Vice President, Law and Public Policy (2017), Deputy General Counsel (2013-2017)
Cheryl C. Johnson (58)	Chief Human Resources Officer (2017)	Executive Vice President of Human Resources for a global multi-industry aerospace, defense and industrial manufacturing company (2012-2017)
Jananne A. Copeland (56)	Chief Accounting Officer (2007)	

Item 2. Properties.

General Information
Caterpillar's operations are highly integrated. Although the majority of our plants are involved primarily in production relating to our Construction Industries, Resource Industries or Energy & Transportation segments, several plants are involved in manufacturing relating to more than one business segment. In addition, several plants reported in our financial statements under the All Other segments are involved in the manufacturing of components that are used in the assembly of products for more than one business segment. Caterpillar's parts distribution centers are involved in the storage and distribution of parts for Construction Industries, Resource Industries and Energy & Transportation. The research and development activities carried on at our Technical Center in Mossville, Illinois involve products for Construction Industries, Resource Industries and Energy & Transportation.

We believe the properties we own to be generally well maintained and adequate for present use. Through planned capital expenditures, we expect these properties to remain adequate for future needs. Properties we lease are covered by leases expiring over terms of generally one to ten years. We do not anticipate any difficulty in retaining occupancy of any leased facilities, either by renewing leases prior to expiration or by replacing them with equivalent leased facilities.

Headquarters and Other Key Offices

Our corporate headquarters are in leased offices located in Deerfield, Illinois. Our Financial Products business is headquartered in offices in Nashville, Tennessee. Additional key offices are located inside and outside the United States.

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Technical Center, Training Centers, Demonstration Areas and Proving Grounds

We operate Technical Centers located in Mossville, Illinois; Wuxi, China; and Chennai, India. Our demonstration centers are located Tinaja Hills, Arizona; Edwards, Illinois; Chichibu, Japan and Malaga, Spain. We have various other technical and training centers, demonstration areas and proving grounds located both inside and outside the United States.

Parts Distribution Centers

Distribution of our parts is conducted from parts distribution centers inside and outside the United States. We operate parts distribution centers in the following locations: Arvin, California; Denver, Colorado; Miami, Florida; Atlanta, Georgia; Morton, Illinois; St. Paul, Minnesota; Clayton, Ohio; York, Pennsylvania; Waco, Texas; Spokane, Washington; Melbourne, Australia; Queensland, Australia; Grimbergen, Belgium; Piracicaba, Brazil; Shanghai, China; Sagami, Japan; San Luis Potosi, Mexico; Singapore, Republic of Singapore; Moscow, Russia; Johannesburg, South Africa; and Dubai, United Arab Emirates. We also own or lease other facilities that support our distribution activities.

Remanufacturing and Components

Remanufacturing of our products is reported in our Energy & Transportation segment and is conducted primarily at the facilities in the following locations: Franklin, Indiana; Corinth, Mississippi; Prentiss County, Mississippi; West Fargo, North Dakota; Piracicaba, Brazil; Shanghai, China; Nuevo Laredo, Mexico; and Shrewsbury, United Kingdom. Component manufacturing is reported in the All Other segments and is conducted primarily at facilities in the following locations: East Peoria, Illinois; Mapleton, Illinois; Peoria, Illinois; Menominee, Michigan; Boonville, Missouri; West Plains, Missouri; Goldsboro, North Carolina; Sumter, South Carolina; Tianjin, China; Xuzhou, China; Atessa, Italy; Bazzano, Italy; Frosinone, Italy; San Eusebio, Italy; Ramos Arizpe, Mexico; Pyeongtaek, South Korea; and Skinningrove, United Kingdom.

We also lease or own other facilities that support our remanufacturing and component manufacturing activities.

Manufacturing

Manufacturing of products for our Construction Industries, Resource Industries and Energy & Transportation segments is conducted primarily at the locations listed below. These facilities are believed to be suitable for their intended purposes, with adequate capacities for current and projected needs for existing products.

Our principal manufacturing facilities include those used by the following segments in the following locations:

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Segment	U.S. Facilities	Facilities Outside the U.S.
Construction Industries	Arkansas: North Little Rock	Brazil: Campo Largo, Piracicaba
	Georgia: Athens, LaGrange Illinois: Decatur, East Peoria Kansas: Wamego Minnesota: Brooklyn Park North Carolina: Clayton, Sanford Texas: Victoria, Waco	China: Suzhou, Wujiang, Xuzhou, Qingzhou France: Grenoble, Echirolles Hungary: Godollo India: Thiruvallar Indonesia: Jakarta Italy: Minerbio Japan: Akashi Mexico: Torreon Netherlands: Den Bosch Poland: Janow, Sosnowiec Thailand: Rayong United Kingdom: Desford, Stockton
Resource Industries	Illinois: Aurora, Decatur, East Peoria, Joliet	China: Wuxi
	South Carolina: Sumter Tennessee: Dyersburg Texas: Denison Wisconsin: South Milwaukee	Germany: Dortmund, Lunen India: Thiruvallur Indonesia: Batam Italy: Jesi Mexico: Acuna, Monterrey, Reynosa Russia: Tosno Thailand: Rayong United Kingdom: Peterlee, Springvale
Energy & Transportation	Alabama: Albertville, Montgomery	Australia: Cardiff, Perth, Redbank, Revesby
	California: San Diego	Brazil: Curitiba, Hortolandia, Piracicaba, Sete Lagoas
	Georgia: Griffin Illinois: Island Lake, LaGrange, Mossville, Mapleton, Pontiac	China: Tianjin, Wuxi Czech Republic: Zatec, Zebrak
	Indiana: Lafayette, Muncie Kentucky: Decoursey, Mayfield Oklahoma: Broken Arrow North Carolina: Winston-Salem Texas: Channelview, DeSoto, Mabank, San Antonio, Schertz, Seguin, Sherman	Germany: Kiel, Mannheim, Rostock India: Aurangabad, Hosur Italy: Pistoria Mexico: San Luis Potosi, Tijuana Republic of Singapore: Singapore
		Sweden: Ockero Islands United Kingdom: Larne, Peterborough, Sandiacre, South Queensferry, Stafford, Wimborne

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Item 3. Legal Proceedings.

Certain legal proceedings in which we are involved are discussed in Note 22 — "Environmental and legal matters" of Part II, Item 8 "Financial Statements and Supplementary Data" and should be considered an integral part of Part I, Item 3 "Legal Proceedings."

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Common Stock (NYSE: CAT)

Listing Information: Caterpillar common stock is listed on the New York Stock Exchange in the United States, and on stock exchanges in France and Switzerland.

Number of Shareholders: Shareholders of record at the end of 2018 totaled 26,938, compared with 27,992 at the end of 2017.

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Performance Graph: Total Cumulative Shareholder Return for Five-Year Period Ending December 31, 2018

The graph below shows the cumulative shareholder return assuming an investment of $100 on December 31, 2013, and reinvestment of dividends issued thereafter.

	2013	2014	2015	2016	2017	2018
Caterpillar Inc.	$100.00	$103.48	$79.70	$113.26	$198.25	$163.44
S&P 500	$100.00	$113.69	$115.26	$129.05	$157.22	$150.33
S&P 500 Machinery	$100.00	$104.42	$88.98	$119.18	$169.59	$144.76

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Non-U.S. Employee Stock Purchase Plans

As of December 31, 2018, we had 23 employee stock purchase plans (the "EIP Plans") administered outside the United States for our non-U.S. employees, which had approximately 11,000 active participants in the aggregate. During the fourth quarter of 2018, approximately 123,000 shares of Caterpillar common stock were purchased by the EIP Plans pursuant to the terms of such plans.

Issuer Purchases of Equity Securities

Period	Total Number of Shares Purchased[2,3,4]	Average Price Paid per Share[2,3,4]	Total Number of Shares Purchased as Part of Publicly Announced Program	Approximate Dollar Value of Shares that May Yet be Purchased under the Program (in billions)[1]
October 1-31, 2018	7,492,531	$ 124.66	7,492,531	$ 2.609
November 1-30, 2018	5,622,285	$ 125.89	5,622,285	$ 1.901
December 1-31, 2018	1,754,824	$ 126.19	1,754,824	$ 1.680
Total	14,869,640	$ 125.30	14,869,640	

[1] In January 2014, the Board of Directors authorized the repurchase of up to $10.0 billion of Caterpillar common stock, which expired on December 31, 2018 (the 2014 Authorization). In July 2018, the Board approved a new share repurchase authorization of up to $10.0 billion of Caterpillar common stock effective January 1, 2019, with no expiration.
[2] During the third quarter of 2018, we entered into an accelerated stock repurchase (ASR) with a third-party financial institution to purchase $750 million of our common stock. In August 2018, upon payment of the $750 million to the financial institution, we received 4.8 million shares. In October 2018, upon final settlement of the August 2018 ASR, we received 0.4 million shares at an average price of $143.31.
[3] During the fourth quarter of 2018, we entered into an ASR with a third-party financial institution to purchase $750 million of our common stock. In October 2018, upon payment of $750 million to the financial institution, we received 6.0 million shares. In December 2018, upon final settlement of the ASR, we received an additional 0.1 million shares. In total, we repurchased 6.1 million shares under this ASR at an average price per share of $124.40.
[4] In October, November, and December of 2018, we repurchased 1.1 million, 5.6 million, and 1.7 million additional shares respectively, for an aggregate of $1.0 billion in open market transactions at an average price per share of $118.28, $125.89, and $126.29, respectively. Some purchases made during the fourth quarter of 2018 were made pursuant to a trading plan meeting the requirements of Rule 10b5-1 under the Securities Exchange Act of 1934.
Share repurchases in the table above are reported based on the trade dates.

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Item 6. Selected Financial Data.

Five-year Financial Summary

(Dollars in millions except per share data)

	2018	2017	2016	2015	2014
Years ended December 31,					
Sales and revenues	$54,722	$45,462	$38,537	$47,011	$55,184
Percent inside the United States	41 %	41 %	41 %	41 %	38 %
Percent outside the United States	59 %	59 %	59 %	59 %	62 %
Sales	$51,822	$42,676	$35,773	$44,147	$52,142
Revenues	$2,900	$2,786	$2,764	$2,864	$3,042
Profit (loss) [1]	$6,147	$754	$(67)	$2,512	$2,452
Profit (loss) per common share [2]	$10.39	$1.27	$(0.11)	$4.23	$3.97
Profit (loss) per common share–diluted [3]	$10.26	$1.26	$(0.11)	$4.18	$3.90
Dividends declared per share of common stock	$3.36	$3.11	$3.08	$3.01	$2.70
Return on average common shareholders' equity [4]	44.1 %	5.6 %	(0.5)%	15.8 %	13.0 %
Capital expenditures:					
Property, plant and equipment	$1,276	$898	$1,109	$1,388	$1,539
Equipment leased to others	$1,640	$1,438	$1,819	$1,873	$1,840
Depreciation and amortization	$2,766	$2,877	$3,034	$3,046	$3,163
Research and development expenses [5]	$1,850	$1,842	$1,853	$2,134	$2,107
As a percent of sales and revenues	3.4 %	4.1 %	4.8 %	4.5 %	3.8 %
Average number of employees	101,500	96,000	99,500	110,800	115,600
December 31,					
Total assets	$78,509	$76,962	$74,704	$78,342	$84,498
Long-term debt due after one year:					
Consolidated	$25,000	$23,847	$22,818	$25,169	$27,696
Machinery, Energy & Transportation	$8,005	$7,929	$8,436	$8,960	$9,445
Financial Products	$16,995	$15,918	$14,382	$16,209	$18,251
Total debt:					
Consolidated	$36,553	$34,878	$36,783	$38,013	$39,195
Machinery, Energy & Transportation	$8,015	$7,936	$9,152	$9,486	$9,964
Financial Products	$28,538	$26,942	$27,631	$28,527	$29,231

[1] Profit (loss) attributable to common shareholders.

[2] Computed on weighted-average number of shares outstanding.

[3] Computed on weighted-average number of shares outstanding diluted by assumed exercise of stock-based compensation awards, using the treasury stock method. In 2016, the assumed exercise of stock-based compensation awards was not considered because the impact would be antidilutive.

[4] Represents profit (loss) divided by average shareholders' equity (beginning of year shareholders' equity plus end of year shareholders' equity divided by two).

[5] Effective January 1, 2018, we adopted new accounting guidance issued by the FASB related to the presentation of net periodic pension costs and net periodic postretirement benefit costs. The change was applied retrospectively to prior years. For further information see Note 1J - "Operations and summary of significant accounting policies - New Accounting Guidance" of Part II, Item 8 "Financial Statements and Supplementary Data".

Additional information required by Item 6 is included in Part II, Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations."

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

This Management’s Discussion and Analysis of Financial Condition and Results of Operations should be read in conjunction with our discussion of cautionary statements and significant risks to the company’s business under Item 1A. Risk Factors of the 2018 Form 10-K.

OVERVIEW

Our sales and revenues for 2018 were $54.722 billion, a 20 percent increase from 2017 sales and revenues of $45.462 billion. The increase was primarily due to higher sales volume, mostly due to improved demand across all regions and across the three primary segments. Profit per share for 2018 was $10.26, compared to profit per share of $1.26 in 2017. Profit was $6.147 billion in 2018, compared with $754 million in 2017. The increase was primarily due to lower tax expense, higher sales volume, decreased restructuring costs and improved price realization. The increase was partially offset by higher manufacturing costs and selling, general and administrative (SG&A) and research and development (R&D) expenses and lower profit from the Financial Products Segment.

Fourth-quarter 2018 sales and revenues were $14.342 billion, up $1.446 billion, or 11 percent, from $12.896 billion in the fourth quarter of 2017. Fourth-quarter 2018 profit was $1.78 per share, compared with a loss of $2.18 per share in the fourth quarter of 2017. Fourth-quarter 2018 profit was $1.048 billion, compared with a loss of $1.299 billion in 2017.

Highlights for 2018 include:

- Sales and revenues in 2018 were $54.722 billion, up 20 percent from 2017. Sales improved in all regions and across the three primary segments.
- Operating profit as a percent of sales and revenues was 15.2 percent in 2018, compared with 9.8 percent in 2017. Adjusted operating profit margin was 15.9 percent in 2018, compared with 12.5 percent in 2017.
- Profit was $10.26 per share for 2018, and excluding the items in the table below, adjusted profit per share was $11.22. For 2017 profit was $1.26 per share, and excluding the items in the table below, adjusted profit per share was $6.88.
- In order for our results to be more meaningful to our readers, we have separately quantified the impact of several significant items:

(Millions of dollars)	Full Year 2018 Profit Before Taxes	Full Year 2018 Profit Per Share	Full Year 2017 Profit Before Taxes	Full Year 2017 Profit Per Share
Profit	$7,822	$10.26	$4,082	$1.26
Restructuring costs	386	0.50	1,256	1.68
Mark-to-market losses	495	0.64	301	0.26
Deferred tax valuation allowance adjustments	—	(0.01)	—	(0.18)
U.S. tax reform impact	—	(0.17)	—	3.95
Gain on sale of equity investment	—	—	(85)	(0.09)
Adjusted profit	$8,703	$11.22	$5,554	$6.88

- Machinery, Energy & Transportation (ME&T) operating cash flow for 2018 was about $6.3 billion, more than sufficient to cover capital expenditures and dividends. ME&T operating cash flow for 2017 was about $5.5 billion.

Restructuring Costs

In recent years, we have incurred substantial restructuring costs to achieve a flexible and competitive cost structure. During 2018, we incurred $386 million of restructuring costs related to restructuring actions across the company. During 2017, we incurred $1.256 billion of restructuring costs with about half related to the closure of the facility in Gosselies, Belgium, and the remainder related to other restructuring actions across the company. Although we expect restructuring to continue as part of ongoing business activities, restructuring costs should be lower in 2019 than 2018.

Notes:

- Glossary of terms included on pages 43-45; first occurrence of terms shown in bold italics.

* Information on non-GAAP financial measures is included on pages 58-59.

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2018 COMPARED WITH 2017
CONSOLIDATED SALES AND REVENUES

The chart above graphically illustrates reasons for the change in Consolidated Sales and Revenues between 2017 (at left) and 2018 (at right). Items favorably impacting sales and revenues appear as upward stair steps with the corresponding dollar amounts above each bar, while items negatively impacting sales and revenues appear as downward stair steps with dollar amounts reflected in parentheses above each bar. Caterpillar management utilizes these charts internally to visually communicate with the company's Board of Directors and employees.

Total sales and revenues were $54.722 billion in 2018, an increase of $9.260 billion, or 20 percent, compared with $45.462 billion in 2017. The increase was primarily due to higher sales volume driven by improved demand for equipment across the three primary segments, including favorable changes in dealer inventories. Favorable price realization across the three primary segments also contributed to the sales improvement. In addition, sales were higher due to currency impacts, primarily from a stronger euro. Financial Products’ revenues increased slightly.

Sales increased in all regions, with the largest sales increase in North America, which improved 23 percent as strong economic conditions in key end markets drove higher demand. Also contributing to higher sales was an increase in dealer inventories during 2018, compared with dealer inventories that were about flat in 2017.

Sales increased 13 percent in Latin America primarily due to stabilizing economic conditions in several countries in the region that resulted in improved demand from low levels.

EAME sales increased 16 percent primarily due to higher demand, including favorable changes in dealer inventories. The improvement in demand was primarily in Europe. The impact of a stronger euro and favorable price realization also contributed to higher sales. The impact of changes in dealer inventories was favorable as dealer inventories increased more significantly in 2018 than in 2017.

Asia/Pacific sales increased 28 percent primarily due to higher demand in several countries across the region, including favorable changes in dealer inventories and favorable price realization. Dealer inventories increased during 2018 as compared with dealer inventories that were about flat in 2017.

Dealer machine and engine inventories increased about $2.3 billion in 2018, compared with an increase of about $100 million in 2017. Dealers are independent, and the reasons for changes in their inventory levels vary, including their expectations of future demand and product delivery times. Dealers’ demand expectations take into account seasonal changes, macroeconomic conditions, machine rental rates and other factors. Delivery times can vary based on availability of product from Caterpillar factories and product distribution centers.

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Sales and Revenues by Segment

(Millions of dollars)	2017	Sales Volume	Price Realization	Currency	Inter-Segment / Other	2018	$ Change	% Change
Construction Industries	$19,240	$3,663	$ 122	$ 198	$ 14	$23,237	$3,997	21 %
Resource Industries	7,861	2,082	316	(14)	25	10,270	2,409	31 %
Energy & Transportation	19,382	2,637	163	68	535	22,785	3,403	18 %
All Other Segments	570	(26)	(1)	3	(64)	482	(88)	(15)%
Corporate Items and Eliminations	(4,377)	(65)	1	(1)	(510)	(4,952)	(575)	
Machinery, Energy & Transportation	42,676	8,291	601	254	—	51,822	9,146	21 %
Financial Products Segment	3,093	—	—	—	186	3,279	186	6 %
Corporate Items and Eliminations	(307)	—	—	—	(72)	(379)	(72)	
Financial Products Revenues	2,786	—	—	—	114	2,900	114	4 %
Consolidated Sales and Revenues	$45,462	$8,291	$ 601	$ 254	$ 114	$54,722	$9,260	20 %

Sales and Revenues by Geographic Region

	North America		Latin America		EAME		Asia/Pacific		External Sales and Revenues		Inter-Segment		Total Rever
(Millions of dollars)	$	% Chg	$	% Chg	$	% Chg	$	% Chg	$	% Chg	$	% Chg	$
2018													
Construction Industries	$10,754	23%	$1,479	6%	$4,410	17%	$6,473	24%	$23,116	21%	$121	13%	$23,2
Resource Industries	3,357	30%	1,647	29%	2,217	25%	2,667	43%	9,888	32%	382	7%	10,27
Energy & Transportation	9,685	22%	1,331	6%	4,934	11%	2,882	25%	18,832	18%	3,953	16%	22,78
All Other Segments	63	(10%)	3	—%	18	(67%)	70	37%	154	(13%)	328	(16%)	482
Corporate Items and Eliminations	(155)		—		(11)		(2)		(168)		(4,784)		(4,95
Machinery, Energy & Transportation	23,704	23%	4,460	13%	11,568	16%	12,090	28%	51,822	21%	—	—%	51,82
Financial Products Segment	2,153	7%	281	(8%)	387	(7%)	458	26%	3,279	6%	—	—%	3,279
Corporate Items and Eliminations	(234)		(46)		(26)		(73)		(379)		—		(379
Financial Products Revenues	1,919	6%	235	(10%)	361	(10%)	385	24%	2,900	4%	—	—%	2,900
Consolidated Sales and Revenues	$25,623	22%	$4,695	12%	$11,929	15%	$12,475	28%	$54,722	20%	$—	—%	$54,7
2017													
Construction Industries	$8,742		$1,396		$3,760		$5,235		$19,133		$107		$19,2
Resource Industries	2,582		1,281		1,775		1,866		7,504		357		7,861
	7,959		1,261		4,431		2,313		15,964		3,418		19,38

Energy & Transportation							
All Other Segments	70	3	54	51	178	392	570
Corporate Items and Eliminations	(97)	(1)	(6)	1	(103)	(4,274)	(4,37
Machinery, Energy & Transportation	19,256	3,940	10,014	9,466	42,676	—	42,67
Financial Products Segment	2,006	306	418	363	3,093	—	3,093
Corporate Items and Eliminations	(190)	(46)	(19)	(52)	(307)	—	(307
Financial Products Revenues	1,816	260	399	311	2,786	—	2,786
Consolidated Sales and Revenues	$21,072	$4,200	$10,413	$9,777	$45,462	$—	$45,4

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CONSOLIDATED OPERATING PROFIT

The chart above graphically illustrates reasons for the change in Consolidated Operating Profit between 2017 (at left) and 2018 (at right). Items favorably impacting operating profit appear as upward stair steps with the corresponding dollar amounts above each bar, while items negatively impacting operating profit appear as downward stair steps with dollar amounts reflected in parentheses above each bar. Caterpillar management utilizes these charts internally to visually communicate with the company's Board of Directors and employees. The bar entitled Other includes consolidating adjustments and Machinery, Energy & Transportation other operating (income) expenses.
Operating profit was $8.293 billion in 2018, an increase of $3.833 billion, or 86 percent, compared with $4.460 billion in 2017. The increase was primarily due to higher sales volume and lower restructuring costs. Higher manufacturing costs and increased SG&A/R&D expenses were mostly offset by favorable price realization.
Manufacturing costs were higher due to increased material and freight costs, partially offset by lower warranty expense. Material costs were higher primarily due to increases in steel prices. The impact of recently imposed tariffs on material costs was about $110 million during 2018. We expect higher expense in 2019 due to the full-year impact of tariffs. Freight costs were unfavorable primarily due to supply chain inefficiencies as the industry responds to strong global demand.
SG&A/R&D expenses increased primarily due to investments aligned with the company’s strategic growth initiatives.
Restructuring costs were $394 million in 2018, related to restructuring actions across the company. In 2017, we incurred $1.227 billion of restructuring costs with about half related to the closure of the facility in Gosselies, Belgium, and the remainder related to other restructuring actions across the company.
Short-term incentive compensation expense is directly related to financial and operational performance, measured against targets set annually. Short-term incentive compensation expense in 2018 was about $1.4 billion, nearly the same as 2017.
For 2019, we expect short-term incentive compensation expense will be significantly lower than 2018. We also expect favorable price realization to about offset higher costs, excluding short-term incentive compensation expense.

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Profit (Loss) by Segment

(Millions of dollars)	2018	2017	$ Change	% Change
Construction Industries	$4,174	$3,255	$919	28 %
Resource Industries	1,603	698	905	130 %
Energy & Transportation	3,938	2,856	1,082	38 %
All Other Segments	23	(44)	67	152 %
Corporate Items and Eliminations	(1,583)	(2,659)	1,076	
Machinery, Energy & Transportation	8,155	4,106	4,049	99 %
Financial Products Segment	505	792	(287)	(36)%
Corporate Items and Eliminations	17	(116)	133	
Financial Products	522	676	(154)	(23)%
Consolidating Adjustments	(384)	(322)	(62)	
Consolidated Operating Profit	$8,293	$4,460	$3,833	86 %

Other Profit/Loss Items

- Other income/expense in 2018 was expense of $67 million, compared with income of $153 million in 2017. The unfavorable change was primarily a result of an unfavorable impact from equity securities in Insurance Services. Effective January 1, 2018, we adopted a new U.S. GAAP accounting rule that requires our equity securities to be measured at fair value through earnings. Previously, the fair value adjustments for these securities were reported in equity until the securities were sold or an impairment was recognized. We adopted the standard using the modified retrospective approach, with no change to prior year financial statements. During 2018, we recognized a loss of $33 million related to fair value adjustments. During 2017, we recognized gains on sales of securities of $104 million. In addition, the absence of a 2017 pretax gain of $85 million on the sale of Caterpillar's equity investment in IronPlanet contributed to the unfavorable change.
- The provision for income taxes for 2018 reflects an annual effective tax rate of 24.1 percent, compared with 27.7 percent for the full year of 2017, excluding the items discussed below. The decrease was primarily due to the reduction in the U.S. corporate tax rate beginning January 1, 2018, along with other changes in the geographic mix of profits from a tax perspective.

We have completed our accounting for the income tax effects of U.S. tax reform legislation and included measurement period adjustments in 2018 of $104 million to reduce the provisionally estimated charge of $2.371 billion recognized in 2017. A $154 million benefit revised the estimated impact of the write-down of U.S. net deferred tax assets to reflect the reduction in the U.S. corporate tax rate from 35 percent to 21 percent. This benefit primarily related to the decision to make an additional discretionary pension contribution of $1.0 billion to U.S. pension plans in 2018 which was treated as deductible on the 2017 U.S. tax return. A $50 million charge revised the provisionally estimated cost of a mandatory deemed repatriation of non-U.S. earnings, including changes in the deferred tax liability related to the amount of earnings considered not indefinitely reinvested as well as the amount of unrecognized tax benefits and state tax liabilities associated with these tax positions.

The provision for income taxes in 2018 and 2017 also included non-cash benefits of $63 million and $111 million, respectively, from reductions in the valuation allowance against U.S. state deferred tax assets due to improved profits in the United States. An additional benefit of $25 million was included in 2018 due to the release of a valuation allowance for a certain non-U.S. subsidiary. The provision for income taxes in 2018 also included a charge of $59 million to correct for an error which resulted in an understatement of the valuation allowance offsetting deferred tax assets for prior years. This error had the effect of overstating profit by $17 million and $33 million for 2017 and 2016, respectively. Management has concluded that the error was not material to any period presented. In addition, a tax benefit of $56 million was recorded in 2018, compared with $64 million in 2017, for the settlement of stock-based compensation awards with associated tax deductions in excess of cumulative U.S. GAAP compensation expense.

We expect the annual effective tax rate will be higher in 2019. The anticipated increase primarily relates to the application of U.S. tax reform provisions to earnings of non-U.S. subsidiaries which do not have a calendar fiscal year end. Certain provisions did not apply to these subsidiaries in 2018.

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Construction Industries

Construction Industries’ total sales were $23.237 billion in 2018, compared with $19.240 billion in 2017. The increase was mostly due to higher sales volume for construction equipment. Sales were also higher due to currency impacts, primarily from a stronger euro.

Sales volume increased primarily due to higher demand for construction equipment and the impact of favorable changes in dealer inventories. Dealer inventories increased significantly more during 2018 than during 2017.

Sales increased in all regions.

In North America, the sales increase was primarily due to higher demand for construction equipment, primarily to support oil and gas activities, including pipelines, non-residential building construction and infrastructure activities. In addition, sales increased due to the favorable impact of dealer inventories, which increased during 2018, compared with a slight decrease during 2017. We believe the strength of the U.S. economy, continued pipeline construction and state and local funding for infrastructure development will be favorable to sales in 2019.

Although construction activities remained weak in Latin America, sales were higher in the region.

Sales increased in EAME primarily due to higher demand and the favorable impact of currency, mostly from a stronger euro. Higher demand was driven by increased construction activities across several countries in the region. Favorable price realization also contributed to the sales increase.

Sales in Asia/Pacific were higher in several countries in the region, most significantly in China, stemming from increased building construction and infrastructure investment. Favorable changes in dealer inventories contributed to the sales improvement as dealer inventories increased in 2018 and were about flat in 2017. In 2019, we expect demand in China to be about flat after two years of significant growth.

Construction Industries’ profit was $4.174 billion in 2018, compared with $3.255 billion in 2017. The increase in profit was a result of higher sales volume and favorable price realization, partially offset by higher material and freight costs, and increased SG&A/R&D expenses, partially due to spending for strategic growth initiatives.

Construction Industries’ profit as a percent of total sales was 18.0 percent in 2018, compared with 16.9 percent in 2017.

Resource Industries

Resource Industries’ total sales were $10.270 billion in 2018, an increase of $2.409 billion from 2017. The increase was primarily due to higher demand for both mining and heavy construction equipment, including aftermarket parts. Favorable commodity price levels and increased mining production contributed to higher mining equipment sales. In addition, increased sales to heavy construction, quarry and aggregate customers were driven by positive global economic growth. Resource Industries’ customers globally continue to focus on improving productivity and efficiency of existing machine assets, thereby extending equipment life cycles and lowering operating costs. Rebuild, overhaul and maintenance activity was robust, resulting in higher aftermarket parts sales. Favorable price realization also contributed to the sales improvement. In 2019, we believe commodity market fundamentals will remain supportive for investment and mining companies will increase their capital expenditures. We expect demand for heavy construction, quarry and aggregate equipment will remain strong in 2019.

Resource Industries’ profit was $1.603 billion in 2018, compared with $698 million in 2017. The improvement was mostly due to higher sales volume and favorable price realization, partially offset by increased manufacturing costs and unfavorable currency impacts. Manufacturing costs were unfavorable as lower warranty expense was more than offset by higher freight and material costs.

Resource Industries’ profit as a percent of total sales was 15.6 percent in 2018, compared with 8.9 percent in 2017.

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Energy & Transportation
Sales by Application

(Millions of dollars)	2018	2017	$ Change	% Change
Oil and Gas	$5,763	$4,424	$1,339	30 %
Power Generation	4,334	3,551	783	22 %
Industrial	3,640	3,445	195	6 %
Transportation	5,095	4,544	551	12 %
External Sales	18,832	15,964	2,868	18 %
Inter-Segment	3,953	3,418	535	16 %
Total Sales	$22,785	$19,382	$3,403	18 %

Energy & Transportation’s total sales were $22.785 billion in 2018, compared with $19.382 billion in 2017. The increase was primarily due to higher sales volume across all applications. Favorable price realization also contributed to the increase in sales.

- Oil and Gas - Sales increased due to higher demand in North America for well servicing and gas compression applications. Growth in U.S. onshore oil and gas drove increased sales for reciprocating engines and related aftermarket parts. Sales of turbines and turbine-related services were higher for production applications.
- Power Generation - Sales improved across all regions, with the largest increase in North America, primarily for reciprocating engine applications including data centers, and for aftermarket parts. In addition, sales increased in EAME from reciprocating engine projects, turbines and turbine-related services and favorable currency.
- Industrial - Sales were higher in Asia/Pacific and North America, primarily due to improving economic conditions supporting higher engine sales into industrial applications. Sales in EAME were about flat as economic uncertainty in a few countries in the Middle East was mostly offset by favorable currency impacts.
- Transportation - Sales were higher for rail services driven by acquisitions in Asia/Pacific and EAME and increased rail traffic in North America. Marine sales were higher in Asia/Pacific, led by increased activity in the ferry sector.

Energy & Transportation’s profit was $3.938 billion in 2018, compared with $2.856 billion in 2017. The improvement was due to higher sales volume and favorable price realization. This was partially offset due to increased spending for strategic growth initiatives and higher freight costs.

Energy & Transportation’s profit as a percent of total sales was 17.3 percent in 2018, compared with 14.7 percent in 2017.

Financial Products Segment

Financial Products’ segment revenues were $3.279 billion, an increase of $186 million, or 6 percent, from 2017. The increase was primarily due to higher average financing rates and higher average earning assets in North America and Asia/Pacific. These favorable impacts were partially offset by lower intercompany lending activity in North America, lower average earning assets in Latin America and lower average financing rates in Europe.

Financial Products’ segment profit was $505 million in 2018, compared with $792 million in 2017. The decrease was primarily due to an increase in the provision for credit losses at Cat Financial, an unfavorable impact from equity securities in Insurance Services and lower intercompany lending activity. These unfavorable impacts, which are not expected to recur in 2019, were partially offset by higher average earning assets and an increase in net yield on average earning assets.

At the end of 2018, past dues at Cat Financial were 3.55 percent, compared with 2.78 percent at the end of 2017. Write-offs, net of recoveries, were $189 million for 2018, compared with $114 million for 2017. As of December 31, 2018, Cat Financial's allowance for credit losses totaled $511 million, or 1.80 percent of finance receivables, compared with $365 million, or 1.33 percent of finance receivables at December 31, 2017. The increase in past dues, write-offs and allowance for credit losses was primarily due to weakening in the Cat Power Finance portfolio.

Corporate Items and Eliminations

Expense for corporate items and eliminations was $1.566 billion in 2018, a decrease of $1.209 billion from 2017. The decrease in expense was mostly due to lower restructuring costs and methodology differences. Restructuring costs were $394 million in 2018. In 2017, restructuring costs impacting operating profit were $1.227 billion with about half related to the closure of the facility in Gosselies, Belgium and the remainder related to other restructuring actions across the company.

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FOURTH QUARTER 2018 COMPARED WITH FOURTH QUARTER 2017
CONSOLIDATED SALES AND REVENUES

The chart above graphically illustrates reasons for the change in Consolidated Sales and Revenues between the fourth quarter of 2017 (at left) and the fourth quarter of 2018 (at right). Items favorably impacting sales and revenues appear as upward stair steps with the corresponding dollar amounts above each bar, while items negatively impacting sales and revenues appear as downward stair steps with dollar amounts reflected in parentheses above each bar. Caterpillar management utilizes these charts internally to visually communicate with the company's Board of Directors and employees.

Total sales and revenues were $14.342 billion in the fourth quarter of 2018, an increase of $1.446 billion, or 11 percent, compared with $12.896 billion in the fourth quarter of 2017. The increase was due to higher sales volume driven by improved demand across all regions and in the three primary segments. Favorable price realization, primarily in Construction Industries, also contributed to the sales improvement. The increase was partially offset by unfavorable currency impacts due to a stronger U.S. dollar.

Sales increased in all regions. The largest sales increase was in North America, which improved 13 percent as strong economic conditions in key end markets drove higher demand, including favorable changes in dealer inventories. Dealer inventories increased more significantly during the fourth quarter of 2018 than during the fourth quarter of 2017.

Sales increased 11 percent in Latin America primarily due to stabilizing economic conditions in several countries in the region that resulted in improved demand from low levels.

EAME sales increased 14 percent primarily due to higher demand as economic conditions improved in Europe; however, this was partially offset by economic uncertainty in a few countries in the Middle East.

Asia/Pacific sales increased 7 percent mostly due to higher demand, including favorable changes in dealer inventories, in several countries across the region. This was partially offset by lower demand in China following two years of significant growth. Dealer inventories increased during the fourth quarter of 2018 and were about flat during the fourth quarter of 2017. Favorable price realization also contributed to the sales improvement. The increase in sales was partially offset by unfavorable currency impacts.

Dealer machine and engine inventories increased about $200 million during the fourth quarter of 2018 and remained about flat during the fourth quarter of 2017. Dealers are independent, and the reasons for changes in their inventory levels vary, including their expectations of future demand and product delivery times. Dealers’ demand expectations take into account seasonal changes, macroeconomic conditions, machine rental rates and other factors. Delivery times can vary based on availability of product from Caterpillar factories and product distribution centers.

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Sales and Revenues by Segment

(Millions of dollars)	Fourth Quarter 2017	Sales Volume	Price Realization	Currency	Inter-Segment / Other	Fourth Quarter 2018	$ Change	% Change
Construction Industries	$5,295	$382	$ 111	$ (85)	$ 2	$5,705	$410	8 %
Resource Industries	2,308	504	34	(32)	(17)	2,797	489	21 %
Energy & Transportation	5,640	599	33	(73)	88	6,287	647	11 %
All Other Segments	155	(13)	—	—	(13)	129	(26)	(17)%
Corporate Items and Eliminations	(1,204)	(25)	1	—	(60)	(1,288)	(84)	
Machinery, Energy & Transportation	12,194	1,447	179	(190)	—	13,630	1,436	12 %
Financial Products Segment	783	—	—	—	29	812	29	4 %
Corporate Items and Eliminations	(81)	—	—	—	(19)	(100)	(19)	
Financial Products Revenues	702	—	—	—	10	712	10	1 %
Consolidated Sales and Revenues	$12,896	$1,447	$ 179	$ (190)	$ 10	$14,342	$1,446	11 %

Sales and Revenues by Geographic Region

	North America		Latin America		EAME		Asia/Pacific		External Sales and Revenues		Inter-Segment		Total Sale Revenues
(Millions of dollars)	$	% Chg	$	% Chg	$	% Chg	$	% Chg	$	% Chg	$	% Chg	$
Fourth Quarter 2018													
Construction Industries	$2,749	17%	$374	(5%)	$1,063	9%	$1,480	(4%)	$5,666	8%	$39	5%	$5,705
Resource Industries	906	15%	466	21%	554	17%	785	41%	2,711	23%	86	(17%)	2,797
Energy & Transportation	2,569	10%	434	16%	1,509	17%	753	5%	5,265	12%	1,022	9%	6,287
All Other Segments	16	(27%)	2	100%	6	(57%)	15	—%	39	(25%)	90	(13%)	129
Corporate Items and Eliminations	(47)		1		(3)		(2)		(51)		(1,237)		(1,288)
Machinery, Energy & Transportation	6,193	13%	1,277	11%	3,129	14%	3,031	7%	13,630	12%	—	—%	13,630
Financial Products Segment	545	8%	68	(15%)	84	(21%)	115	26%	812	4%	—	—%	812
Corporate Items and Eliminations	(66)		(10)		(8)		(16)		(100)		—		(100)
Financial Products Revenues	479	5%	58	(15%)	76	(25%)	99	27%	712	1%	—	—%	712
Consolidated Sales and Revenues	$6,672	13%	$1,335	10%	$3,205	12%	$3,130	8%	$14,342	11%	$—	—%	$14,342
Fourth Quarter 2017													
	$2,346		$392		$976		$1,544		$5,258		$37		$5,295

Construction Industries							
Resource Industries	791	384	475	555	2,205	103	2,308
Energy & Transportation	2,327	374	1,286	719	4,706	934	5,640
All Other Segments	22	1	14	15	52	103	155
Corporate Items and Eliminations	(27)	—	—	—	(27)	(1,177)	(1,204)
Machinery, Energy & Transportation	5,459	1,151	2,751	2,833	12,194	—	12,194
Financial Products Segment	505	80	107	91	783	—	783
Corporate Items and Eliminations	(50)	(12)	(6)	(13)	(81)	—	(81)
Financial Products Revenues	455	68	101	78	702	—	702
Consolidated Sales and Revenues	$5,914	$1,219	$2,852	$2,911	$12,896	$—	$12,896

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CONSOLIDATED OPERATING PROFIT

The chart above graphically illustrates reasons for the change in Consolidated Operating Profit between the fourth quarter of 2017 (at left) and the fourth quarter of 2018 (at right). Items favorably impacting operating profit appear as upward stair steps with the corresponding dollar amounts above each bar, while items negatively impacting operating profit appear as downward stair steps with dollar amounts reflected in parentheses above each bar. Caterpillar management utilizes these charts internally to visually communicate with the company's Board of Directors and employees. The bar entitled Other includes consolidating adjustments and Machinery, Energy & Transportation other operating (income) expenses.

Operating profit for the fourth quarter of 2018 was $1.883 billion, compared with $1.387 billion in the fourth quarter of 2017. The increase of $496 million was mostly due to higher sales volume. Favorable price realization and lower restructuring costs were mostly offset by higher manufacturing costs and lower profit from Financial Products. Manufacturing costs were higher due to increased material and freight costs, partially offset by lower warranty expense. Material costs were higher primarily due to increases in steel prices and tariffs. Freight costs were unfavorable primarily due to continued supply chain inefficiencies.

Financial Products’ operating profit was lower primarily due to an increase in the provision for credit losses, which was mostly driven by a $72 million unfavorable impact from an increase in allowance rate and an increase in write-offs of $13 million, due to continued weakening in the Cat Power Finance portfolio. This was partially offset by higher average earning assets.

Restructuring costs were $101 million in the fourth quarter of 2018, compared with $245 million in the fourth quarter of 2017.

Short-term incentive compensation expense was about $310 million in the fourth quarter of 2018, compared with about $350 million in the fourth quarter of 2017.

Operating profit margin for the fourth quarter of 2018 was 13.1 percent, compared with 10.8 percent in the fourth quarter of 2017.

Profit (Loss) by Segment

(Millions of dollars)	Fourth Quarter 2018	Fourth Quarter 2017	$ Change	% Change
Construction Industries	$845	$837	$8	1 %
Resource Industries	400	210	190	90 %
Energy & Transportation	1,079	874	205	23 %
All Other Segments	(47)	(16)	(31)	(194)%
Corporate Items and Eliminations	(375)	(588)	213	
Machinery, Energy & Transportation	1,902	1,317	585	44 %
Financial Products Segment	29	233	(204)	(88)%
Corporate Items and Eliminations	54	(77)	131	
Financial Products	83	156	(73)	(47)%
Consolidating Adjustments	(102)	(86)	(16)	
Consolidated Operating Profit	$1,883	$1,387	$496	36 %

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Other Profit/Loss Items

- Interest expense excluding Financial Products in the fourth quarter of 2018 was $99 million, a decrease of $70 million primarily due to an early debt retirement in the fourth quarter of 2017.
- Other income/expense in the fourth quarter of 2018 was a loss of $417 million, compared with a loss of $107 million in the fourth quarter of 2017. The unfavorable change was primarily a result of an increase in mark-to-market losses related to pension and other postemployment benefit (OPEB) plans and an unfavorable impact from equity securities.
- The provision for income taxes in the fourth quarter of 2018 reflects an annual effective tax rate of 24.1 percent, compared with 27.7 percent for the full year of 2017, excluding the items discussed below. The decrease was primarily due to the reduction in the U.S. corporate tax rate beginning January 1, 2018, along with other changes in the geographic mix of profits from a tax perspective.

The provision for income taxes in the fourth quarter of 2018 and 2017 also included non-cash benefits of $63 million and $111 million, respectively, from reductions in the valuation allowance against U.S. state deferred tax assets due to improved profits in the United States. The provision for income taxes in the fourth quarter of 2018 also included a $50 million increase related to the $2.371 billion charge recorded in the fourth quarter of 2017 due to the enactment of U.S. tax reform legislation. In addition, a tax benefit of $4 million was recorded in the fourth quarter of 2018, compared with $19 million in the fourth quarter of 2017, for the settlement of stock-based compensation awards with associated tax deductions in excess of cumulative U.S. GAAP compensation expense. The provision for income taxes in the fourth quarter of 2018 and 2017 also included a $8 million charge and a $130 million benefit, respectively, related to the change from the third-quarter estimated annual tax rate.

Construction Industries

Construction Industries' total sales were $5.705 billion in the fourth quarter of 2018, compared with $5.295 billion in the fourth quarter of 2017. The increase was mostly due to higher sales volume for construction equipment. Favorable price realization was mostly offset by unfavorable currency impacts due to a stronger U.S. dollar.

- In North America, the sales increase was driven by higher demand for new equipment, with about half due to an increase in dealer inventories. The increase in demand was primarily to support oil and gas activities, including pipelines, and non-residential building construction activities. Favorable price realization also contributed to the sales improvement.
- Construction activities remained at low levels in Latin America.
- Sales increased in EAME as infrastructure, road and non-residential building construction activities drove higher demand in Europe, partially offset by weakness in the Middle East.
- Sales in Asia/Pacific declined due to lower demand in China, partially offset by higher demand in a few other countries in the region. Unfavorable currency impacts also contributed to the sales decline.

Construction Industries' profit was $845 million in the fourth quarter of 2018, compared with $837 million in the fourth quarter of 2017. The increase in profit was a result of favorable price realization and higher sales volume, mostly offset by higher manufacturing costs, including material, freight, labor costs and the absence of Brazil incentives.

Construction Industries' profit as a percent of total sales was 14.8 percent in the fourth quarter of 2018, compared with 15.8 percent in the fourth quarter of 2017.

Resource Industries

Resource Industries' total sales were $2.797 billion in the fourth quarter of 2018, an increase of $489 million from the fourth quarter of 2017. The increase was primarily due to higher demand for both mining and heavy construction equipment, including quarry and aggregate. Mining activities were robust as commodity market fundamentals remained positive, and increased non-residential construction activities drove higher sales.

Resource Industries' profit was $400 million in the fourth quarter of 2018, compared with $210 million in the fourth quarter of 2017. The improvement was mostly due to higher sales volume and favorable price realization, partially offset by higher material and freight costs.

Resource Industries' profit as a percent of total sales was 14.3 percent in the fourth quarter of 2018, compared with 9.1 percent in the fourth quarter of 2017.

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Energy & Transportation
Sales by Application

(Millions of dollars)	Fourth Quarter 2018	Fourth Quarter 2017	$ Change	% Change
Oil and Gas	$ 1,719	$ 1,497	$ 222	15 %
Power Generation	1,271	1,060	211	20 %
Industrial	902	899	3	— %
Transportation	1,373	1,250	123	10 %
External Sales	5,265	4,706	559	12 %
Inter-Segment	1,022	934	88	9 %
Total Sales	$ 6,287	$ 5,640	$ 647	11 %

Energy & Transportation's total sales were $6.287 billion in the fourth quarter of 2018, compared with $5.640 billion in the fourth quarter of 2017. The increase was primarily due to higher sales volume across all applications except Industrial, which was flat.

- Oil and Gas - Sales increased due to higher demand for reciprocating engines in North America for gas compression and well servicing applications. Sales of turbines and turbine-related services were about flat.
- Power Generation - Sales improved across all regions, with the largest increases in North America and EAME primarily for reciprocating engine applications, including data centers and other large power generation projects.
- Industrial - Sales were flat, with increases in Asia/Pacific and North America about offset by lower sales in EAME and Latin America.
- Transportation - Sales were higher primarily due to rail services, driven by acquisitions.

Energy & Transportation's profit was $1.079 billion in the fourth quarter of 2018, compared with $874 million in the fourth quarter of 2017. The improvement was mostly due to higher sales volume. The increase was partially offset by higher manufacturing costs, including freight costs.

Energy & Transportation's profit as a percent of total sales was 17.2 percent in the fourth quarter of 2018, compared with 15.5 percent in the fourth quarter of 2017.

Financial Products Segment

Financial Products' segment revenues were $812 million in the fourth quarter of 2018, an increase of $29 million, or 4 percent, from the fourth quarter of 2017. The increase was primarily due to higher average financing rates and higher average earning assets in North America and Asia/Pacific. These favorable impacts were partially offset by an unfavorable impact from returned or repossessed equipment in Europe and Latin America.

Financial Products' segment profit was $29 million in the fourth quarter of 2018, compared with $233 million in the fourth quarter of 2017. About half of the decrease was due to an unfavorable impact from equity securities in Insurance Services, which was driven by the absence of investment gains from the fourth quarter of 2017 and an unfavorable impact from mark-to-market in the fourth quarter of 2018. In addition, an increase in the provision for credit losses at Cat Financial also contributed to lower profit. This increase was driven by a higher allowance rate and an increase in write-offs, due to continued weakening in the Cat Power Finance portfolio.

Corporate Items and Eliminations

Expense for corporate items and eliminations was $321 million in the fourth quarter of 2018, a decrease of $344 million from the fourth quarter of 2017, primarily due to methodology differences and lower restructuring costs. Restructuring costs were $101 million in the fourth quarter of 2018, compared with $245 million in the fourth quarter of 2017.

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2017 COMPARED WITH 2016

CONSOLIDATED SALES AND REVENUES

The chart above graphically illustrates reasons for the change in Consolidated Sales and Revenues between 2016 (at left) and 2017 (at right). Items favorably impacting sales and revenues appear as upward stair steps with the corresponding dollar amounts above each bar, while items negatively impacting sales and revenues appear as downward stair steps with dollar amounts reflected in parentheses above each bar. Caterpillar management utilizes these charts internally to visually communicate with the company's board of directors and employees.

Total sales and revenues were $45.462 billion in 2017, an increase of $6.925 billion, or 18 percent, compared with $38.537 billion in 2016. The increase was primarily due to higher sales volume, mostly due to improved end-user demand. In addition, favorable changes in dealer inventories contributed to increased sales volume. The improvement in end-user demand was across all regions and most end markets. The favorable change in dealer inventories was primarily due to a decrease in 2016, compared with dealer inventories that were about flat in 2017. Dealer machine and engine inventories increased about $100 million in 2017, compared with a decrease of about $1.6 billion during 2016. Dealers are independent, and the reasons for changes in their inventory levels vary, including their expectations of future demand and product delivery times. Dealers’ demand expectations take into account seasonal changes, macroeconomic conditions, machine rental rates and other factors. Delivery times can vary based on availability of product from Caterpillar factories and product distribution centers.

By segment, the largest sales volume increase was in Construction Industries mostly due to higher end-user demand for construction equipment. Resource Industries sales volume increased due to higher end-user demand for aftermarket parts and equipment and a favorable impact of changes in dealer inventories. Energy & Transportation’s sales volume was higher mostly due to increased demand for equipment and aftermarket parts for oil and gas and industrial applications. Favorable price realization, mostly in Construction Industries, also contributed to the sales improvement. Financial Products’ revenues were about flat.

Sales increased in all regions. In North America, sales increased 19 percent primarily due to higher end-user demand mostly for on-shore oil and gas applications and construction equipment, the favorable impact of changes in dealer inventories and favorable price realization, primarily in Construction Industries. Asia/Pacific sales increased 23 percent primarily due to an increase in construction equipment sales, mostly in China resulting from increased building construction and infrastructure investment. EAME sales increased 16 percent primarily due to higher end-user demand for equipment and aftermarket parts in Resource Industries and favorable changes in dealer inventories, as dealers decreased inventories in 2016 and inventories were about flat in 2017. In addition, price realization was favorable, primarily in Construction Industries. Sales increased 25 percent in Latin America primarily due to stabilizing economic conditions in several countries in the region that resulted in improved end-user demand from low levels and the favorable impact of changes in dealer inventories as inventories decreased in 2016 and increased in 2017.

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Sales and Revenues by Segment

(Millions of dollars)	2016	Sales Volume	Price Realization	Currency	Inter-Segment / Other	2017	$ Change	% Change
Construction Industries	$15,690	$2,810	$ 751	$ (40)	$ 29	$19,240	$3,550	23 %
Resource Industries	6,010	1,638	118	22	73	7,861	1,851	31 %
Energy & Transportation	16,951	1,556	(42)	39	878	19,382	2,431	14 %
All Other Segments	544	39	—	—	(13)	570	26	5 %
Corporate Items and Eliminations	(3,422)	12	—	—	(967)	(4,377)	(955)	
Machinery, Energy & Transportation	35,773	6,055	827	21	—	42,676	6,903	19 %
Financial Products Segment	2,993	—	—	—	100	3,093	100	3 %
Corporate Items and Eliminations	(229)	—	—	—	(78)	(307)	(78)	
Financial Products Revenues	2,764	—	—	—	22	2,786	22	1 %
Consolidated Sales and Revenues	$38,537	$6,055	$ 827	$ 21	$ 22	$45,462	$6,925	18 %

Sales and Revenues by Geographic Region

	North America		Latin America		EAME		Asia/Pacific		External Sales and Revenues		Inter-Segment		Total Sales and Revenues
(Millions of dollars)	$	% Chg	$	% Chg	$	% Chg	$	% Chg	$	% Chg	$	% Chg	$
2017													
Construction Industries	$8,742	16%	$1,396	32%	$3,760	15%	$5,235	39%	$19,133	23%	$107	37%	$19,240
Resource Industries	2,582	25%	1,281	28%	1,775	51%	1,866	26%	7,504	31%	357	26%	7,861
Energy & Transportation	7,959	19%	1,261	14%	4,431	5%	2,313	(5%)	15,964	11%	3,418	35%	19,382
All Other Segments	70	52%	3	—%	54	93%	51	(18%)	178	28%	392	(3%)	570
Corporate Items and Eliminations	(97)		(1)		(6)		1		(103)		(4,274)		(4,377)
Machinery, Energy & Transportation	19,256	19%	3,940	25%	10,014	16%	9,466	23%	42,676	19%	—	—%	42,676
Financial Products Segment	2,006	8%	306	(9%)	418	4%	363	(8%)	3,093	3%	—	—%	3,093
Corporate Items and Eliminations	(190)		(46)		(19)		(52)		(307)		—		(307)
Financial Products Revenues	1,816	5%	260	(11%)	399	4%	311	(12%)	2,786	1%	—	—%	2,786
Consolidated Sales and Revenues	$21,072	17%	$4,200	22%	$10,413	15%	$9,777	21%	$45,462	18%	$—	—%	$45,462
2016													
Construction Industries	$7,529		$1,059		$3,270		$3,754		$15,612		$78		$15,690
Resource Industries	2,068		1,001		1,179		1,478		5,726		284		6,010
	6,680		1,104		4,201		2,426		14,411		2,540		16,951

Energy & Transportation							
All Other Segments	46	3	28	62	139	405	544
Corporate Items and Eliminations	(98)	(3)	(9)	(5)	(115)	(3,307)	(3,422)
Machinery, Energy & Transportation	16,225	3,164	8,669	7,715	35,773	—	35,773
Financial Products Segment	1,862	336	401	394	2,993	—	2,993
Corporate Items and Eliminations	(125)	(45)	(17)	(42)	(229)	—	(229)
Financial Products Revenues	1,737	291	384	352	2,764	—	2,764
Consolidated Sales and Revenues	$17,962	$3,455	$9,053	$8,067	$38,537	$—	$38,537

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CONSOLIDATED OPERATING PROFIT

The chart above graphically illustrates reasons for the change in Consolidated Operating Profit between 2016 (at left) and 2017 (at right). Items favorably impacting operating profit appear as upward stair steps with the corresponding dollar amounts above each bar, while items negatively impacting operating profit appear as downward stair steps with dollar amounts reflected in parentheses above each bar. Caterpillar management utilizes these charts internally to visually communicate with the company's Board of Directors and employees. The bar entitled Other includes consolidating adjustments and Machinery, Energy & Transportation other operating (income) expenses.

Operating profit for 2017 was $4.460 billion, compared with $1.162 billion in 2016. The increase of $3.298 billion was primarily due to higher sales volume, improved price realization and the absence of a goodwill impairment charge in Resource Industries in 2016. An increase in SG&A/R&D expenses and restructuring costs was partially offset by lower manufacturing costs.

SG&A/R&D expenses increased primarily due to higher short-term incentive compensation expense, partially offset by the favorable impact of restructuring and cost reduction actions. These actions primarily impacted research and development (R&D) expenses.

Short-term incentive compensation expense is directly related to financial and operational performance, measured against targets set annually. Short-term incentive compensation expense was about $1.4 billion in 2017, significantly above targeted levels, compared with about $250 million in 2016.

In 2017, we incurred $1.227 billion of restructuring costs with about half related to the closure of the facility in Gosselies, Belgium, and the remainder related to other restructuring actions across the company. In 2016, restructuring costs were $1.012 billion, primarily related to Resource Industries and Energy & Transportation.

Manufacturing costs were lower primarily due to the favorable impact from cost absorption and efficiencies, partially offset by higher short-term incentive compensation expense. Cost absorption was favorable as inventory increased in 2017, and decreased in 2016. Material costs were slightly unfavorable in 2017, as higher steel costs were partially offset by cost reduction actions.

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Profit (Loss) by Segment

(Millions of dollars)	2017	2016	$ Change	% Change
Construction Industries	$3,255	$1,639	$1,616	99 %
Resource Industries	698	(1,045)	1,743	n/a
Energy & Transportation	2,856	2,187	669	31 %
All Other Segments	(44)	(85)	41	48 %
Corporate Items and Eliminations	(2,659)	(1,943)	(716)	
Machinery, Energy & Transportation	4,106	753	3,353	445 %
Financial Products Segment	792	702	90	13 %
Corporate Items and Eliminations	(116)	(53)	(63)	
Financial Products	676	649	27	4 %
Consolidating Adjustments	(322)	(240)	(82)	
Consolidated Operating Profit	$4,460	$1,162	$3,298	284 %

Other Profit/Loss Items

- Other income/expense in 2017 was income of $153 million, compared with a loss of $518 million in 2016. The improvement was primarily due to a decrease in mark-to-market losses related to pension and OPEB plans, a pretax gain on the sale of Caterpillar's equity investment in IronPlanet, gains on sale of securities and an increase in interest income. The favorable change was partially offset by an unfavorable net impact from currency translation and hedging gains and losses. Currency translation and hedging net losses in 2017 were significantly higher than the net losses in 2016.
- The provision for income taxes for 2017 reflects an annual effective tax rate of 27.7 percent, compared with 36.4 percent for the full-year 2016, excluding the items discussed below. The effective tax rate related to 2017 full-year adjusted profit before tax, excluding a discrete benefit from stock-based compensation awards, was 27 percent, compared with 26 percent in 2016.

The provision for income taxes for 2017 also included a charge of $2.371 billion due to the enactment of U.S. tax reform legislation on December 22, 2017. The provisionally estimated charge included a $596 million write-down of net deferred tax assets to reflect the reduction in the U.S. corporate tax rate from 35 percent to 21 percent beginning January 1, 2018, with the remainder primarily related to the cost of a mandatory deemed repatriation of non-U.S. earnings. The 2017 provision for income taxes also included the following:

- A non-cash benefit of $111 million, net of U.S. federal tax at 35 percent, from reductions in the valuation allowance against U.S. state deferred tax assets due to improved profits in the United States.
- A tax benefit of $64 million for the settlement of stock-based compensation awards with associated tax deductions in excess of cumulative U.S. GAAP compensation expense.
- A charge of $15 million for an increase in prior year taxes related to the Gosselies, Belgium, facility restructuring costs.

The provision for income taxes for 2016 also included a non-cash charge of $141 million, net of U.S. federal tax at 35 percent, for increases in the valuation allowance against U.S. state deferred tax assets.

Construction Industries

Construction Industries’ total sales were $19.240 billion in 2017, compared with $15.690 billion in 2016. The increase was due to higher sales volume and favorable price realization.

- Sales volume increased due to higher end-user demand, primarily for equipment in Asia/Pacific and North America. In addition, sales volume increased due to favorable changes in dealer inventories, as inventories decreased in 2016 and increased in 2017.
- Although market conditions remained competitive, price realization was favorable due to a particularly weak pricing environment in 2016, and previously implemented price increases impacting 2017.

Sales increased across all regions with the largest increases in Asia/Pacific and North America.

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- Sales in Asia/Pacific were higher as a result of an increase in end-user demand, primarily in China, stemming from increased building construction and infrastructure investment.
- In North America, sales increased primarily due to higher end-user demand for construction equipment, mostly due to improved oil and gas, residential and nonresidential construction activities. Also contributing to higher sales was the impact of favorable changes in dealer inventories, as inventories decreased more in 2016 than in 2017, and favorable price realization.
- Sales in EAME increased due to favorable changes in dealer inventories and favorable price realization. The favorable impact of change in dealer inventories resulted from a decrease in 2016 and an increase in 2017.
- Although construction activity remained weak in Latin America, sales were higher as end-user demand increased from low levels due to stabilizing economic conditions in several countries in the region. In addition, sales volume increased due to favorable changes in dealer inventories, as dealer inventories increased in 2017 and decreased in 2016.

Construction Industries' profit was $3.255 billion in 2017, compared with $1.639 billion in 2016. The increase in profit was primarily due to higher sales volume and favorable price realization. SG&A/R&D expenses were unfavorable primarily due to higher short-term incentive compensation expense.

Construction Industries' profit as a percent of total sales was 16.9 percent in 2017, compared with 10.4 percent in 2016.

Resource Industries

Resource Industries' total sales were $7.861 billion in 2017, an increase of $1.851 billion, or 31 percent, from 2016. Sales increased due to higher end-user demand for aftermarket parts and equipment and the favorable impact of changes in dealer inventories. Positive commodity price trends in 2017 drove improved market conditions and better financial health of mining companies. After a number of years of low investment, miners began to increase capital expenditures in 2017, reflecting more confidence in their end markets. Idle mining trucks on customer sites also decreased in 2017. These changes resulted in higher sales for aftermarket parts to support increased mining activity as well as maintenance and rebuild activities and, by the second half of 2017, resulted in higher end-user demand for mining equipment. Dealer inventories increased in 2017, compared with a significant decrease in 2016.

Resource Industries' profit was $698 million in 2017, compared with a loss of $1.045 billion in 2016. The improvement was partially due to the absence of a goodwill impairment charge of $595 million in 2016. Higher sales volume, lower manufacturing costs and favorable price realization also contributed to increased profit. Manufacturing costs were lower primarily due to a favorable impact from cost absorption, lower period manufacturing costs and efficiencies. Cost absorption was favorable as inventory increased in 2017, to support higher production volumes and decreased in 2016. Period manufacturing costs were lower primarily due to the favorable impact of restructuring and cost reduction actions, partially offset by an increase in short-term incentive compensation expense.

Resource Industries' profit as a percent of total sales was 8.9 percent in 2017, compared with a loss as a percent of total sales of 17.4 percent in 2016.

Energy & Transportation

Energy & Transportation's total sales were $19.382 billion in 2017, compared with $16.951 billion in 2016. The increase was primarily due to higher sales in oil and gas and industrial applications.

- Oil and Gas - Sales increased in North America due to higher sales of reciprocating engines and aftermarket parts used in on-shore gas compression and well servicing applications. Sales in remaining regions were about flat.
- Industrial - Sales were higher in all regions, reflecting increased sales for equipment across end-user applications and aftermarket parts.
- Transportation - Sales were higher primarily in North America for rail services driven by increased rail traffic.
- Power Generation - Sales were about flat in all regions as the industry remains challenged.

Energy & Transportation's profit was $2.856 billion in 2017, compared with $2.187 billion in 2016. The increase was primarily due to higher sales volume, partially offset by higher SG&A/R&D expenses and manufacturing costs. The increase in SG&A/R&D expenses was primarily due to higher short-term incentive compensation expense. Manufacturing costs were higher primarily due to higher short-term incentive compensation expense, partially offset by favorable impact from cost absorption and improved material costs. Cost absorption was favorable as inventory

increased in 2017, compared with a decrease in 2016.
Energy & Transportation’s profit as a percent of total sales was 14.7 percent in 2017, compared with 12.9 percent in 2016.

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Financial Products Segment
Financial Products' segment revenues were $3.093 billion, an increase of $100 million, or 3 percent, from 2016. The increase was primarily due to higher average financing rates in North America, a favorable impact from intercompany lending activity in North America and higher average earning assets in EAME. These favorable impacts were partially offset by lower average financing rates in Asia/Pacific and lower average earning assets in North America and Latin America.
Financial Products' segment profit was $792 million in 2017, compared with $702 million in 2016. The increase was primarily due to higher gains on sales of securities at Insurance Services, an increase in net yield on average earning assets and increased intercompany lending activity. These favorable impacts were partially offset by an increase in SG&A expenses due to higher short-term incentive compensation expense.
At the end of 2017, past dues at Cat Financial were 2.78 percent, compared with 2.38 percent at the end of 2016. Write-offs, net of recoveries, were $114 million for the full year of 2017, compared with $123 million for the full year of 2016.
As of December 31, 2017, Cat Financial's allowance for credit losses totaled $365 million, or 1.33 percent of finance receivables, compared with $343 million, or 1.29 percent of finance receivables at year-end 2016.
Corporate Items and Eliminations
Expense for corporate items and eliminations was $2.775 billion in 2017, which was an increase of $779 million compared with 2016. The increase in expense was a result of higher restructuring costs, methodology differences, timing differences and an increase in short-term incentive compensation expense.

RESTRUCTURING COSTS

Restructuring costs for 2018, 2017 and 2016 were as follows:

(Millions of dollars)	2018	2017	2016
Employee separations [1]	$112	$525	$297
Contract terminations [1]	7	183	62
Long-lived asset impairments [1]	93	346	391
Defined benefit plan curtailments and termination benefits [2]	(8)	29	7
Other [3]	182	173	262
Total restructuring costs	$386	$1,256	$1,019

[1] Recognized in Other operating (income) expenses.
[2] Recognized in Other income (expense).
[3] Represents costs related to our restructuring programs, primarily for accelerated depreciation, project management costs, equipment relocation and inventory write-downs, and also LIFO inventory decrement benefits from inventory liquidations at closed facilities, all of which are primarily included in Cost of goods sold.

The restructuring costs in 2018 were primarily related to ongoing facility closures across the company. In 2017, about half of the restructuring costs were related to the closure of the facility in Gosselies, Belgium, within Construction Industries, and the remainder was related to other restructuring actions across the company. The restructuring costs in 2016 were primarily related to actions in Resource Industries in response to continued weakness in the mining industry. In addition, costs in 2016 resulted from our decision to discontinue production of on-highway vocational trucks within Energy & Transportation and other restructuring actions across the company.

Restructuring costs are a reconciling item between Segment profit and Consolidated profit before taxes.

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The following table summarizes the 2017 and 2018 employee separation activity:

(Millions of dollars)	
Liability balance at December 31, 2016	$147
Increase in liability (separation charges)	525
Reduction in liability (payments)	(423)
Liability balance at December 31, 2017	$249
Increase in liability (separation charges)	112
Reduction in liability (payments)	(276)
Liability balance at December 31, 2018	$85

Most of the remaining liability balance as of December 31, 2018 is expected to be paid in 2019.

In March 2017, Caterpillar informed Belgian authorities of the decision to proceed to a collective dismissal, which led to the closure of the Gosselies site, impacting about 2,000 employees. Production of Caterpillar products at the Gosselies site ended during the second quarter of 2017. The other operations and functions at the Gosselies site were phased out by the end of the second quarter of 2018. The program concluded in 2018, and we incurred a total of $647 million of restructuring costs (primarily in 2017) under this program. These costs were primarily related to employee separation costs, long-lived asset impairments and other costs which were partially offset by a LIFO inventory decrement benefit.

Restructuring costs for the year ended December 31, 2016 were $1,019 million. Throughout 2016, we initiated the following restructuring plans:

- In February 2016, we made the decision to discontinue production of on-highway vocational trucks. Based on the business climate in the truck industry and a thorough evaluation of the business, the company decided it would withdraw from this market. We recognized $104 million of restructuring costs, primarily related to long-lived asset impairments and sales discounts.

- In the second half of 2016, we took additional restructuring actions in Resource Industries, including ending the production of track drills; pursuing strategic alternatives related to room and pillar products; consolidation of two product development divisions; and additional actions in response to ongoing weakness in the mining industry. For the year ended December 31, 2016, we incurred $369 million of restructuring costs for these plans primarily related to long-lived asset impairments, employee separation costs and inventory write-downs.

In September 2015, we announced a large scale restructuring plan (the Plan) including a voluntary retirement enhancement program for qualifying U.S. employees, several voluntary separation programs outside of the U.S., additional involuntary programs throughout the company and manufacturing facility consolidations and closures that occurred through 2018. The largest action among those included in the Plan was related to our European manufacturing footprint which led to the Gosselies, Belgium, facility closure as discussed above. We incurred $121 million, $817 million and $281 million of restructuring costs associated with these actions in 2018, 2017 and 2016, respectively. Total restructuring costs incurred since the inception of the Plan were $1,788 million. The remaining costs of approximately $50 million related to the Plan are expected to be recognized in 2019.

Although we expect restructuring to continue as part of ongoing business activities, restructuring costs are anticipated to be lower in 2019 than 2018. We are expecting about $300 million of cost reduction in 2019 from lower operating costs, primarily SG&A expenses and Cost of goods sold primarily resulting from 2018 restructuring actions.

GLOSSARY OF TERMS

1. Adjusted Operating Profit Margin - Operating profit excluding restructuring costs as a percent of sales and revenues.
2. Adjusted Profit Per Share - Profit per share excluding restructuring costs, pension and OPEB mark-to-market losses, certain deferred tax valuation allowance adjustments and the impact of the U.S. tax reform. For 2017, adjusted profit per share also excludes a gain on the sale of an equity investment in IronPlanet.
3. All Other Segments - Primarily includes activities such as: business strategy, product management and development, manufacturing of filters and fluids, undercarriage, ground engaging tools, fluid transfer products, precision seals, rubber sealing and connecting components primarily for Cat® products; parts distribution; integrated logistics solutions, distribution services responsible for dealer development and administration including a wholly owned dealer in Japan, dealer portfolio

management and ensuring the most efficient and effective distribution of machines, engines and parts; digital investments for new customer and dealer solutions that integrate data analytics with state-of-the-art digital technologies while transforming the buying experience.

4. Consolidating Adjustments - Elimination of transactions between Machinery, Energy & Transportation and Financial Products.
5. Construction Industries - A segment primarily responsible for supporting customers using machinery in infrastructure, forestry and building construction applications. Responsibilities include business strategy, product design, product management and development, manufacturing, marketing and sales and product support. The product portfolio includes asphalt pavers, backhoe loaders, compactors, cold planers, compact track and multi-terrain loaders, mini, small, medium and large track excavators, forestry excavators, feller bunchers, harvesters, knuckleboom loaders, motor graders, pipelayers, road reclaimers, site prep tractors, skidders, skid steer loaders, telehandlers, small and medium track-type tractors, track-type loaders, utility vehicles, wheel excavators, compact, small and medium wheel loaders and related parts and work tools.
6. Corporate Items and Eliminations - Includes restructuring costs; corporate-level expenses; timing differences, as some expenses are reported in segment profit on a cash basis; methodology differences between segment and consolidated external reporting; and inter-segment eliminations.
7. Currency - With respect to sales and revenues, currency represents the translation impact on sales resulting from changes in foreign currency exchange rates versus the U.S. dollar. With respect to operating profit, currency represents the net translation impact on sales and operating costs resulting from changes in foreign currency exchange rates versus the U.S. dollar. Currency only includes the impact on sales and operating profit for the Machinery, Energy & Transportation lines of business excluding restructuring costs; currency impacts on Financial Products' revenues and operating profit are included in the Financial Products' portions of the respective analyses. With respect to other income/expense, currency represents the effects of forward and option contracts entered into by the company to reduce the risk of fluctuations in exchange rates (hedging) and the net effect of changes in foreign currency exchange rates on our foreign currency assets and liabilities for consolidated results (translation).
8. EAME - A geographic region including Europe, Africa, the Middle East and the Commonwealth of Independent States (CIS).
9. Earning Assets - Assets consisting primarily of total finance receivables net of unearned income, plus equipment on operating leases, less accumulated depreciation at Cat Financial.
10. Energy & Transportation - A segment primarily responsible for supporting customers using reciprocating engines, turbines, diesel-electric locomotives and related parts across industries serving Oil and Gas, Power Generation, Industrial and Transportation applications, including marine and rail-related businesses. Responsibilities include business strategy, product design, product management and development, manufacturing, marketing and sales and product support of turbine machinery and integrated systems and solutions and turbine-related services, reciprocating engine-powered generator sets, integrated systems used in the electric power generation industry, reciprocating engines and integrated systems and solutions for the marine and oil and gas industries; reciprocating engines supplied to the industrial industry as well as Cat machinery; the remanufacturing of Caterpillar engines and components and remanufacturing services for other companies; the business strategy, product design, product management and development, manufacturing, remanufacturing, leasing and service of diesel-electric locomotives and components and other rail-related products and services and product support of on-highway vocational trucks for North America.
11. Financial Products Segment - Provides financing alternatives to customers and dealers around the world for Caterpillar products, as well as financing for vehicles, power generation facilities and marine vessels that, in most cases, incorporate Caterpillar products. Financing plans include operating and finance leases, installment sale contracts, working capital loans and wholesale financing plans. The segment also provides insurance and risk management products and services that help customers and dealers manage their business risk. Insurance and risk management products offered include physical damage insurance, inventory protection plans, extended service coverage for machines and engines, and dealer property and casualty insurance. The various forms of financing, insurance and risk management products offered to customers and dealers help support the purchase and lease of

our equipment. The segment also earns revenues from Machinery, Energy & Transportation, but the related costs are not allocated to operating segments. Financial Products' segment profit is determined on a pretax basis and includes other income/expense items.

12. Latin America - A geographic region including Central and South American countries and Mexico.
13. Machinery, Energy & Transportation (ME&T) - Represents the aggregate total of Construction Industries, Resource Industries, Energy & Transportation, All Other Segments and related corporate items and eliminations.

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14. Machinery, Energy & Transportation Other Operating (Income) Expenses - Comprised primarily of gains/losses on disposal of long-lived assets, gains/losses on divestitures and legal settlements and accruals. Restructuring costs classified as other operating expenses on the Results of Operations are presented separately on the Operating Profit Comparison.
15. Manufacturing Costs - Manufacturing costs exclude the impacts of currency and restructuring costs (see definition below) and represent the volume-adjusted change for variable costs and the absolute dollar change for period manufacturing costs. Variable manufacturing costs are defined as having a direct relationship with the volume of production. This includes material costs, direct labor and other costs that vary directly with production volume such as freight, power to operate machines and supplies that are consumed in the manufacturing process. Period manufacturing costs support production but are defined as generally not having a direct relationship to short-term changes in volume. Examples include machinery and equipment repair, depreciation on manufacturing assets, facility support, procurement, factory scheduling, manufacturing planning and operations management.
16. Mark-to-market gains/losses - Represents the net gain or loss of actual results differing from our assumptions and the effects of changing assumptions for our defined benefit pension and OPEB plans. These gains and losses are immediately recognized through earnings upon the annual remeasurement in the fourth quarter, or on an interim basis as triggering events warrant remeasurement.
17. Pension and Other Postemployment Benefit (OPEB) - The company’s defined-benefit pension and postretirement benefit plans.
18. Price Realization - The impact of net price changes excluding currency and new product introductions. Price realization includes geographic mix of sales, which is the impact of changes in the relative weighting of sales prices between geographic regions.
19. Resource Industries - A segment primarily responsible for supporting customers using machinery in mining, quarry and aggregates, waste and material handling applications. Responsibilities include business strategy, product design, product management and development, manufacturing, marketing and sales and product support. The product portfolio includes large track-type tractors, large mining trucks, hard rock vehicles, longwall miners, electric rope shovels, draglines, hydraulic shovels, rotary drills, large wheel loaders, off-highway trucks, articulated trucks, wheel tractor scrapers, wheel dozers, landfill compactors, soil compactors, hard rock continuous mining systems, select work tools, machinery components, electronics and control systems and related parts. In addition to equipment, Resource Industries also develops and sells technology products and services to provide customers fleet management, equipment management analytics and autonomous machine capabilities. Resource Industries also manages areas that provide services to other parts of the company, including integrated manufacturing and research and development.
20. Restructuring Costs - Primarily costs for employee separation, long-lived asset impairments and contract terminations. These costs are included in Other operating (income) expenses except for defined-benefit plan curtailment losses and special termination benefits, which are included in Other income (expense). Restructuring costs also include other exit-related costs primarily for accelerated depreciation, inventory write-downs, equipment relocation and project management costs and LIFO inventory decrement benefits from inventory liquidations at closed facilities, all of which are primarily included in Cost of goods sold.
21. Sales Volume - With respect to sales and revenues, sales volume represents the impact of changes in the quantities sold for Machinery, Energy & Transportation as well as the incremental sales impact of new product introductions, including emissions-related product updates. With respect to operating profit, sales volume represents the impact of changes in the quantities sold for Machinery, Energy & Transportation combined with product mix as well as the net operating profit impact of new product introductions, including emissions-related product updates. Product mix represents the net operating profit impact of changes in the relative weighting of Machinery, Energy & Transportation sales with respect to total sales. The impact of sales volume on segment profit includes inter-segment sales.

LIQUIDITY AND CAPITAL RESOURCES

Sources of funds

We generate significant capital resources from operating activities, which are the primary source of funding for our ME&T operations. Funding for these businesses is also available from commercial paper and long-term debt issuances. Financial Products' operations are funded primarily from commercial paper, term debt issuances and collections from its existing portfolio. During 2018, we experienced favorable liquidity conditions globally in both our ME&T and Financial Products' operations. On a consolidated basis, we ended 2018 with $7.86 billion of cash, a decrease of $404 million from year-end 2017. We intend to maintain a strong cash and liquidity position.

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Our cash balances are held in numerous locations throughout the world with approximately $6.9 billion held by our non-U.S. subsidiaries. As a result of U.S. tax reform legislation enacted in December 2017, we expect to be able to use cash held by non-U.S. subsidiaries in the United States in the future with minimal tax consequences.

Consolidated operating cash flow for 2018 was $6.56 billion, up from $5.71 billion in 2017. The increase was due to higher profit in 2018 adjusted for non-cash items. Profit in 2017 included a non-cash charge related to U.S. tax reform legislation enacted in December 2017. The most significant driver of higher profit was an increase in sales volume in 2018. This improvement was mostly offset by higher working capital requirements to support increasing production volumes and higher short-term incentive compensation payments. See further discussion of operating cash flow under ME&T and Financial Products.

Total debt as of December 31, 2018 was $36.55 billion, an increase of $1.68 billion from year-end 2017. Debt related to Financial Products increased $1.60 billion, primarily due to increased portfolio funding requirements. Debt related to ME&T increased $79 million in 2018. During 2018, we repurchased $3.80 billion of Caterpillar common stock.

We have three global credit facilities with a syndicate of banks totaling $10.50 billion (Credit Facility) available in the aggregate to both Caterpillar and Cat Financial for general liquidity purposes. Based on management's allocation decision, which can be revised from time to time, the portion of the Credit Facility available to ME&T as of December 31, 2018 was $2.75 billion. Information on our Credit Facility is as follows:

- The 364-day facility of $3.15 billion (of which $0.82 billion is available to ME&T) expires in September 2019.
- The three-year facility, as amended in September 2018, of $2.73 billion (of which $0.72 billion is available to ME&T) expires in September 2021.
- The five-year facility, as amended in September 2018, of $4.62 billion (of which $1.21 billion is available to ME&T) expires in September 2023.

At December 31, 2018, Caterpillar's consolidated net worth was $14.07 billion, which was above the $9.00 billion required under the Credit Facility. The consolidated net worth is defined as the consolidated shareholder's equity including preferred stock but excluding the pension and other postretirement benefits balance within Accumulated other comprehensive income (loss).

At December 31, 2018, Cat Financial's covenant interest coverage ratio was 1.56 to 1. This is above the 1.15 to 1 minimum ratio, calculated as (1) profit excluding income taxes, interest expense and net gain/(loss) from interest rate derivatives to (2) interest expense calculated at the end of each calendar quarter for the rolling four quarter period then most recently ended, required by the Credit Facility.

In addition, at December 31, 2018, Cat Financial's six-month covenant leverage ratio was 7.69 to 1 and year-end covenant leverage ratio was 8.33 to 1. This is below the maximum ratio of debt to net worth of 10 to 1, calculated (1) on a monthly basis as the average of the leverage ratios determined on the last day of each of the six preceding calendar months and (2) at each December 31, required by the Credit Facility.

In the event Caterpillar or Cat Financial does not meet one or more of their respective financial covenants under the Credit Facility in the future (and are unable to obtain a consent or waiver), the syndicate of banks may terminate the commitments allocated to the party that does not meet its covenants. Additionally, in such event, certain of Cat Financial's other lenders under other loan agreements where similar financial covenants or cross default provisions are applicable, may, at their election, choose to pursue remedies under those loan agreements, including accelerating the repayment of outstanding borrowings. At December 31, 2018, there were no borrowings under the Credit Facility.

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Our total credit commitments and available credit as of December 31, 2018 were:

	December 31, 2018		
(Millions of dollars)	Consolidated	Machinery, Energy & Transportation	Financial Products
Credit lines available:			
Global credit facilities	$ 10,500	$ 2,750	$ 7,750
Other external	4,577	—	4,577
Total credit lines available	15,077	2,750	12,327
Less: Commercial paper outstanding	(4,759)	—	(4,759)
Less: Utilized credit	(1,172)	—	(1,172)
Available credit	$ 9,146	$ 2,750	$ 6,396

The other consolidated credit lines with banks as of December 31, 2018 totaled $4.58 billion. These committed and uncommitted credit lines, which may be eligible for renewal at various future dates or have no specified expiration date, are used primarily by our subsidiaries for local funding requirements. Caterpillar or Cat Financial may guarantee subsidiary borrowings under these lines.

We receive debt ratings from the major credit rating agencies. Moody's rates our debt as "low-A", while Fitch and S&P maintain a "mid-A" debt rating. This split rating has not had a material impact on our borrowing costs or our overall financial health. However, a downgrade of our credit ratings by any of the major credit rating agencies would result in increased borrowing costs and could make access to certain credit markets more difficult. In the event economic conditions deteriorate such that access to debt markets becomes unavailable, ME&T's operations would rely on cash flow from operations, use of existing cash balances, borrowings from Cat Financial and access to our Credit Facility. Our Financial Products' operations would rely on cash flow from its existing portfolio, existing cash balances, access to our Credit Facility and other credit line facilities of Cat Financial and potential borrowings from Caterpillar. In addition, we maintain a support agreement with Cat Financial, which requires Caterpillar to remain the sole owner of Cat Financial and may, under certain circumstances, require Caterpillar to make payments to Cat Financial should Cat Financial fail to maintain certain financial ratios.

Machinery, Energy & Transportation

Net cash provided by operating activities was $6.35 billion in 2018, compared with $5.46 billion in 2017. The increase was primarily due to higher profit in 2018 adjusted for non-cash items. Profit in 2017 included a non-cash charge related to U.S. tax reform legislation enacted in December 2017. The most significant driver of higher profit was an increase in sales volume during 2018. This improvement was mostly offset by higher working capital requirements to support increasing production volumes and higher short-term incentive compensation payments. Within working capital, changes to accounts payable, inventories and customer advances unfavorably impacted cash flow, but were partially offset by changes to accounts receivable.

Net cash used for investing activities in 2018 was $1.19 billion, compared with net cash used of $727 million in 2017. The change was primarily due to the acquisition of ECM S.p.A. and Downer Freight Rail in 2018 and increased capital expenditures.

Net cash used for financing activities during 2018 was $5.47 billion, compared with net cash used of $2.58 billion in 2017. The change was primarily due to the repurchase of $3.80 billion of Caterpillar common stock in 2018, partially offset by lower payments on debt in 2018, as 2017 included the early retirement of $900 million of debt due in

December 2018 and a long-term debt maturity of $500 million.

Our priorities for cash deployment have not changed. While our short-term priorities for the use of cash may vary from time to time as business needs and conditions dictate, our long-term cash deployment strategy is focused on the following priorities. Our top priority is to maintain a strong financial position in support of a Mid-A rating. Next, we intend to fund operational requirements and commitments. Then, we intend to fund priorities that profitably grow the company and return capital to shareholders through dividend growth and share repurchases. Additional information on cash deployment is as follows:

Strong financial position — Our top priority is to maintain a strong financial position in support of a Mid-A rating. We track a diverse group of financial metrics that focus on liquidity, leverage, cash flow and margins aligned with our cash deployment actions and the various methodologies used by the major credit rating agencies.

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Operational excellence and commitments — Capital expenditures were $1.22 billion during 2018, compared to $916 million in 2017. We expect ME&T's capital expenditures in 2019 to be about $1.4 billion. Contributions to our pension and OPEB plans were $1.35 billion and $1.61 billion in 2018 and 2017, respectively. Both years included a $1.0 billion discretionary contribution to our U.S. pension plans. We expect to make approximately $315 million of contributions to our pension and OPEB plans in 2019.

Fund strategic growth initiatives and return capital to shareholders — We intend to fund initiatives that drive long-term profitable growth that will be focused in the areas of expanded offerings and services, including acquisitions. In 2018, we acquired ECM S.p.A. and Downer Freight Rail. Each quarter, our Board of Directors reviews the company's dividend for the applicable quarter. The Board evaluates the financial condition of the company and considers the economic outlook, corporate cash flow, the company's liquidity needs, and the health and stability of global credit markets to determine whether to maintain or change the quarterly dividend. Dividends paid totaled $1.95 billion in 2018, representing 78 cents per share paid in the first and second quarter, and 86 cents per share paid in the third quarter and fourth quarter. In January 2014, the Board of Directors approved an authorization to repurchase up to $10 billion of Caterpillar common stock (the 2014 Authorization), which expired on December 31, 2018. As of January 1, 2018, $5.47 billion remained available under the 2014 Authorization, and in 2018, we repurchased $3.80 billion of Caterpillar common stock. In July 2018, the Board of Directors approved a new share repurchase authorization of up to $10 billion of Caterpillar common stock effective January 1, 2019, with no expiration. Our share repurchase plans are subject to the company’s cash deployment priorities and are evaluated on an ongoing basis; however, we plan to consistently repurchase common stock with the intent to, at a minimum, offset the impact of dilution over time. The timing and amount of future repurchases may vary depending on operating cash flow, market conditions and investing priorities. Caterpillar's basic shares outstanding as of December 31, 2018 were approximately 576 million.

Financial Products

Financial Products operating cash flow was $1.52 billion in 2018, compared with $1.35 billion in 2017. Net cash used for investing activities was $2.78 billion in 2018, compared with $596 million in 2017. The change was primarily due to the impact of portfolio related activity. Net cash provided by financing activities in 2018 was $1.26 billion, compared with net cash used for financing activities of $1.82 billion in 2017. The change was primarily due to higher portfolio funding requirements and a lower dividend payment to Machinery, Energy & Transportation.

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Contractual obligations

The company has committed cash outflow related to long-term debt, operating lease agreements, postretirement benefit obligations, purchase obligations, interest on long-term debt and other long-term contractual obligations. As of December 31, 2018, minimum payments for these obligations were:

(Millions of dollars)	2019	2020-2021	2022-2023	After 2023	Total
Long-term debt:					
Machinery, Energy & Transportation (excluding capital leases)	$2	$ 1,374	$ 588	$ 6,189	$8,153
Machinery, Energy & Transportation-capital leases	8	63	16	32	119
Financial Products	5,823	11,330	4,224	1,490	22,867
Total long-term debt [1]	5,833	12,767	4,828	7,711	31,139
Operating leases	205	265	117	185	772
Postretirement benefit obligations [2]	315	680	1,200	2,850	5,045
Purchase obligations:					
Accounts payable [3]	7,051	—	—	—	7,051
Purchase orders [4]	6,451	—	—	—	6,451
Other contractual obligations [5]	267	41	—	—	308
Total purchase obligations	13,769	41	—	—	13,810
Interest on long-term debt [6]	921	1,399	878	5,792	8,990
Other long-term obligations [7]	564	819	416	362	2,161
Total contractual obligations	$21,607	$ 15,971	$ 7,439	$ 16,900	$61,917

1 Amounts exclude unamortized discounts, a non-cash settlement for a capital lease, debt issuance costs, and fair value adjustments.

2 Amounts represent expected contributions to our pension and other postretirement benefit plans through 2028, offset by expected Medicare Part D subsidy receipts.

3 Amount represents invoices received and recorded as liabilities in 2018, but scheduled for payment in 2019. These represent short-term obligations made in the ordinary course of business.

4 Amount represents contractual obligations for material and services on order at December 31, 2018 but not yet delivered. These represent short-term obligations made in the ordinary course of business.

5 Amounts represent long-term commitments entered into with key suppliers for minimum purchases quantities.

6 Amounts represent estimated contractual interest payments on long-term debt, including capital lease interest payments.

7 Amounts represent contractual obligations primarily for logistics services agreements related to our former third party logistics business, software license and development contracts, IT consulting contracts and outsourcing contracts for benefit plan administration and software system support, and estimated income tax payments for mandatory deemed repatriation as a result of U.S. tax reform.

The total amount of gross unrecognized tax benefits for uncertain tax positions, including positions impacting only the timing of tax benefits, was $1,796 million at December 31, 2018. Payment of these obligations would result from settlements with taxing authorities. Due to the difficulty in determining the timing of settlements, these obligations are not included in the table above. We do not expect to make a tax payment related to these obligations within the next year that would significantly impact liquidity.

Off-balance sheet arrangements

We are a party to certain off-balance sheet arrangements, primarily in the form of guarantees. Information related to guarantees appears in Note 21 – “Guarantees and product warranty” of Part II, Item 8 “Financial Statements and Supplementary Data”.

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CRITICAL ACCOUNTING POLICIES

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect reported amounts. The more significant estimates include: residual values for leased assets, fair values for goodwill impairment tests, warranty liability, stock-based compensation, reserves for product liability and insurance losses, postretirement benefits, post-sale discounts, credit losses and income taxes. We have incorporated many years of data into the determination of each of these estimates and we have not historically experienced significant adjustments. These assumptions are reviewed at least annually with the Audit Committee of the Board of Directors. Following are the methods and assumptions used in determining our estimates and an indication of the risks inherent in each.

Residual values for leased assets – The residual values for Cat Financial's leased assets, which are an estimate of the market value of leased equipment at the end of the lease term, are based on an analysis of historical wholesale market sales prices, projected forward on a level trend line without consideration for inflation or possible future pricing action. At the inception of the lease, residual values are estimated with consideration of the following critical factors: market size and demand, any known significant market/product trends, total expected hours of usage, machine configuration, application, location, model changes, quantities, past remarketing experience, third-party residual guarantees and contractual customer purchase options. Many of these factors are gathered in an application survey that is completed prior to quotation. The lease agreement also clearly defines applicable return conditions and remedies for non-compliance, to ensure that the leased equipment will be in good operating condition upon return. Model changes and updates, as well as market strength and product acceptance, are monitored and adjustments are made to residual values in accordance with the significance of any such changes. Remarketing sales staff works closely with customers and dealers to manage the sale of lease returns and the recovery of residual exposure.

During the term of the equipment on operating leases, we evaluate our depreciation on a regular basis taking into consideration expected residual values at lease termination. Adjustments to depreciation expense reflecting revised estimates of expected residual values at the end of the lease terms are recorded prospectively on a straight-line basis. For finance leases, residual value adjustments are recognized through a reduction of finance revenue.

We evaluate the carrying value of equipment on operating leases for potential impairment when we determine a triggering event has occurred. When a triggering event occurs, a test for recoverability is performed by comparing projected undiscounted future cash flows to the carrying value of the equipment on operating leases. If the test for recoverability identifies a possible impairment, the fair value of the equipment on operating leases is measured in accordance with the fair value measurement framework. An impairment charge is recognized for the amount by which the carrying value of the equipment on operating leases exceeds its estimated fair value.

At December 31, 2018, the aggregate residual value of equipment on operating leases was $2.21 billion. Without consideration of other factors such as third-party residual guarantees or contractual customer purchase options, a 10% non-temporary decrease in the market value of our equipment subject to operating leases would reduce residual value estimates and result in the recognition of approximately $80 million of additional annual depreciation expense.

Fair values for goodwill impairment tests – We test goodwill for impairment annually, at the reporting unit level, and whenever events or circumstances make it more likely than not that an impairment may have occurred, such as a significant adverse change in the business climate or a decision to sell all or a portion of a reporting unit. We perform our annual goodwill impairment test as of October 1 and monitor for interim triggering events on an ongoing basis.

Goodwill is reviewed for impairment utilizing either a qualitative assessment or a quantitative goodwill impairment test. If we choose to perform a qualitative assessment and determine the fair value more likely than not exceeds the carrying value, no further evaluation is necessary. For reporting units where we perform the quantitative goodwill

impairment test, we compare the fair value of each reporting unit, which we primarily determine using an income approach based on the present value of discounted cash flows, to the respective carrying value, which includes goodwill. If the fair value of the reporting unit exceeds its carrying value, the goodwill is not considered impaired. Beginning in 2017, if the carrying value is higher than the fair value, the difference would be recognized as an impairment loss. Prior to 2017, a two-step process was used. For reporting units where we performed the two-step process, the first step required us to compare the fair value of each reporting unit, which we primarily determined using an income approach based on the present value of discounted cash flows, to the respective carrying value, which includes goodwill. If the fair value of the reporting unit exceeded its carrying value, the goodwill was not considered impaired. If the carrying value was higher than the fair value, there was an indication that an impairment may have existed and the second step was required. In step two, the implied fair value of goodwill was calculated as the excess of the fair value of a reporting unit over the fair values assigned to its assets and liabilities. If the implied fair value of goodwill was less than the carrying value of the reporting unit's goodwill, the difference was recognized as an impairment loss.

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The impairment test process requires valuation of the respective reporting unit, which we primarily determine using an income approach based on a discounted five year forecasted cash flow with a year-five residual value. The residual value is computed using the constant growth method, which values the forecasted cash flows in perpetuity. The income approach is supported by a reconciliation of our calculated fair value for Caterpillar to the company's market capitalization. The assumptions about future cash flows and growth rates are based on each reporting unit's long-term forecast and are subject to review and approval by senior management. A reporting unit's discount rate is a risk-adjusted weighted average cost of capital, which we believe approximates the rate from a market participant's perspective. The estimated fair value could be impacted by changes in market conditions, interest rates, growth rates, tax rates, costs, pricing and capital expenditures. The fair value determination is categorized as Level 3 in the fair value hierarchy due to its use of internal projections and unobservable measurement inputs.

Our annual impairment tests completed in the fourth quarter of 2018 indicated the fair value of each reporting unit was substantially above its respective carrying value, including goodwill. Caterpillar's market capitalization has remained significantly above the net book value of the Company.

An unfavorable change in our expectations for the financial performance of our reporting units, particularly long-term growth and profitability, would reduce the fair value of our reporting units. The demand for our equipment and related parts is highly cyclical and significantly impacted by commodity prices, although the impact may vary by reporting unit. The energy and mining industries are major users of our products, including the coal, iron ore, gold, copper, oil and natural gas industries. Decisions to purchase our products are dependent upon the performance of those industries, which in turn are dependent in part on commodity prices. Lower commodity prices or industry specific circumstances that have a negative impact to the valuation assumptions may reduce the fair value of our reporting units. Should such events occur and it becomes more likely than not that a reporting unit's fair value has fallen below its carrying value, we will perform an interim goodwill impairment test(s), in addition to the annual impairment test. Future impairment tests may result in a goodwill impairment, depending on the outcome of the quantitative impairment test. A goodwill impairment would be reported as a non-cash charge to earnings.

Warranty liability – At the time a sale is recognized, we record estimated future warranty costs. The warranty liability is determined by applying historical claim rate experience to the current field population and dealer inventory. Generally, historical claim rates are based on actual warranty experience for each product by machine model/engine size by customer or dealer location (inside or outside North America). Specific rates are developed for each product shipment month and are updated monthly based on actual warranty claim experience. Warranty costs may differ from those estimated if actual claim rates are higher or lower than our historical rates.

Stock-based compensation – We use a lattice-based option-pricing model to calculate the fair value of our stock options and stock appreciation rights (SARs). The calculation of the fair value of the awards using the lattice-based option-pricing model is affected by our stock price on the date of grant as well as assumptions regarding the following:

- Volatility is a measure of the amount by which the stock price is expected to fluctuate each year during the expected term of the award and is based on historical Caterpillar stock price movement and current implied volatilities from traded options on Caterpillar stock. The implied volatilities from traded options are impacted by changes in market conditions. An increase in the volatility would result in an increase in our expense.
- The expected term represents the period of time that awards granted are expected to be outstanding and is an output of the lattice-based option-pricing model. In determining the expected term of the award, future exercise and forfeiture patterns are estimated from Caterpillar employee historical exercise behavior. These patterns are also affected by the vesting conditions of the award. Changes in the future exercise behavior of employees or in the vesting period of the award could result in a change in the expected term. An increase in the expected term would result in an increase to our expense.

- The weighted-average dividend yield is based on Caterpillar's historical dividend yields. As holders of stock options and SARs do not receive dividend payments, this could result in employees retaining the award for a longer period of time if dividend yields decrease or exercising the award sooner if dividend yields increase. A decrease in the dividend yield would result in an increase in our expense.
- The risk-free interest rate is based on the U.S. Treasury yield curve in effect at time of grant. As the risk-free interest rate increases, the expected term increases, resulting in an increase in our expense.

Beginning in 2018, the fair value of Restricted Stock Units (RSUs) and Performance-based Restricted Stock Units (PRSUs) is determined as the closing stock price on the date of grant, as holders of these awards are credited with dividend equivalent units on each date that a cash dividend is paid to holders of Common Stock. Prior to 2018, RSUs and PRSUs were not credited dividend equivalent units and the fair value was determined by reducing the stock price on the date of grant by the present value of the estimated dividends to be paid during the vesting period. The estimated dividends were based on Caterpillar's quarterly dividend per share at the time of grant.

Stock-based compensation expense is recognized based on the grant date fair value. Forfeitures are accounted for in the period they occur as a reduction to expense. Stock-based compensation expense for PRSUs is based on the probable number of shares expected to vest. Changes in the expected probability of achieving performance targets in future periods may result in an increase or decrease in our expense.

Product liability and insurance loss reserve – We determine these reserves based upon reported claims in process of settlement and actuarial estimates for losses incurred but not reported. Loss reserves, including incurred but not reported reserves, are based on estimates and ultimate settlements may vary significantly from such estimates due to increased claims frequency or severity over historical levels.

Postretirement benefits – Primary actuarial assumptions were determined as follows:

- The assumed discount rate is used to discount future benefit obligations back to today's dollars. The U.S. discount rate is based on a benefit cash flow-matching approach and represents the rate at which our benefit obligations could effectively be settled as of our measurement date, December 31. The benefit cash flow-matching approach involves analyzing Caterpillar's projected cash flows against a high quality bond yield curve, calculated using a wide population of corporate Aa bonds available on the measurement date. A similar approach is used to determine the assumed discount rate for our most significant non-U.S. plans. In estimating the service and interest cost components of net periodic benefit cost, we utilize a full yield curve approach in determining a discount rate. This approach applies the specific spot rates along the yield curve used in the determination of the benefit obligation to the relevant projected cash flows.

Discount rates are sensitive to changes in interest rates. A decrease in the discount rate would increase our obligation and future expense.

- The expected long-term rate of return on plan assets is based on our estimate of long-term passive returns for equities and fixed income securities weighted by the allocation of our plan assets. Based on historical performance, we increase the passive returns due to our active management of the plan assets. This rate is impacted by changes in general market conditions, but because it represents a long-term rate, it is not significantly impacted by short-term market swings. Changes in our allocation of plan assets would also impact this rate. For example, a shift to more fixed income securities would lower the rate. A decrease in the rate would increase our expense. The expected return on plan assets is calculated using the fair value of plan assets as of our measurement date, December 31.

- The expected rate of compensation increase is used to develop benefit obligations using projected pay at retirement. It represents average long-term salary increases. This rate is influenced by our long-term compensation policies. An increase in the rate would increase our obligation and expense.

- The assumed health care trend rate represents the rate at which health care costs are assumed to increase and is based on historical and expected experience. Changes in our projections of future health care costs due to general economic conditions and those specific to health care (e.g., technology driven cost changes) will impact this trend rate. An increase in the trend rate would increase our obligation and expense.

The effects of actual results differing from our assumptions and the effects of changing assumptions are considered actuarial gains or losses. We recognize actuarial gains or losses immediately through earnings upon the annual remeasurement in the fourth quarter, or on an interim basis as triggering events warrant remeasurement.

See Note 12 for further information regarding the accounting for postretirement benefits.

Post-sale discount reserve – We provide discounts to dealers through merchandising programs. We have numerous programs that are designed to promote the sale of our products. The most common dealer programs provide a discount when the dealer sells a product to a targeted end user. The amount of accrued post-sale discounts was $1,544 million and $1,426 million as of December 31, 2018 and 2017, respectively. The reserve represents discounts that we expect to pay on previously sold units and is reviewed at least quarterly. The reserve is adjusted if discounts paid differ from those estimated. Historically, those adjustments have not been material.

Credit loss reserve – The allowance for credit losses is an estimate of the losses inherent in our finance receivable portfolio and includes consideration of accounts that have been individually identified as impaired, as well as pools of finance receivables where it is probable that certain receivables in the pool are impaired but the individual accounts cannot yet be identified. In identifying and measuring impairment, management takes into consideration past loss experience, known and inherent risks in the portfolio,

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adverse situations that may affect the borrower's ability to repay, estimated value of underlying collateral and current economic conditions.

Accounts are identified for individual review based on past-due status and information available about the customer, such as financial statements, news reports and published credit ratings, as well as general information regarding industry trends and the economic environment in which our customers operate. The allowance for credit losses attributable to finance receivables that are individually evaluated and determined to be impaired is based on the present value of expected future cash flows discounted at the receivables' effective interest rate, the fair value of the collateral for collateral-dependent receivables or the observable market price of the receivable. In determining collateral value, we estimate the current fair market value of the collateral less selling costs. We also consider credit enhancements such as additional collateral and contractual third-party guarantees. The allowance for credit losses attributable to the remaining accounts not yet individually identified as impaired is estimated based on loss forecast models utilizing probabilities of default, our estimate of the loss emergence period and the estimated loss given default. In addition, qualitative factors not able to be fully captured in our loss forecast models including industry trends, macroeconomic factors and model imprecision are considered in the evaluation of the adequacy of the allowance for credit losses. These qualitative factors are subjective and require a degree of management judgment.

While management believes it has exercised prudent judgment and applied reasonable assumptions, there can be no assurance that in the future, changes in economic conditions or other factors would not cause changes in the financial health of our customers. If the financial health of our customers deteriorates, the timing and level of payments received could be impacted and therefore, could result in a change to our estimated losses.

Income taxes – We are subject to the income tax laws of the many jurisdictions in which we operate. These tax laws are complex, and the manner in which they apply to our facts is sometimes open to interpretation. In establishing the provision for income taxes, we must make judgments about the application of these inherently complex tax laws. Our income tax positions and analysis are based on currently enacted tax law. Future changes in tax law or related interpretations could significantly impact the provision for income taxes, the amount of taxes payable, and the deferred tax asset and liability balances. Changes in tax law are reflected in the period of enactment with related interpretations considered in the period received. On January 15, 2019, the U.S. Treasury issued final regulations providing additional guidance related to the calculation of the mandatory deemed repatriation of non-U.S. earnings. We are currently evaluating the impact of these regulations and will recognize any resulting adjustments in the first quarter of 2019.

Despite our belief that our tax return positions are consistent with applicable tax laws, we believe that taxing authorities could challenge certain positions. Settlement of any challenge can result in no change, a complete disallowance, or some partial adjustment reached through negotiations or litigation. We record tax benefits for uncertain tax positions based upon management's evaluation of the information available at the reporting date. To be recognized in the financial statements, a tax benefit must be at least more likely than not of being sustained based on technical merits. The benefit for positions meeting the recognition threshold is measured as the largest benefit more likely than not of being realized upon ultimate settlement with a taxing authority that has full knowledge of all relevant information. Significant judgment is required in making these determinations and adjustments to unrecognized tax benefits may be necessary to reflect actual taxes payable upon settlement. Adjustments related to positions impacting the effective tax rate affect the provision for income taxes. Adjustments related to positions impacting the timing of deductions impact deferred tax assets and liabilities. For tax years 2007 to 2012 including the impact of a loss carryback to 2005, the IRS has proposed to tax in the United States profits earned from certain parts transactions by Caterpillar SARL (CSARL), based on the IRS examination team's application of "substance-over-form" or "assignment-of-income" judicial doctrines. CSARL is primarily taxable locally in Switzerland. We are vigorously contesting the proposed increases to tax and penalties for these years of approximately $2.3 billion. We believe that the relevant transactions complied with applicable tax laws and did not violate judicial doctrines. The purchase of

parts by CSARL from unrelated parties and the subsequent sale of those parts to unrelated dealers outside the United States have substantial legal, commercial, and economic consequences for the parties involved. Therefore, we have concluded that the largest amount of benefit that is more likely than not to be sustained related to this position is the entire benefit. As a result, no amount related to these IRS adjustments is reflected in unrecognized tax benefits. We have filed U.S. income tax returns on this same basis for years after 2012. We currently believe the ultimate disposition of this matter will not have a material adverse effect on our consolidated financial position, liquidity or results of operations.

Deferred tax assets generally represent tax benefits for tax deductions or credits available in future tax returns. Certain estimates and assumptions are required to determine whether it is more likely than not that all or some portion of the benefit of a deferred tax asset will not be realized. In making this assessment, management analyzes the trend of U.S. GAAP earnings and estimates the impact of future taxable income, reversing temporary differences and available prudent and feasible tax planning strategies. We give less weight in this analysis to mark-to-market adjustments to remeasure our pension and OPEB plans as we do not consider these adjustments indicative of ongoing earnings trends. Should a change in facts or circumstances lead to a change in judgment

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about the ultimate realizability of a deferred tax asset, we record or adjust the related valuation allowance in the period that the change in facts and circumstances occurs, along with a corresponding increase or decrease in the provision for income taxes.

OTHER MATTERS

ENVIRONMENTAL AND LEGAL MATTERS

The Company is regulated by federal, state and international environmental laws governing our use, transport and disposal of substances and control of emissions. In addition to governing our manufacturing and other operations, these laws often impact the development of our products, including, but not limited to, required compliance with air emissions standards applicable to internal combustion engines. We have made, and will continue to make, significant research and development and capital expenditures to comply with these emissions standards.

We are engaged in remedial activities at a number of locations, often with other companies, pursuant to federal and state laws. When it is probable we will pay remedial costs at a site, and those costs can be reasonably estimated, the investigation, remediation, and operating and maintenance costs are accrued against our earnings. Costs are accrued based on consideration of currently available data and information with respect to each individual site, including available technologies, current applicable laws and regulations, and prior remediation experience. Where no amount within a range of estimates is more likely, we accrue the minimum. Where multiple potentially responsible parties are involved, we consider our proportionate share of the probable costs. In formulating the estimate of probable costs, we do not consider amounts expected to be recovered from insurance companies or others. We reassess these accrued amounts on a quarterly basis. The amount recorded for environmental remediation is not material and is included in Accrued expenses. We believe there is no more than a remote chance that a material amount for remedial activities at any individual site, or at all the sites in the aggregate, will be required.

On January 7, 2015, the Company received a grand jury subpoena from the U.S. District Court for the Central District of Illinois. The subpoena requests documents and information from the Company relating to, among other things, financial information concerning U.S. and non-U.S. Caterpillar subsidiaries (including undistributed profits of non-U.S. subsidiaries and the movement of cash among U.S. and non-U.S. subsidiaries). The Company has received additional subpoenas relating to this investigation requesting additional documents and information relating to, among other things, the purchase and resale of replacement parts by Caterpillar Inc. and non-U.S. Caterpillar subsidiaries, dividend distributions of certain non-U.S. Caterpillar subsidiaries, and Caterpillar SARL and related structures. On March 2-3, 2017, agents with the Department of Commerce, the Federal Deposit Insurance Corporation and the Internal Revenue Service executed search and seizure warrants at three facilities of the Company in the Peoria, Illinois area, including its former corporate headquarters. The warrants identify, and agents seized, documents and information related to, among other things, the export of products from the United States, the movement of products between the United States and Switzerland, the relationship between Caterpillar Inc. and Caterpillar SARL, and sales outside the United States. It is the Company’s understanding that the warrants, which concern both tax and export activities, are related to the ongoing grand jury investigation. The Company is continuing to cooperate with this investigation. The Company is unable to predict the outcome or reasonably estimate any potential loss; however, we currently believe that this matter will not have a material adverse effect on the Company’s consolidated results of operations, financial position or liquidity.

On March 20, 2014, Brazil’s Administrative Council for Economic Defense (CADE) published a Technical Opinion which named 18 companies and over 100 individuals as defendants, including two subsidiaries of Caterpillar Inc., MGE - Equipamentos e Serviços Ferroviários Ltda. (MGE) and Caterpillar Brasil Ltda. The publication of the Technical Opinion opened CADE's official administrative investigation into allegations that the defendants participated in anticompetitive bid activity for the construction and maintenance of metro and train networks in Brazil.

While companies cannot be held criminally liable for anticompetitive conduct in Brazil, criminal charges have been brought against two current employees of MGE and one former employee of MGE involving the same conduct alleged by CADE. The Company has responded to all requests for information from the authorities. The Company is unable to predict the outcome or reasonably estimate the potential loss; however, we currently believe that this matter will not have a material adverse effect on the Company's consolidated results of operations, financial position or liquidity.

In addition, we are involved in other unresolved legal actions that arise in the normal course of business. The most prevalent of these unresolved actions involve disputes related to product design, manufacture and performance liability (including claimed asbestos and welding fumes exposure), contracts, employment issues, environmental matters, intellectual property rights, taxes (other than income taxes) and securities laws. The aggregate range of reasonably possible losses in excess of accrued liabilities, if any, associated with these unresolved legal actions is not material. In some cases, we cannot reasonably estimate a range of loss because there is insufficient information regarding the matter. However, we believe there is no more than a remote chance that any liability arising from these matters would be material. Although it is not possible to predict with certainty the outcome of these unresolved legal actions, we believe that these actions will not individually or in the aggregate have a material adverse effect on our consolidated results of operations, financial position or liquidity.

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RETIREMENT BENEFITS

We recognize mark-to-market gains and losses immediately through earnings upon the remeasurement of our pension and OPEB plans. Mark-to-market gains and losses represent the effects of actual results differing from our assumptions and the effects of changing assumptions. Changes in discount rates and differences between the actual return on plan assets and the expected return on plan assets generally have the largest impact on mark-to-market gains and losses.

We recognized expense of $415 million, $342 million and $957 million in 2018, 2017 and 2016, respectively, related to our defined benefit pension and OPEB plans. The increase in expense in 2018 compared to 2017 was primarily due to higher net mark-to-market losses in 2018 compared to 2017. This was partially offset by a higher expected return on plan assets and curtailment gains compared to curtailment and termination charges in 2017. The decrease in expense in 2017 compared to 2016 was primarily due to lower net mark-to-market losses in 2017 compared to 2016. This was partially offset by an unfavorable change in amortization of prior service credits, curtailment and termination charges and a lower expected return on plan assets.

The primary factors that resulted in mark-to-market losses for 2018, 2017 and 2016 are described below. The net mark-to-market losses were included in Other income (expense) in the Results of Operations.

- 2018 net mark-to-market loss of $495 million - Primarily due to the difference between the actual return on plan assets compared to the expected return on plan assets (U.S. pension plans had an actual rate of return of negative 5.4 percent compared to an expected rate of return of 6.3 percent). This was partially offset by higher discount rates at the end of 2018 compared to the end of 2017.
- 2017 net mark-to-market loss of $301 million - Primarily due to lower discount rates at the end of 2017 compared to the end of 2016 and changes in our mortality assumption (discussed below). This was partially offset by the difference between the actual return on plan assets compared to the expected return on plan assets (U.S. pension plans had an actual rate of return of 15.5 percent compared to an expected rate of return of 6.7 percent).
- 2016 net mark-to-market loss of $985 million - Primarily due to lower discount rates at the end of 2016 compared to the end of 2015 and changes in our U.S. mortality assumption (discussed below). This was partially offset by the difference between the actual return on plan assets compared to the expected return on plan assets (U.S. pension plans had an actual rate of return of 7.8 percent compared to an expected rate of return of 6.9 percent).

In the fourth quarter of 2017, the company reviewed and made changes to the mortality assumptions primarily for our U.S. pension plans which resulted in an overall increase in the life expectancy of plan participants. As of December 31, 2017 these changes resulted in an increase in our Liability for postemployment benefits of approximately $290 million. In the fourth quarter of 2016, the company adopted new mortality improvement scales released by the Society of Actuaries for our U.S. pension and OPEB plans. As of December 31, 2016, this resulted in an increase in our Liability for postemployment benefits of approximately $200 million.

In the first quarter of 2017, we announced the closure of our Gosselies, Belgium facility. This announcement impacted certain employees that participated in a defined benefit pension plan and resulted in a net loss of $20 million in the first quarter of 2017 for curtailment and termination benefits.

We expect our total defined benefit pension and OPEB expense (excluding the impact of mark-to-market gains and losses) to increase approximately $260 million in 2019. This increase is primarily due to a lower expected return on plan assets (U.S. pension plans have an expected rate of return of 5.9 percent in 2019 compared to 6.3 percent in 2018).

In general, our strategy for both the U.S. and the non-U.S. pensions includes ongoing alignment of our investments to our liabilities, while reducing risk in our portfolio. For our U.S. pension plans, our year-end 2018 asset allocation was 70 percent fixed income, 27 percent equities and 3 percent other. Our current U.S. pension target asset allocation is 70 percent fixed income and 30 percent equities. The target allocation is revisited periodically to ensure it reflects our overall objectives. The U.S. plans are rebalanced to within the appropriate target asset allocation ranges on a monthly basis.

The year-end 2018 asset allocation for our non-U.S. pension plans was 78 percent fixed income, 13 percent equities, 5 percent real estate and 4 percent other. The 2018 weighted-average target allocation for our non-U.S. pension plans was also 78 percent fixed income, 13 percent equities, 5 percent real estate and 4 percent other. The target allocations for each plan vary based upon local statutory requirements, demographics of the plan participants and funded status. The frequency of rebalancing for the non-U.S. plans varies depending on the plan.

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Contributions to our pension and OPEB plans were $1.4 billion and $1.6 billion in 2018 and 2017, respectively. Both years included a $1.0 billion discretionary contribution to our U.S. pension plans. We expect to make approximately $315 million of contributions to our pension and OPEB plans in 2019. We believe we have adequate resources to fund both pension and OPEB plans.

Effective January 1, 2018, we adopted new accounting guidance issued by the FASB related to the presentation of net periodic pension costs and net periodic postretirement benefit costs. The change in presentation was applied retrospectively to prior years. For further information see Note 1J - "Operations and summary of significant accounting policies - New Accounting Guidance" of Part II, Item 8 "Financial Statements and Supplementary Data."

Actuarial assumptions have a significant impact on both pension and OPEB expenses. The effects of a one percentage point change in our primary actuarial assumptions on 2018 benefit costs and year-end obligations are included in the table below.

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Postretirement Benefit Plan Actuarial Assumptions Sensitivity

The effects of a one percentage-point change in our primary actuarial assumptions on 2018 pension and OPEB costs and obligations are as follows:

(Millions of dollars)	2018 Benefit Cost One percentage-point increase	 One percentage-point decrease	Year-end Benefit Obligation One percentage-point increase	 One percentage-point decrease
U.S. Pension benefits:				
Assumed discount rate	$ 64	$ (85)	$ (1,625)	$ 1,970
Expected rate of compensation increase	1	(2)	5	(5)
Expected long-term rate of return on plan assets	(129)	129	—	—
Non-U.S. Pension benefits:				
Assumed discount rate	7	(11)	(560)	720
Expected rate of compensation increase	7	(6)	41	(36)
Expected long-term rate of return on plan assets	(42)	42	—	—
Other postretirement benefits:				
Assumed discount rate	9	(12)	(318)	377
Expected rate of compensation increase	—	—	—	—
Expected long-term rate of return on plan assets	(4)	4	—	—
Assumed health care cost trend rate	14	(11)	138	(117)

Primary Actuarial Assumptions

	U.S. Pension Benefits 2018	 2017	 2016	Non-U.S. Pension Benefits 2018	 2017	 2016	Other Postretirement Benefits 2018	 2017	 2016
Weighted-average assumptions used to determine benefit obligations, end of year:									
Discount rate	4.2 %	3.5 %	4.0 %	2.5 %	2.4 %	2.5 %	4.2 %	3.6 %	4.0 %
Rate of compensation increase	4.0 %	4.0 %	4.0 %	3.0 %	4.0 %	4.0 %	4.0 %	4.0 %	4.0 %
Weighted-average assumptions used to determine net cost:									
Discount rate used to measure service cost	3.7 %	4.2 %	4.5 %	2.3 %	2.4 %	2.9 %	3.5 %	3.9 %	4.2 %
Discount rate used to measure interest cost	3.2 %	3.3 %	3.4 %	2.2 %	2.3 %	2.8 %	3.2 %	3.3 %	3.3 %
Expected rate of return on plan assets	6.3 %	6.7 %	6.9 %	5.2 %	5.9 %	6.1 %	7.5 %	7.5 %	7.5 %
Rate of compensation increase	4.0 %	4.0 %	4.0 %	4.0 %	4.0 %	3.6 %	4.0 %	4.0 %	4.0 %
Health care cost trend rates at year-end:									
Health care trend rate assumed for next year							6.1 %	6.1 %	6.6 %
Rate that the cost trend rate gradually declines to							5.0 %	5.0 %	5.0 %
Year that the cost trend rate reaches ultimate rate							2025	2022	2022

SENSITIVITY

Foreign Exchange Rate Sensitivity

Machinery, Energy & Transportation operations use foreign currency forward and option contracts to manage unmatched foreign currency cash inflow and outflow. Our objective is to minimize the risk of exchange rate movements that would reduce the U.S. dollar value of our foreign currency cash flow. Our policy allows for managing anticipated foreign currency cash flow for up to

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five years. Based on the anticipated and firmly committed cash inflow and outflow for our Machinery, Energy & Transportation operations for the next 12 months and the foreign currency derivative instruments in place at year-end, a hypothetical 10 percent weakening of the U.S. dollar relative to all other currencies would adversely affect our expected 2019 cash flow for our Machinery, Energy & Transportation operations by approximately $250 million. Last year similar assumptions and calculations yielded a potential $200 million adverse impact on 2018 cash flow. We determine our net exposures by calculating the difference in cash inflow and outflow by currency and adding or subtracting outstanding foreign currency derivative instruments. We multiply these net amounts by 10 percent to determine the sensitivity.

Since our policy for Financial Products operations is to hedge the foreign exchange risk when the currency of our debt portfolio does not match the currency of our receivable portfolio, a 10 percent change in the value of the U.S. dollar relative to all other currencies would not have a material effect on our consolidated financial position, results of operations or cash flow. Neither our policy nor the effect of a 10 percent change in the value of the U.S. dollar has changed from that reported at the end of last year.

The effect of the hypothetical change in exchange rates ignores the effect this movement may have on other variables, including competitive risk. If it were possible to quantify this competitive impact, the results would probably be different from the sensitivity effects shown above. In addition, it is unlikely that all currencies would uniformly strengthen or weaken relative to the U.S. dollar. In reality, some currencies may weaken while others may strengthen. Our primary exposure (excluding competitive risk) is to exchange rate movements in the Japanese yen, British pound, Indian rupee, Swiss franc and Australian dollar.

Interest Rate Sensitivity

For our Machinery, Energy & Transportation operations, we have the option to use interest rate contracts to lower the cost of borrowed funds by attaching fixed-to-floating interest rate contracts to fixed-rate debt, and by entering into forward rate agreements on future debt issuances. A hypothetical 100 basis point adverse move in interest rates along the entire interest rate yield curve would have a minimal impact to the 2019 pre-tax earnings of Machinery, Energy & Transportation. Last year, similar assumptions and calculations yielded a minimal impact to 2018 pre-tax earnings.

For our Financial Products operations, we use interest rate derivative instruments primarily to meet our match-funding objectives and strategies. We have a match-funding policy whereby the interest rate profile (fixed or floating rate) of our debt portfolio is matched to the interest rate profile of our earning asset portfolio (finance receivables and operating leases) within certain parameters. In connection with that policy, we use interest rate derivative instruments to modify the debt structure. Match funding assists us in maintaining our interest rate spreads, regardless of the direction interest rates move.

In order to properly manage sensitivity to changes in interest rates, Financial Products measures the potential impact of different interest rate assumptions on pre-tax earnings. All on-balance sheet positions, including derivative financial instruments, are included in the analysis. The primary assumptions included in the analysis are that there are no new fixed rate assets or liabilities, the proportion of fixed rate debt to fixed rate assets remains unchanged and the level of floating rate assets and debt remain constant. An analysis of the December 31, 2018 balance sheet, using these assumptions, estimates the impact of a 100 basis point immediate and sustained adverse change in interest rates to have a minimal impact on 2019 pre-tax earnings. Last year, similar assumptions and calculations yielded a minimal impact to 2018 pre-tax earnings.

This analysis does not necessarily represent our current outlook of future market interest rate movement, nor does it consider any actions management could undertake in response to changes in interest rates. Accordingly, no assurance can be given that actual results would be consistent with the results of our estimate.

NON-GAAP FINANCIAL MEASURES

The following definitions are provided for the non-GAAP financial measures used in this report. These non-GAAP financial measures have no standardized meaning prescribed by U.S. GAAP and therefore are unlikely to be comparable to the calculation of similar measures for other companies. Management does not intend these items to be considered in isolation or as a substitute for the related GAAP measures.

We believe it is important to separately quantify the profit impact of several significant items in order for our results to be meaningful to our readers. These items consist of (i) restructuring costs, which are incurred in the current year to generate longer term benefits, (ii) pension and OPEB mark-to-market losses resulting from plan remeasurements, (iii) certain deferred tax valuation allowance adjustments, (iv) U.S. tax reform impact and (v) a gain on the sale of an equity investment. We do not consider these items indicative of earnings from ongoing business activities and believe the non-GAAP measures will provide useful perspective on underlying business results and trends, and a means to assess our period-over-period results.

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Reconciliations of adjusted operating profit margin to the most directly comparable GAAP measure, operating profit as a percent of sales and revenues are as follows:

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2018	2017	2018	2017
Operating profit as a percent of total sales and revenues	13.1%	10.8%	15.2%	9.8 %
Restructuring costs	0.7 %	1.9 %	0.7 %	2.7 %
Adjusted operating profit margin	13.8%	12.7%	15.9%	12.5%

Reconciliations of adjusted profit before taxes to the most directly comparable GAAP measure, consolidated profit before taxes, are as follows:

	Three Months Ended December 31,		Twelve Months Ended December 31,	
(millions of dollars)	2018	2017	2018	2017
Profit before taxes	$1,367	$1,111	$7,822	$4,082
Restructuring costs	$93	$245	$386	$1,256
Mark-to-market losses	$495	$301	$495	$301
Gain on sale of equity investment	$—	$—	$—	$(85)
Adjusted profit before taxes	$1,955	$1,657	$8,703	$5,554

Reconciliations of adjusted profit per share to the most directly comparable GAAP measure, diluted profit per share, are as follows:

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2018	2017	2018	2017
Profit (Loss) per share - diluted	$1.78	$(2.18)	$10.26	$1.26
Per share restructuring costs [1]	$0.13	$0.31	$0.50	$1.68
Per share mark-to-market losses [2]	$0.66	$0.26	$0.64	$0.26
Per share deferred tax valuation allowance adjustments	$(0.11)	$(0.18)	$(0.01)	$(0.18)
Per share U.S. tax reform impact	$0.09	$3.91	$(0.17)	$3.95
Per share gain on sale of equity investment[2]	$—	$—	$—	$(0.09)
Adjusted profit per share	$2.55	$2.16	$11.22	$6.88

[1] At statutory tax rates. 2017 is prior to consideration of U.S. tax reform. Full year 2017 also includes $15 million increase to prior year taxes related to non-U.S. restructuring costs.
[2] At statutory tax rates. 2017 is prior to consideration of U.S. tax reform.
Per share amounts computed using fully diluted shares outstanding except for consolidated loss per share, which was computed using basic shares outstanding.

Supplemental Consolidating Data

We are providing supplemental consolidating data for the purpose of additional analysis. The data has been grouped as follows:

Consolidated – Caterpillar Inc. and its subsidiaries.

Machinery, Energy & Transportation – Caterpillar defines Machinery, Energy & Transportation as it is presented in the supplemental data as Caterpillar Inc. and its subsidiaries with Financial Products accounted for on the equity basis. Machinery, Energy & Transportation information relates to the design, manufacturing and marketing of our products. Financial Products' information relates to the financing to customers and dealers for the purchase and lease of Caterpillar and other equipment. The

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nature of these businesses is different, especially with regard to the financial position and cash flow items. Caterpillar management utilizes this presentation internally to highlight these differences. We also believe this presentation will assist readers in understanding our business.

Financial Products – Our finance and insurance subsidiaries, primarily Cat Financial and Insurance Services.

Consolidating Adjustments – Eliminations of transactions between Machinery, Energy & Transportation and Financial Products.

Pages 61 to 63 reconcile Machinery, Energy & Transportation with Financial Products on the equity basis to Caterpillar Inc. consolidated financial information.

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Supplemental Data for Results of Operations
For The Years Ended December 31

				Supplemental consolidating data								
	Consolidated			Machinery, Energy & Transportation [1]			Financial Products			Consolidating Adjustments		
(Millions of dollars)	2018	2017	2016	2018	2017	2016	2018	2017	2016	2018	2017	2016
Sales and revenues:												
Sales of Machinery, Energy & Transportation	$51,822	$42,676	$35,773	$51,822	$42,676	$35,773	$—	$—	$—	$—	$—	$—
Revenues of Financial Products	2,900	2,786	2,764	—	—	—	3,362	3,167	3,065	(462)[2]	(381)[2]	(301
Total sales and revenues	54,722	45,462	38,537	51,822	42,676	35,773	3,362	3,167	3,065	(462)	(381)	(301
Operating costs:												
Cost of goods sold	36,997	31,260	28,044	36,998	31,261	28,046	—	—	—	(1)[3]	(1)[3]	(2
Selling, general and administrative expenses	5,478	4,999	4,383	4,675	4,411	3,826	825	604	573	(22)[3]	(16)[3]	(16
Research and development expenses	1,850	1,842	1,853	1,850	1,842	1,853	—	—	—	—	—	—
Interest expense of Financial Products	722	646	596	—	—	—	756	667	611	(34)[4]	(21)[4]	(15
Goodwill impairment charge	—	—	595	—	—	595	—	—	—	—	—	—
Other operating (income) expenses	1,382	2,255	1,904	144	1,056	700	1,259	1,220	1,232	(21)[3]	(21)[3]	(28
Total operating costs	46,429	41,002	37,375	43,667	38,570	35,020	2,840	2,491	2,416	(78)	(59)	(61
Operating profit	8,293	4,460	1,162	8,155	4,106	753	522	676	649	(384)	(322)	(240
Interest expense excluding Financial Products	404	531	505	448	622	553	—	—	—	(44)[4]	(91)[4]	(48
Other income (expense)	(67)	153	(518)	(391)	(170)	(753)	(16)	92	43	340[5]	231[5]	192
Consolidated profit (loss) before taxes	7,822	4,082	139	7,316	3,314	(553)	506	768	692	—	—	—
Provision (benefit) for income taxes	1,698	3,339	192	1,574	3,317	(24)	124	22	216	—	—	—
Profit (loss) of consolidated companies	6,124	743	(53)	5,742	(3)	(529)	382	746	476	—	—	—
Equity in profit (loss) of unconsolidated affiliated companies	24	16	(6)	24	16	(6)	—	—	—	—	—	—

Equity in profit of Financial Products' subsidiaries	—	—	—	362	738	470	—	—	—	(362)[6]	(738)[6]	(470
Profit (loss) of consolidated and affiliated companies	6,148	759	(59)	6,128	751	(65)	382	746	476	(362)	(738)	(470
Less: Profit (loss) attributable to noncontrolling interests	1	5	8	(19)	(3)	2	20	8	6	—	—	—
Profit (loss) [7]	$6,147	$754	$(67)	$6,147	$754	$(67)	$362	$738	$470	$(362)	$(738)	$(47

[1] Represents Caterpillar Inc. and its subsidiaries with Financial Products accounted for on the equity basis.
[2] Elimination of Financial Products' revenues earned from Machinery, Energy & Transportation.
[3] Elimination of net expenses recorded by Machinery, Energy & Transportation paid to Financial Products.
[4] Elimination of interest expense recorded between Financial Products and Machinery, Energy & Transportation.
[5] Elimination of discount recorded by Machinery, Energy & Transportation on receivables sold to Financial Products and of interest earned between Machinery, Energy & Transportation and Financial Products.
[6] Elimination of Financial Products' profit due to equity method of accounting.
[7] Profit (loss) attributable to common shareholders.

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Supplemental Data for Financial Position
At December 31

			Supplemental consolidating data					
	Consolidated		Machinery, Energy & Transportation [1]		Financial Products		Consolidating Adjustments	
(Millions of dollars)	2018	2017	2018	2017	2018	2017	2018	2017
Assets								
Current assets:								
Cash and short-term investments	$7,857	$8,261	$6,968	$7,381	$889	$880	$—	$—
Receivables - trade and other	8,802	7,436	4,677	4,596	401	343	3,724 [2,3]	2,497 [2,3]
Receivables - finance	8,650	8,757	—	—	13,989	12,985	(5,339) [3]	(4,228) [3]
Prepaid expenses and other current assets	1,765	1,772	1,227	1,099	583	679	(45) [4]	(6) [4]
Inventories	11,529	10,018	11,529	10,018	—	—	—	—
Total current assets	38,603	36,244	24,401	23,094	15,862	14,887	(1,660)	(1,737)
Property, plant and equipment - net	13,574	14,155	9,085	9,823	4,489	4,332	—	—
Long-term receivables - trade and other	1,161	990	302	229	204	162	655 [2,3]	599 [2,3]
Long-term receivables - finance	13,286	13,542	—	—	13,951	14,170	(665) [3]	(628) [3]
Investments in Financial Products subsidiaries	—	—	3,672	4,064	—	—	(3,672) [5]	(4,064) [5]
Noncurrent deferred and refundable income taxes	1,439	1,693	2,015	2,166	116	101	(692) [6]	(574) [6]
Intangible assets	1,897	2,111	1,897	2,106	—	5	—	—
Goodwill	6,217	6,200	6,217	6,183	—	17	—	—
Other assets	2,332	2,027	886	822	1,446	1,205	—	—
Total assets	$78,509	$76,962	$48,475	$48,487	$36,068	$34,879	$(6,034)	$(6,404)
Liabilities								
Current liabilities:								
Short-term borrowings	$5,723	$4,837	$—	$1	$5,723	$4,836	$—	$—
Short-term borrowings with consolidated companies	—	—	—	—	1,500	1,623	(1,500) [7]	(1,623) [7]
Accounts payable	7,051	6,487	6,972	6,330	194	265	(115) [8]	(108) [8]
Accrued expenses	3,573	3,220	3,212	2,880	361	340	—	—
Accrued wages, salaries and employee benefits	2,384	2,559	2,350	2,504	34	55	—	—
Customer advances	1,243	1,426	1,243	1,426	—	—	—	—
Dividends payable	495	466	495	466	—	—	—	—
Other current liabilities	1,919	1,742	1,532	1,327	433	423	(46) [6,9]	(8) [6,9]
Long-term debt due within one year	5,830	6,194	10	6	5,820	6,188	—	—
Total current liabilities	28,218	26,931	15,814	14,940	14,065	13,730	(1,661)	(1,739)
	25,000	23,847	8,015	7,958	16,995	15,918	(10) [7]	(29) [7]

Long-term debt due after one year								
Liability for postemployment benefits	7,455	8,365	7,455	8,365	—	—	—	—
Other liabilities	3,756	4,053	3,111	3,458	1,336	1,167	(691)[6]	(572)[6]
Total liabilities	64,429	63,196	34,395	34,721	32,396	30,815	(2,362)	(2,340)
Commitments and contingencies								
Shareholders' equity								
Common stock	5,827	5,593	5,827	5,593	919	918	(919)[5]	(918)[5]
Treasury stock	(20,531)	(17,005)	(20,531)	(17,005)	—	—	—	—
Profit employed in the business	30,427	26,301	30,427	26,301	3,543	3,598	(3,543)[5]	(3,598)[5]
Accumulated other comprehensive income (loss)	(1,684)	(1,192)	(1,684)	(1,192)	(943)	(592)	943[5]	592[5]
Noncontrolling interests	41	69	41	69	153	140	(153)[5]	(140