

**CATERPILLAR®**

2016 EXECUTIVE SUMMARY

**BUILDING BETTER**



# BUILDING A BETTER FUTURE

IN THE COMING DECADES, THE WORLD WILL REQUIRE INVESTMENT IN CONSTRUCTION, TRANSPORTATION AND NATURAL INFRASTRUCTURE TO MEET THE NEEDS OF A GROWING POPULATION, AN EMERGING MIDDLE CLASS AND A LARGELY URBANIZED SOCIETY. CATERPILLAR IS POSITIONED TO MEET THIS DEMAND.

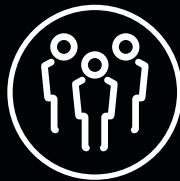


## GLOBAL POPULATION<sup>1</sup>

→ 2030 → 2050  
**8.5B 9.7B**

## GLOBAL MIDDLE CLASS<sup>2</sup>

→ 2020 → 2030  
**3.2B 4.9B**



## URBAN POPULATION<sup>3</sup>

→ 2050  
**66%**



2016–2030

# \$3.3 TRILLION

Annual global infrastructure investment needed to keep pace with expected growth<sup>4</sup>

## NATURAL INFRASTRUCTURE

Soil restoration increases carbon storage capacity by 1 to 3 billion tons annually and eliminates

# 3.5-11 BILLION TONS

of carbon emissions<sup>5</sup>

## WORLD ENERGY CONSUMPTION<sup>6</sup> 2012–2040

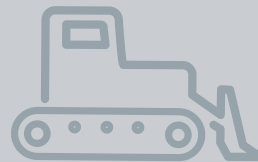
UP  
**48%**



\$1 SPENT ON ROAD, HIGHWAY  
& BRIDGE IMPROVEMENTS

# RETURNS

\$5.20 TO THE ECONOMY<sup>7</sup>



# \$15 TRILLION

CONSTRUCTION  
MARKET GROWTH  
BY 2025<sup>8</sup>

**63%**  
BY 2020

EMERGING MARKETS  
AS A PERCENTAGE OF  
GLOBAL CONSTRUCTION<sup>8</sup>

### Sources:

<sup>1</sup> United Nations Department of Economic and Social Affairs

<sup>2</sup> OECD Observer – An Emerging Middle Class, 2012

<sup>3</sup> United Nations – World Urbanization Prospects, 2014

<sup>4</sup> McKinsey & Company – Bridging Global Infrastructure Gaps, Our Insights

<sup>5</sup> Ohio State University's Carbon Management and Sequestration Center

<sup>6</sup> U.S. Energy Information Administration

<sup>7</sup> 2017 Infrastructure Report Card

<sup>8</sup> PWC Global Construction 2025

---

**Whether paving roads, mining essential commodities, restoring natural infrastructure or extracting the fuels to satisfy global energy demand, Caterpillar’s products are helping to build a better world.**

**And we’re doing the same for our business.**

**Though we operate in cyclical markets, we’re on a journey of continuous improvement in critical areas such as quality, safety, resource conservation and digital technology – working to build better and grow stronger every day. At Caterpillar, we’re building better every day.**

# **BUILDING A BETTER CATERPILLAR**

---

## **TABLE OF CONTENTS**

Letter to Stakeholders .....	2
Financial Performance At-A-Glance .....	4
U.N. Sustainable Development Goals .....	5
Sustainability Goals & Progress .....	6
Building Better .....	8
Technology .....	10
Impact .....	12
Customers .....	14
Natural Infrastructure .....	16
Women in Leadership .....	18
Circular Economy .....	20
Energy Access .....	22
Corporate Governance .....	24

# TO OUR STAKEHOLDERS

---



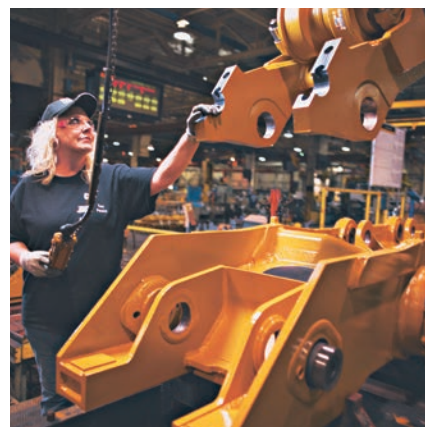
**JIM UMPLEBY**  
Chief Executive Officer

DESPITE ANOTHER YEAR OF CHALLENGING MARKET CONDITIONS, OUR 2016 PERFORMANCE WAS STRONG. CATERPILLAR IS AS SOLID AS THE IRON IN OUR MACHINES. WE ARE COMMITTED TO HELPING OUR CUSTOMERS BUILD A BETTER WORLD.

Reflecting weak commodity prices and generally weak global economic conditions, our 2016 sales and revenues declined 18 percent from 2015, to \$38.5 billion. Sales were lower in all segments and all regions. However, we reduced variable manufacturing and period costs by \$2.3 billion in 2016, which helped offset lower sales.

Our 2016 results included significant restructuring costs and three large non-cash items, which contributed to a loss per share of \$0.11, compared to \$4.18 profit per share in 2015. Excluding the non-cash charges and restructuring costs, 2016 adjusted profit was \$3.42 per share, compared to an adjusted profit per share of \$5.35 in 2015.

Despite lower profits, our balance sheet remained strong. Our Machinery, Energy & Transportation debt-to-capital ratio was 41.0 percent at the end of 2016, within our targeted range. We ended the year with a strong cash and liquidity position. Operating profit pull through was better than our target, and ME&T operating cash flow was more than enough to cover dividend payments and capital expenditures.



Our dividend has remained a high priority throughout this difficult economic cycle. We've maintained our dividend because of our balance sheet strength and because we've taken the tough actions necessary to reduce our cost structure and generate solid cash flow, including closing or consolidating facilities and reducing our workforce.

## Developing the World

Our customers use Cat® products to build the roads, dams, airports and schools that support local, regional and national economies, and improve living standards around the world.

We're also a leader in developing products that enable affordable and dependable energy, which is the foundation for sustainable progress. Our solutions include combined heat and power, waste to energy, landfill gas to energy, coal mine methane to energy, and more. We see great potential through our innovations in renewable energy technologies for both developing and developed regions.

Cat® products are also at work restoring natural infrastructure – forests,



prairies, farmlands, wetlands and coastal landscapes – that are essential for healthy economies, societies and environmental preservation.

## Investing in Better

Thanks to our investments in digital technologies, data analytics and automation, Caterpillar is providing our customers with information to help them operate our machines, engines and locomotives more efficiently. With 470,000 connected assets today, Caterpillar has the largest connected fleet in the industry, and we've barely begun.

We'll also see progress from continued significant investment in research and development. Our global R&D community, with more than 10,000 engineers and over 350 PhD-level scientists and technology experts, is working to improve current offerings and design the products of the future.

We're also making progress on multiple internal fronts. In 2016, we lowered our recordable injury frequency rate to 0.50, a 92 percent improvement since 2003. We reduced absolute greenhouse gas emissions from our operations by 7 percent from 2015 and set targets to increase the number of women to nearly a third of our workforce and 25 percent of our leadership by 2022. We also invested \$36.8 million in global communities through the Caterpillar Foundation. We're proud of these accomplishments and look forward to further progress in the years ahead.

## Laying Groundwork for the Future

In everything we do, we are guided by Our Values in Action, our common principles for how we work together and work with our customers, suppliers and officials.

We are also comprehensively reviewing our enterprise strategy. A diverse, cross-functional team is reviewing and updating our strategy with a primary focus on profitable growth.

We're also monitoring potential changes to trade, infrastructure, tax and regulatory policies in the United States and other countries. Our foremost priority is to advocate for policies that could generate economic growth, which would benefit our company and stakeholders.

As we continue to evolve, our stakeholders can count on us and our customers to keep building a better world. Our customers can also count on the 172 independent Caterpillar dealers who sell and service our products around the world, and provide our greatest competitive advantage.

We see many opportunities ahead. I'm confident we are well-positioned for the future due to our talented team of employees, values-based culture and market leadership.

**Jim Umpleby**  
Chief Executive Officer



# FINANCIAL PERFORMANCE AT-A-GLANCE

## PRODUCTS

- ▶ Construction Equipment
- ▶ Mining Equipment
- ▶ Diesel & Natural Gas Engines
- ▶ Industrial Gas Turbines
- ▶ Diesel-Electric Locomotives



**\$38.5B**

2016 Consolidated Sales and Revenues



**59%**

Sales and Revenues Outside U.S.



**3M+**

Products at Work Around the World



**172**

Global Cat® Dealers



**470,000**

Connected Assets

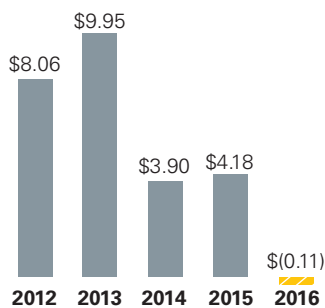


**95,400**

Employees

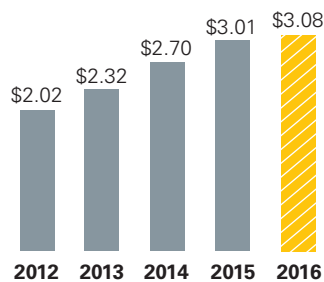
## PROFIT PER SHARE

(diluted)



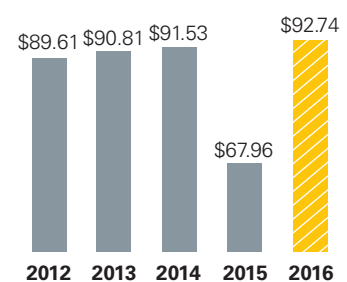
## DIVIDENDS DECLARED

(per share)



## 5-YEAR CLOSING STOCK PRICE

(in dollars)





# HOW CATERPILLAR SUPPORTS THE U.N. SUSTAINABLE DEVELOPMENT GOALS

## CATERPILLAR® SUSTAINABLE DEVELOPMENT GOALS

As the world's leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines and diesel-electric locomotives, at Caterpillar, we support sustainable development around the world. That is why we are working toward the 17 United Nations Sustainable Development Goals (SDGs), put forth in September 2015, as a part of our corporate sustainability strategy.



- Work toward alleviating extreme poverty through the Caterpillar Foundation
- Help provide energy access to the developing world



- Champion programs that support providing all people with 'Basic Human Needs' through the Caterpillar Foundation
- Support programs to restore Natural Infrastructure



- Prepare for disaster response efforts
- Provide back-up power for communities and hospitals



- Champion programs that support education through the Caterpillar Foundation
- Encourage Caterpillar employees to volunteer as mentors through Junior Achievement and other school programs



- Support the Caterpillar Foundation's Together. Stronger. campaign
- Support the Caterpillar Women in Leadership initiative



- Champion programs that support providing all people with 'Basic Human Needs' through the Caterpillar Foundation



- Create alternative energy infrastructure including combined heat and power (CHP) technology, microgrids and biofuels
- Provide clean cook stove grants through the Caterpillar Foundation



- Maintain our core business of fostering economic development through infrastructure
- Continue to focus on Human Rights throughout all aspects of our business



- Support programs to restore Natural Infrastructure
- Maintain our core businesses of Construction Industries, Energy & Transportation and Resource Industries
- Invest in Research & Development
- Engage in innovative partnerships such as Uptake, XPRIZE and NASA Maker Faire



- Advocate for immigration
- Develop local workforces
- Promote global trade agreements



- Support programs to restore Natural Infrastructure



- Offer remanufacturing and rebuild solutions
- Continue to focus on Human Rights throughout all aspects of our business
- Responsible sourcing of conflict minerals used in our products
- Remove hazardous materials from our supply chain



- Help our customers achieve fuel efficiency gains, worksite efficiency and operational productivity
- Reduce our own operational GHG emissions



- Support programs to restore Natural Infrastructure



- Support programs to restore Natural Infrastructure



- Implement our worldwide Code of Conduct across all of our operations
- Continue to focus on Human Rights throughout all aspects of our business



- Engage with stakeholders through global government affairs



# SUSTAINABILITY GOALS & PROGRESS

Caterpillar has set aspirational, long-term goals for our operations and product stewardship. We believe these standards affirm our determination to lead our industry to a more sustainable future. Intensity-based goals are measured against company sales and revenues, and a decline in sales and revenues in 2016 directly affected our progress toward these goals. Nevertheless, we continued to focus on efficiency improvements, and these efforts contributed to year-over-year performance gains in these areas in 2016 when measured on an absolute basis.

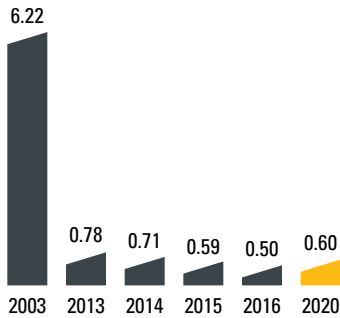
## 2020 OPERATIONAL GOALS

### SAFETY GOAL

Reduce our recordable workplace injury rate to 0.6 and lost-time injury case rate to 0.15 by 2020.

#### Recordable Injury Frequency (RIF)

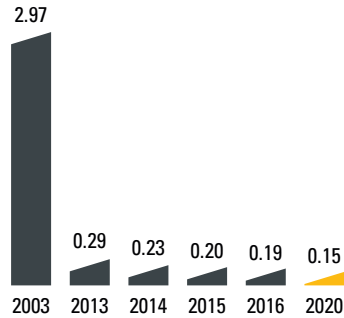
Recordable injuries per 200,000 hours worked



We have improved our Recordable Injury Frequency rate by 92 percent from our 2003 base year and 15 percent from our last reporting period.

#### Lost-Time Case Frequency Rate (LTCFR)

Work-related injuries resulting in lost time per 200,000 hours worked



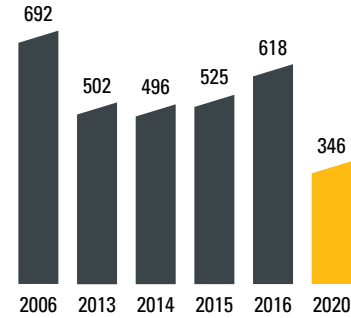
We have improved our Lost-Time Case Frequency Rate by 94 percent from our 2003 base year and 5 percent from our last reporting period.

### ENERGY GOAL

Reduce energy intensity by 50 percent from 2006 to 2020.

#### Energy Intensity<sup>5</sup>

Absolute gigajoules energy use/ million dollars of revenue



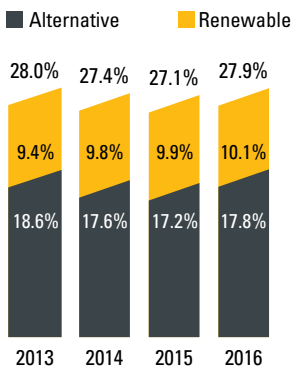
Operational energy intensity decreased 11 percent from 2006 to 2016. In addition, our absolute energy consumption decreased 4 percent from 2015 to 2016.

### RENEWABLE ENERGY GOAL

Use alternative/renewable sources to meet 20 percent of our energy needs by 2020.

#### Alternative/Renewable Energy<sup>1,2,3</sup>

Sum of alternative and renewable electrical energy use/total electrical use x 100



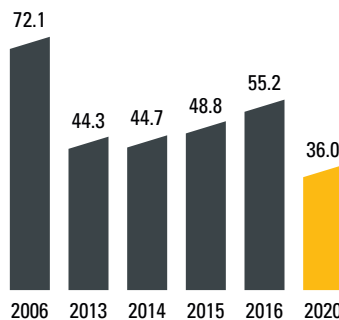
In 2016, 27.9 percent of our electrical energy was from renewable or alternative sources.

### GHG EMISSIONS GOAL

Reduce greenhouse gas emissions intensity by 50 percent from 2006 to 2020.

#### GHG Emissions Intensity<sup>4</sup>

Absolute metric tons of CO<sub>2</sub>e/ million dollars of revenue



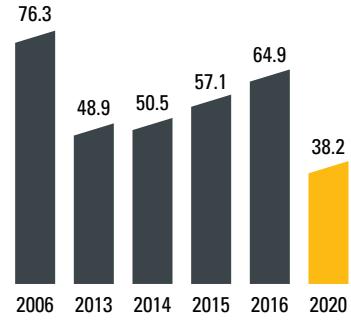
Through 2016, Caterpillar has reduced GHG emissions intensity from our facilities by 23 percent compared with our 2006 base year. From 2015 to 2016, our absolute GHG emissions decreased 7 percent.

### WATER GOAL

Reduce water consumption intensity by 50 percent from 2006 to 2020.

#### Water Consumption Intensity<sup>5,6</sup>

Absolute thousand gallons of water/ million dollars of revenue



Through 2016, we have reduced water consumption intensity at our facilities by a total of 15 percent from our 2006 base year.



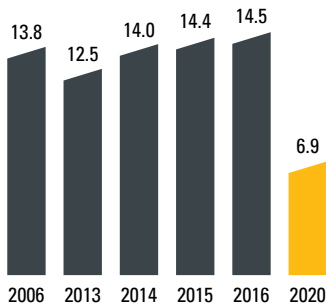
## 2020 OPERATIONAL GOALS *(Continued)*

### BY-PRODUCT MATERIALS GOAL

Reduce by-product materials intensity by 50 percent from 2006 to 2020.

#### By-Product Materials Intensity

Absolute metric tons of by-product materials/million dollars of revenue



Our by-product materials intensity increased 5 percent from our 2006 base year to 2016. However, we decreased our generation of total absolute by-product materials by 17 percent from 2015 to 2016.

## 2020 PRODUCT STEWARDSHIP GOALS

### SAFETY GOAL

Provide leadership in the safety of people in, on and around our products.



## 2020 PRODUCT STEWARDSHIP GOALS *(Continued)*

### SYSTEMS OPTIMIZATION GOAL

Increase managed fleet hours by 100 percent from 2013 to 2020.

↑ **98%**

Increase in fleet hours managed by Caterpillar Job Site Solutions (2013 to 2016)

↑ **126%**

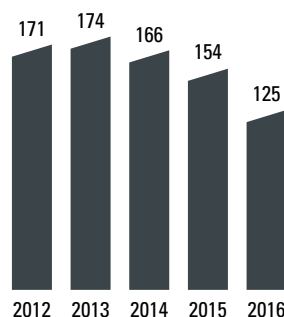
Increase in number of machines covered by service agreements with Caterpillar Job Site Solutions (2013 to 2016)

### REMAN & REBUILD GOAL

Increase remanufactured and rebuild business sales by 20 percent from 2013 to 2020.

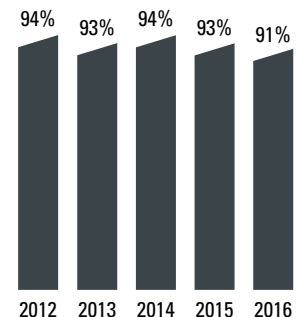
#### Reman End-of-Life "Take-Back" By Weight<sup>7</sup>

Millions of pounds of end-of-life material received



#### Reman End-of-Life "Take-Back" Percent<sup>7</sup>

Actual end-of-life returns/eligible returns x 100



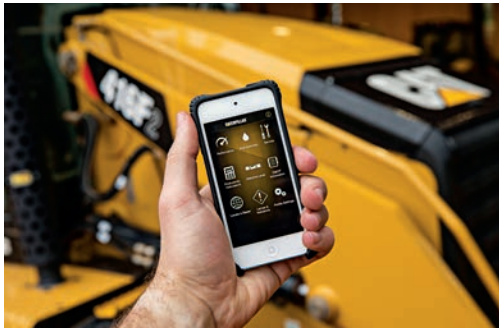
Reman sales decreased 13 percent 2013-2016  
Rebuild sales decreased 10 percent 2013-2016

# BUILDING BETTER

**Caterpillar makes the equipment needed to build a better world. As we do so, we're also building a better company. Our accomplishments this year are proof of our commitment. See how Caterpillar continued to build better in 2016.**

## BUILDING **SMARTER**

*With the largest connected fleet in the industry to give our customers a competitive edge.*



## BUILDING **LEANER**

*By applying principles to make our operations safer, more cost effective and more efficient.*



## BUILDING **QUALITY**

---

*With products that are dependable and built to last.*



## BUILDING **RESPONSIBLY**

---

*With a focus on improving safety and decreasing use and production of energy, water and waste.*



## BUILDING **TOGETHER**

---

*By fostering inclusion and building the capacity of our global dealer network, so we can protect our most valuable asset – our people.*





# TECHNOLOGY

## CONSTRUCTION IN AN AGE OF SMART

Machines are getting smarter – allowing our customers to work smarter, too. Cat® Connect Technology and Services builds machines that speak the same “language” – enabling operators to get more out of their job sites. In this “Age of Smart Iron,” Cat Connect LINK technologies work in tandem, turning wireless data into essential insights about the location, status and productivity of equipment. They also provide immediate feedback about machine performance and job progress. This helps operators solve issues and work more efficiently to minimize service costs and slash downtime. Here’s how three Cat Connect LINK technologies are helping customers work smarter.

**GRADE** allows operators to get to grade accurately in fewer passes. It combines digital design data, in-cab guidance and automatic machine control to hit target

grade fast. Easy-to-read displays show real-time cut/fill data and arrows that indicate exactly which direction to move the cutting edge. Customers using GRADE are seeing efficiency gains of up to 50 percent and reduced material, surveying and labor costs.

**COMPACT** is another solution for meeting specifications and cutting material costs. It includes advanced sensors on soil and asphalt compactors that help equipment perform more consistently. This streamlines construction processes from site prep and paving to landfill applications.

With **PAYLOAD**, customers can load and haul with precision. This technology provides on-the-go load weighing to help operators hit precise targets. Operators can track daily productivity from the cab, with quick access to payload weights, load and cycle counts and daily totals. When combined with other LINK technologies, managers can track daily production tonnage and cycle counts as well as calculate tons per hour and tons per fuel burned.

## CUSTOMER CONNECTIVITY: KEY TO COST EFFICIENCY

**\$2 TO \$4 TRILLION**  
ANNUAL CONSTRUCTION COST OVERRUNS

**60%**  
OVERRUNS THAT ARE CONTROLLABLE

The connected worksite is a key to preventing overruns and unlocking trapped value. Cat Connect Services offer improved:

- Equipment management – with telematics that allow trucks to be loaded to a safe, but full, capacity
- Productivity – when fewer, more efficient hauls lead to increased production
- Safety – due to less traffic and more ergonomic features
- Sustainability – thanks to more efficient fuel patterns and less idle time



## A WHOLE NEW REALITY

Field technicians rely on technical information from Caterpillar to make sense of customers' machines in need of repair. Their routine once went something like this: pull up to a job site, identify the problem, review how to make the repair on a computer, then make the fix. It was a time-consuming process. Dealer technicians and Jason McIntyre, Technical Information Innovation Manager at Caterpillar, knew there had to be another way.

Inspired by the collaborative feedback of dealer technicians, McIntyre and his team are developing Caterpillar's service offerings in augmented reality (AR). "AR allows technicians to easily see where the component causing the issue is, even if it's their first time working on the machine," McIntyre says.

And it could completely change how Cat® equipment is serviced. By superimposing visual information on a physical space, Caterpillar can simplify the overall electrical complexity of a machine's system. The proof of concept, which was completed in just four months, gives virtual step-by-step directions on how to perform tasks like machine maintenance and safety checks. The software can be used on a phone or tablet, even in remote locations without Wi-Fi. This technology gives dealers the ability to reduce the downtime associated with troubleshooting, as well as improve dealer technician availability.



If a dealer technician had to fix a complex electrical problem on a track-type tractor, for example, the interface would provide detailed, visual step-by-step instructions. It would explain where the problem was most likely occurring, where to locate the failed part, how to remove it and, finally, how to replace it – all without the need to refer to a manual.

AR technology also provides an extra quality check, allowing users to take pictures of each step of the maintenance process and receive feedback. By investing in AR, Caterpillar will reduce costs, increase efficiency and decrease errors. We're excited to see where this innovation leads us.





# IMPACT

## CATERPILLAR- AND NASA-INSPIRED BUILDINGS ARE OUT OF THIS WORLD

For more than 90 years, Caterpillar has been building the world's infrastructure. And we intend to do so for the next 90 years – whether that's in a great city, a developing village or even beyond our planet.

That's why we're working with Bechtel, Brick and Mortar Ventures and Bradley University to sponsor NASA's latest Centennial Challenge – the 3D-Printed Habitat Challenge. The competition was created to motivate the world's most talented to dream of innovative ways to design and print habitats that could be used for deep space exploration or on Earth.



“AS TECHNOLOGY EVOLVES, SO DO OUR MACHINES. THE FUTURE OF CONSTRUCTION WILL LOOK VERY DIFFERENT THAN IT DOES TODAY. BY EXPANDING OUR HORIZONS AND ENGAGING IN PROGRESSIVE OPPORTUNITIES LIKE THE CENTENNIAL CHALLENGE, WE ARE BETTER EQUIPPED TO DEVELOP DISRUPTIVE TECHNOLOGIES TO SOLVE OUR CUSTOMERS' CURRENT CHALLENGES, AS WELL AS PREPARE FOR OUR MUTUAL LONG-TERM SUCCESS.”

*Justin Speichinger,  
Advanced Engineering Manager for  
the Caterpillar Excavation Division*

The competition takes place in three phases. The first phase, the design competition, was completed in September 2015. The second phase is the structural competition, which focuses on the technologies needed to manufacture structural components from readily available and recyclable materials. In fall 2017, teams will test their structural components and compete for top honors at the Caterpillar Edwards Demonstration Center. The competition will culminate with the third phase – the On-Site Habitat Competition – also held at Caterpillar in fall 2018. There, teams will come together and demonstrate their ability to fabricate full-scale habitats in front of judges and the public.

The competition is open to teams from universities and corporations, as well as individual citizens – anyone with an idea and the motivation to bring that idea to life. NASA is offering \$1.1 million in prize money in phase two of the competition.

## INFRASTRUCTURE AND EDUCATION FOR AFRICA, BUILT BY CATERPILLAR

Africa's population is growing faster than anywhere else on Earth. Its numbers are expected to double by 2050, with an additional 122 million people added to its workforce by 2020.

When population grows, demand for roads, buildings, clean water and energy grows, too. Caterpillar intends to be part of this transformation in Africa. In 2016, Caterpillar, our independent dealers and the Caterpillar Foundation announced plans to invest more than \$1 billion in African countries over the next five years.

The investment will include a major upgrade in customer service capabilities, including enhanced parts distribution capacity, state-of-the-art Certified Rebuild Centers and new dealer branch locations to better serve our customers throughout the continent. It will also help fund the expansion of Technicians for Africa, Caterpillar's online skills development program that launched in 2015. The e-learning website provides a broad, basic technical education – free of cost.

The program initially launched in Nigeria, Mozambique and the Democratic Republic of the Congo, and quickly expanded to 12 additional countries (Angola, Ethiopia, Ghana, Ivory Coast, Kenya, Liberia, Senegal, Sierra Leone, South Africa, Tanzania, Uganda and Zambia.) To date, the program has about 5,000 users and has awarded more than 100 certificates, and we expect to reach thousands more in the years ahead.

Perhaps most importantly, funding from Caterpillar and the Caterpillar Foundation will support projects in Africa that assist those living in poverty, specifically girls and women, through training, policy work, entrepreneurship programs and more. The Foundation's past investments have benefited hundreds of thousands with access to education, clean water and sanitation and microfinance. Now, the Caterpillar Foundation will commit approximately \$15 million by 2020 to organizations working to improve lives across Africa.





# CUSTOMERS

## A DIAMOND MINER'S BEST FRIEND

When Stornoway Diamond Corporation began making plans to build Quebec's first diamond mine, they had a relatively small project in mind. Then they started digging. "We discovered that the ore body was flaring at depth rather than getting smaller," says Matt Manson, Stornoway CEO, president and director. "Our six-year mine life became a 20-year mine life. Suddenly, we had a major project on our hands. But first, we had to finance it."

“WHATEVER A MINE NEEDS,  
CAT FINANCIAL IS THERE  
TO MAKE IT SUCCESSFUL.”

*David Hewitt,  
Hewitt Equipment Vice President*

Enter Cat Financial. Working with local Cat® dealer Hewitt Equipment Ltd., Caterpillar determined Stornoway's financing needs for the life of the mine. "Cat Financial is often one of the first groups that we contact when we talk with greenfield customers," says David Hewitt, Hewitt Equipment vice president. "They are very aware of what mining customers need to accomplish, and they are also very good listeners."



Cat Financial looks at what customers want to accomplish, what their financial structures are and what their cash flow needs are. Then, we come back not just with equipment solutions, but guidance based on the structured financing requirements of mines. Based on these discussions, Cat Financial funded the equipment on site and is a partner in the project financing.

Stornoway secured \$946 million from multiple sources, the most ever for a publicly listed diamond company and enough to fund the project to completion. The mine began production in fall 2016 and now employs approximately 500 people, including members of the local Cree tribe. It's a project Caterpillar is proud to support.





## POWER IN THE JUNGLE: BRINGING RELIABLE ELECTRICITY TO AN OFF-GRID REGION

The remote city of Boa Vista, Brazil, is isolated from the national power grid. Due to its location, aging equipment and increasing power demands, brownouts were common and power rationing was critical. In 2009, facing failing generators, the city was desperate for a new solution.

Oliveira Energia, a local supplier of power plants and emergency power installations, acted quickly, developing a substation to supply more than 40 MW of power from 32 containerized Cat® 3516A and 3516B diesel generator sets in just eight weeks. The substation was designed as a two-year fix. Meeting the region's long-term power needs, however, was more complicated. Many municipalities are reachable only by boat, some requiring journeys as long as two weeks.

Working with local Cat® dealer Sotreq, Oliveira Energia built a power plant with 34 Cat® C175-20 diesel generator sets. The generator sets were manufactured in Indiana and transported across land and sea for 30 days, including a final 600 miles by cargo ship up the Amazon River.

The plant factors in requirements for climate conditions, emissions, noise, voltage and frequency control. "It's important for us to select power solutions that will withstand the high-temperature, high-humidity conditions common in the Amazon region, which shorten the useful life of the equipment," says Pedro Farias, technical director for Oliveira Energia. "By using Caterpillar equipment, we have managed to maintain above 90 percent availability."

The power plant was completed on time and on budget. "A project like this typically takes about three years, but we built this plant in record time, which never happens in Brazil," says Orsine Oliveira, Oliveira Energia's president and CEO.

A more stable power system means better quality of life for residents and greater productivity for businesses. The region's power needs are expected to grow with time. When that happens, Caterpillar will be ready to meet the demand.





# NATURAL INFRASTRUCTURE

Conventional infrastructure – sanitary sewers, treatment plants, roads and bridges – is not the only infrastructure in need of rebuilding. Ecosystems that are essential to the health of our economy, communities and planet – forests, prairies, agricultural lands, estuaries, coastal landscapes and wetlands – also are in critical need of restoration. These ecosystems purify our water and air, sequester carbon, produce nourishment and supply other raw materials. A significant portion of the earth’s natural infrastructure has been lost or degraded. The good news: Cat® products are well equipped to address these types of restoration projects.

Consider the New Jersey coastline. Hurricane Sandy and Winter Storm Jonas caused more than \$30 billion in financial, social and environmental damage to the shoreline. Now, Cat® equipment is being used by multiple dredging contractors to restore the beaches

and dunes. These projects will help improve coastal resilience and protect social and environmental assets on coastlines from future storm surge and flood damage.

To raise awareness of the importance of such projects, Caterpillar is helping form a coalition on restoring natural infrastructure. The planned coalition will focus initially on coastal resilience, inland waterways and dam removals. Its role is to add value by accelerating the frequency, pace and funding for natural infrastructure projects. It will also identify and help remove or reduce regulatory and commercial barriers to implementation. Other activities may include a public campaign to raise awareness of the environmental, social and economic benefits of restoring natural infrastructure and encouraging policymakers to provide incentives to invest in natural infrastructure projects.



# WHY NATURAL INFRASTRUCTURE RESTORATION IS CRITICAL

THE MOST IMPORTANT ROLE OF NATURAL INFRASTRUCTURE IS TO SEQUESTER BILLIONS OF TONS OF CARBON. MORE CARBON RESIDES IN SOIL THAN IN THE ATMOSPHERE.



**SOIL**  
2,500 BILLION TONS CO<sub>2</sub>



**ATMOSPHERE**  
800 BILLION TONS CO<sub>2</sub>

TODAY THE UNITED NATIONS ESTIMATES:



**25% LAND IS  
HIGHLY DEGRADED**



**50%+ WETLANDS  
HAVE BEEN LOST**

NATURAL INFRASTRUCTURE RESTORATION CAN REVERSE SOME OF THIS DAMAGE.



**1-3 BILLION  
TONS ANNUALLY**

Annual increase in  
carbon storage capacity  
due to soil restoration



**3.5-11 BILLION  
TONS**

Annual carbon emissions  
eliminated due to soil  
restoration

**Sources:**

Ontl, T. A. & Schulte, L. A. (2012) Soil Carbon Storage. Nature Education Knowledge  
United Nations report, the State of the World's Land and Water Resources for Food and Agriculture (SOLAW)  
Ohio State University's Carbon Management and Sequestration Center



# WOMEN IN LEADERSHIP

Caterpillar has set ambitious targets in several key areas to increase the mix of qualified, capable females across our enterprise to industry benchmark levels by 2022. These goals include increasing our total female workforce to 29 percent, a 9 percent increase over our current population, and the number of female leaders to 25 percent, a 6 percent increase over the current composition of our leadership.



## DIVERSITY RECOGNITION



### DIVERSITYINC

25 Noteworthy Companies



### HUMAN RIGHTS CAMPAIGN FOUNDATION

Corporate Equality Index 90%



### WOMAN ENGINEER MAGAZINE

Top 50 Employers #7



### CAREERS & THE disABLED MAGAZINE

Top 50 Employers #2

### Enterprise Employees by Gender

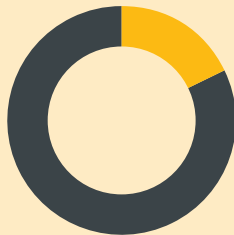
Includes management and production employees



● 20% / Female  
● 80% / Male

### Enterprise Leadership by Gender

Includes management and production employees



● 19% / Female  
● 81% / Male

### 2022 Targets

**29%** Female employees

**25%** Female leaders

## WOMEN'S LEADERSHIP INITIATIVE

Inclusion drives business results, and Caterpillar knows that when it focuses on having the best talent – including a more gender-balanced workforce at all levels – everyone benefits. That's why we've set ambitious targets in several key areas to increase the mix of qualified women across our enterprise to industry benchmark levels by 2022. These goals include increasing our total female workforce to 29 percent and increasing our total female leaders to 25 percent.

We're making progress toward these goals with the help of the Women in Leadership (WIL) initiative, an intentional, focused step on a continuous journey toward a globally diverse team. WIL is focused on three key pillars to drive cultural change:

- Executive sponsorship across all levels of the enterprise to generate internal commitment that positions us for long-term change
- Pipeline development that looks inside and outside of Caterpillar for creative and innovative sourcing solutions to attract and retain talent
- Culture change focused on our current policies and procedures to help us better understand what our employees seek in their work culture

## BREAKTHROUGH LEADERSHIP PROGRAMS

One standout WIL-related program is Breakthrough Leadership for Women. The workshop develops skills in the areas of networking, negotiating for leadership success, solving gender dilemmas and coaching on leadership challenges. The program has grown substantially since its inception in 2014, and in 2017 will graduate nearly 1,000 women.



The success of this program helped us address a further need: identifying and developing men as advocates for their female colleagues. In response, we created a parallel program, Breakthrough Leadership for Men, in 2016. The course is designed to help men develop inclusive leadership strategies and sharpen awareness of gender biases, their leadership journeys and our organizational culture. Participants explore how they can become more fully empowered, inclusive leaders and advocates of gender equality by creating more success for both men and women. We expect that more than 500 men and 200 women will participate in Breakthrough Leadership for Men in 2017.

In both programs, participants come together for in-depth discussions about bias, privilege and leadership. They share real-life business examples and leave with a personal action plan that includes how to identify, mentor and sponsor high-performing talent across the organization.



# CIRCULAR ECONOMY

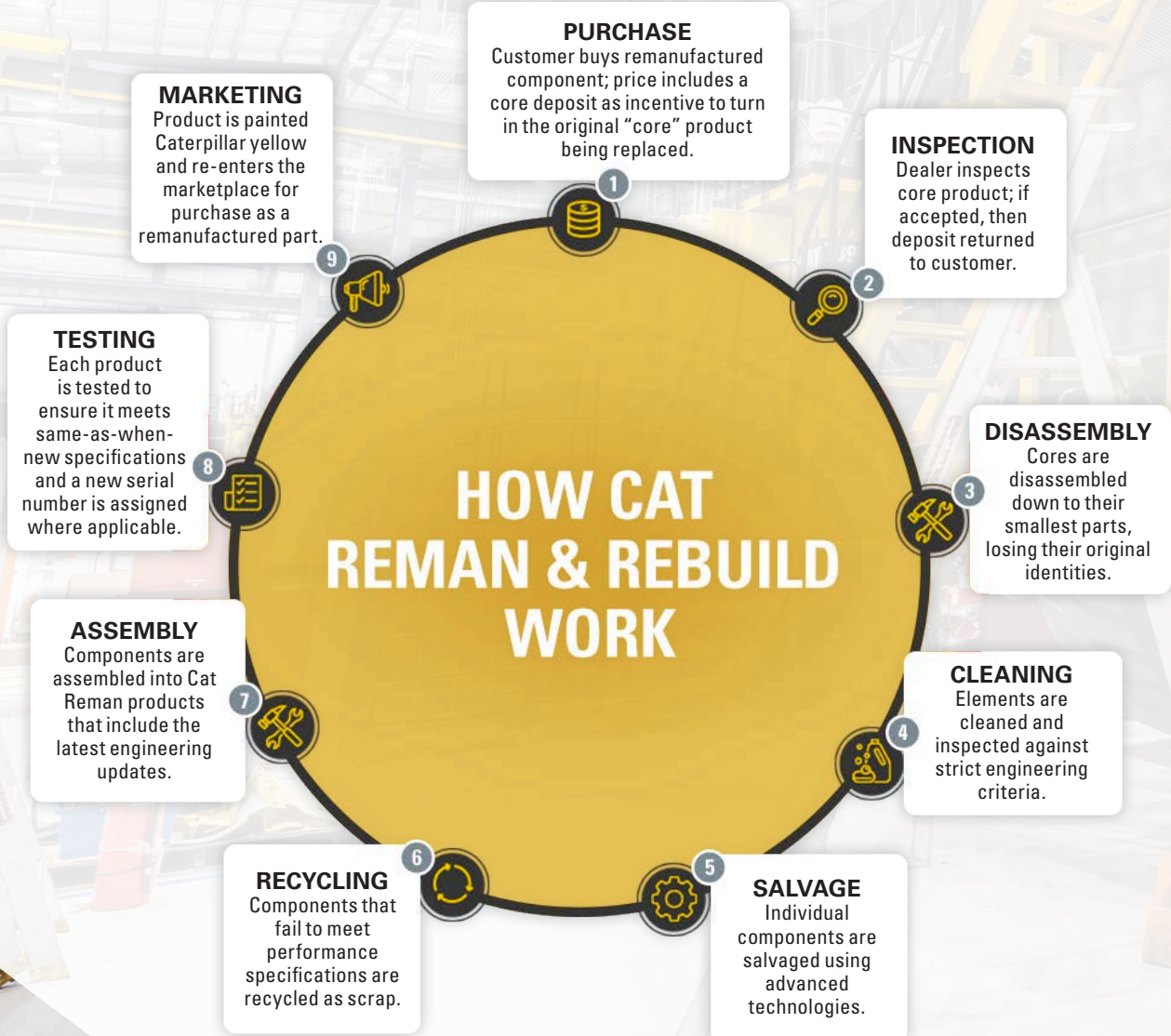
Earth's iron ore deposits date to nearly 2 billion years ago. To us, it makes a lot of sense to keep that iron, which we use in our products, around for as long as possible. It's a concept that also makes a lot of financial sense for our customers and why our remanufacturing and rebuilding businesses are a win for all.

Cat Reman focuses on the reclamation, recycling and reuse of parts and components, such as engines, into good-as-new ones. The process keeps materials, such as iron, in our value chain and out of landfills and is less

**350**  
Cat Certified  
Rebuild tests  
& inspections

**125M+**  
Pounds of  
end-of-life material  
received annually

energy-intensive than manufacturing a new machine. Cat Rebuild programs increase the lifespan of equipment by providing customers with product updates for a fraction of the cost of buying a new machine.



## 500<sup>TH</sup> CAT<sup>®</sup> CERTIFIED REBUILD PT FREEPORT INDONESIA MINE

Fifteen years after Caterpillar, Cat<sup>®</sup> dealer PT Trakindo and customer PT Freeport Indonesia signed a strategic alliance agreement, the group celebrated its 500th Cat<sup>®</sup> Certified Rebuild in 2016.

Rebuilding these 500 machines has saved the gold mine over \$350 million in replacement costs alone. Better still, every dollar saved has been directly reinvested into the mine or the mining community, which 32,000 people from 26 different countries call home. The entire town relies on mine-funded hospitals, health clinics, schools, religious centers and recreational centers. To operate its Lowland Kuala Kencana Rebuild Center, which opened its doors 15 years ago, our dealer hired and trained 405 local employees. The center supports a total of 43 rebuilding bays and has achieved OSHAS 18001 certification.

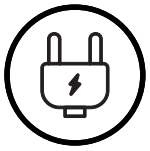
The benefits of rebuilding also contribute positively to the mine's economic performance. Rebuilt machines lower the mine's cost per ton, so savings are compounded through the life of each product, especially the underground

equipment that is approaching its fourth or fifth rebuild. This benefits the customer, the dealer and Caterpillar.

During the rebuilding process, Caterpillar also updates and improves each machine over its previous model. This results in an enhanced operator experience and enables more advanced upgrades, such as adding Command remote operation technology for Cat Load-Haul-Dump (LHD) Loaders. Now, PT Freeport Indonesia's fleet is operating 85 percent of the time, and rotating through regularly scheduled maintenance practices the other 15 percent, allowing the mine to focus on operations.

The 500th Cat<sup>®</sup> Certified Rebuild with PT Freeport Indonesia signifies much more than reuse of materials; it represents long-term business stability, community growth and brand loyalty for the mine. For Caterpillar, rebuilds show the value and long-term quality that come with the Cat<sup>®</sup> brand, and they provide the aftermarket sales and services on which our business model depends.





# ENERGY ACCESS

*Consider the implications of not having electricity: No light for a child to read a school book; no way to cook without harmful smoke; limited, if any, options for a business to work through the night; and no heating to warm the very young, elderly or sick. In short, no sustainable way forward. That's the situation for a sizeable amount of the world's population today.*

*Caterpillar and the Caterpillar Foundation are committed to reducing energy poverty so that sustainable progress is possible — progress such as sanitation and education. These are the building blocks to grow economies and improve living standards for millions. Explore some of the solutions that Caterpillar and its customers are deploying around the world today.*



### Cat® Microgrid Solutions

Microgrids couple renewable energy generation with traditional generators for deployment to places where the grid is weak or does not reach. Our strategic alliance with First Solar is focused on development and distribution of Cat®-branded photovoltaic modules for incorporation into microgrid systems for use anywhere in the world.



### Gas-to-Power

Cat® power generators play an integral role in supplying reliable electric power in parts of the world where a dependable power infrastructure is lacking. In these areas, a lack of reliable power slows economic development, often for decades.



### Distributed Power Generation

Caterpillar offers solutions that include combined heat and power, waste to energy, landfill gas to energy, coal mine methane to energy, and more.



### Investment & Awareness

Sometimes, the best solution is simply about finding the right channel to work through a challenge. By combining the strength of Cat® products and the enduring power of women in communities all over the world, we are on a mission to make energy access a basic global human right.



## TUCSON PROVING GROUND REDUCES EMISSIONS USING NEW CAT® MICROGRID SOLUTION

Caterpillar's Tucson Proving Ground (TPG) is located in an off-the-grid corner of Arizona – but supports activities with high power demands. The site has relied on three Cat® C15 diesel generator sets that are designed to run continuously all year long, consuming approximately 250,000 gallons of diesel fuel each year. Altogether, the generator sets typically run a combined 11,000 hours per year.

In 2016, to reduce fuel costs, decrease dependency on generator sets and lower emissions on the site, TPG installed 500 kWp of thin-film photovoltaic (PV) solar panels and 500 kW of short-term energy storage from the new Cat® Microgrid Solution suite of product offerings.

The Cat® Microgrid Solution offers solar panels, state-of-the-art energy storage, and advanced monitoring and control systems in combination with Caterpillar's traditional line of power generation equipment, including Cat® generator sets, switchgear, uninterruptible power

supplies and automatic transfer switches. Ideal for a broad range of applications such as mining sites, rural electrification and telecommunication towers, the Cat® Microgrid Solution is designed to reduce fuel expenses, lower utility bills and decrease emissions while increasing energy efficiency in even the most challenging of environments.

Thanks to the Cat® Microgrid Solution, TPG expects to lower its diesel fuel use by 33 percent and its generator set operation by 25 percent, saving about 1,000 tons of carbon dioxide emissions a year.

In addition to the TPG project, the microgrid team has recently supplied a 1000 kW PV system to the Illinois Municipal Electric Agency in Rantoul, Illinois, and a complete off-grid microgrid, including solar panels, diesel generator sets and energy storage, to a game and wildlife park in the West African country of Gabon.



# CORPORATE GOVERNANCE



Caterpillar's governance structure provides leadership, accountability and transparency to company business on behalf of our employees and our stockholders. Our corporate governance framework serves the interests of stockholders with the highest standards of responsibility, integrity and commitment. These standards are developed and implemented by our Board of Directors and global management team, who oversee the company's performance and governance policies. Learn more at [www.caterpillar.com/investors](http://www.caterpillar.com/investors).

## BOARD OF DIRECTORS

**David Calhoun**  
Senior Managing  
Director  
*The Blackstone Group*  
Independent Chairman  
of the Caterpillar Board

**Daniel Dickinson**  
Managing Partner  
*HCI Equity Partners*

**Juan Gallardo**  
Former CEO  
*Organización CULTIBA*

**Jesse Greene, Jr.**  
Instructor  
*Columbia Business  
School*

**Jon Huntsman, Jr.**  
Former Ambassador  
to China

**Dennis Muilenburg**  
Chairman, President  
and CEO  
*The Boeing Company*

**William Osborn**  
Former Chairman  
and CEO  
*Northern Trust  
Corporation*

**Debra Reed**  
Chairman and CEO  
*Sempra Energy*

**Edward Rust, Jr.**  
Former Chairman  
and CEO  
*State Farm Mutual  
Automobile Insurance  
Company*

**Susan Schwab**  
Professor  
*University of Maryland  
School of Public Policy*

**Jim Umpleby**  
Chief Executive Officer  
*Caterpillar Inc.*

**Miles White**  
Chairman and CEO  
*Abbott*

## OFFICERS

Chief Executive Officer  
**Jim Umpleby**

Group Presidents  
**Robert Charter**  
**Bob De Lange**  
**Bradley Halverson**  
**Denise Johnson**  
**Thomas Pellette**

Group President &  
Chief Financial Officer  
**Bradley Halverson**

Executive Vice President,  
Law and Public Policy &  
Chief Legal Officer  
**James Buda**

Senior Vice President  
**William Ainsworth**

Vice Presidents  
**Thomas Bluth**  
**Wai Man (Raymond) Chan**  
**Qihua Chen**  
**Joseph Creed**  
**Frank Crespo**  
**Paolo Fellin**  
**Gregory Folley**  
**Tom Frake**  
**Ken Hoefling**  
**Douglas Hoerr**  
**Kathryn Dickey Karol**  
**Zachary Kauk**  
**Philip Kelliher**  
**Pablo Koziner**  
**Julie Lagacy**  
**Nigel Lewis**

**Jean Savage**  
**George Taylor**  
**Tana Utley**  
**Karl Weiss**  
**David Walton**  
**Ramin Younessi**

Interim Executive Vice  
President, Law and  
Public Policy &  
Chief Legal Officer  
**Suzette Long**

Chief Accounting Officer  
**Jananne Copeland**

Corporate Controller  
**Kyle Epley**

Treasurer  
**Richard Moore**

Chief Audit Officer  
**Jill Daugherty**

Chief Ethics and  
Compliance Officer  
**Lance High**

Corporate Secretary  
**Christopher Reitz**

Assistant Treasurer  
**Sally Stiles**

Assistant Secretary  
**Chad Wiener**

Assistant Secretary  
**Joni Funk**

*As of April 1, 2017*

## Endnotes

- 1 Total includes purchased and on-site generated alternative and renewable energy, as well as calculating the percentage of renewable energy from grid-purchased electricity using data obtained from the International Energy Agency.
- 2 Renewable Energy: Caterpillar defines renewable energy as energy resources that are naturally replenishing over a short period of time and virtually inexhaustible. Power generation examples include wind, solar, hydro, geothermal, tidal, wave, biomass and biogas from anaerobic digestion.
- 3 Alternative Energy: Caterpillar defines alternative energy as any source of usable energy that offers substantial environmental benefits compared to the conventional sources of energy that it replaces. Power generation examples include landfill gas, coal mine and abandoned mine methane, combined heat and power (cogen, trigen and quadgen), coal with carbon sequestration and localized power generation. Transportation fuel examples include pure methanol, ethanol blends of 85 percent or more with gasoline, pure natural gas, natural gas blends of 85 percent or more with diesel fuel, liquid fuels domestically produced from natural gas (compressed natural gas, liquefied natural gas and gas to liquid fuels), propane, coal-derived liquid fuels, hydrogen and electricity.
- 4 GHG emissions intensity reduction goal is based on our combined Scope 1 (direct) and Scope 2 (indirect, market-based) GHG emissions using a 2006 baseline year. Likewise, total absolute GHG emissions are a sum of Scope 1 and Scope 2 (market-based) emissions.
- 5 Data prior to 2016 has been restated due to data updates realized from improved accuracy.
- 6 Water consumption intensity does not include non-contact cooling water.
- 7 Data does not include Progress Rail, Electro-Motive or Solar Turbines.

## Legal Statements

Certain statements in this 2016 Executive Summary relate to future events and expectations and are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Words such as “believe,” “estimate,” “will be,” “will,” “would,” “expect,” “anticipate,” “plan,” “project,” “intend,” “could,” “should” or other similar words or expressions often identify forward-looking statements. All statements other than statements of historical fact are forward-looking statements, including, without limitation, statements regarding our outlook, projections, forecasts or trend descriptions. These statements do not guarantee future performance and speak only as of the date they are made, and we do not undertake to update our forward-looking statements.

Caterpillar’s actual results may differ materially from those described or implied in our forward-looking statements based on a number of factors, including, but not limited to: (i) global and regional economic conditions and economic conditions in the industries we serve; (ii) commodity price changes, material price increases, fluctuations in demand for our products or significant shortages of material; (iii) government monetary or fiscal policies; (iv) political and economic risks, commercial instability and events beyond our control in the countries in which we operate; (v) our ability to develop, produce and market quality products that meet our customers’ needs; (vi) the impact of the highly competitive environment in which we operate on our sales and pricing; (vii) information technology security threats and computer crime; (viii) additional restructuring costs or a failure to realize anticipated savings or benefits from past or future cost reduction actions; (ix) failure to realize all of the anticipated benefits from initiatives to increase our productivity, efficiency and cash flow and to reduce costs; (x) inventory management decisions and sourcing practices of our dealers and our OEM customers; (xi) a failure to realize, or a delay in realizing, all of the anticipated benefits of our acquisitions, joint ventures or divestitures; (xii) union disputes or other employee relations issues; (xiii) adverse effects of unexpected events including natural disasters; (xiv) disruptions or volatility in global financial markets limiting our sources of liquidity or the liquidity of our customers, dealers and suppliers; (xv) failure to maintain our credit ratings and potential resulting increases to our cost of borrowing and adverse effects on our cost of funds, liquidity, competitive position and access to capital markets; (xvi) our Financial Products segment’s risks associated with the financial services industry; (xvii) changes in interest rates or market liquidity conditions; (xviii) an increase in delinquencies, repossessions or net losses of Cat Financial’s customers; (xix) currency fluctuations; (xx) our or Cat Financial’s compliance with financial and other restrictive covenants in debt agreements; (xxi) increased pension plan funding obligations; (xxii) alleged or actual violations of trade or anti-corruption laws and regulations; (xxiii) international trade policies and their impact on demand for our products and our competitive position; (xxiv) additional tax expense or exposure; (xxv) significant legal proceedings, claims, lawsuits or government investigations; (xxvi) new regulations or changes in financial services regulations; (xxvii) compliance with environmental laws and regulations; and (xxviii) other factors described in more detail in Caterpillar’s Forms 10-Q, 10-K and other filings with the Securities and Exchange Commission.

**Learn More**

Find the Annual Report and Sustainability Report at:  
[reports.caterpillar.com](https://reports.caterpillar.com)

**CATERPILLAR®**