# **CATERPILLAR®**

# 2015 EXECUTIVE SUMMARY YEAR IN REVIEW AND SUSTAINABILITY REPORT



# WHAT WE'VE BUILT.

Caterpillar has designed and built the world's most powerful, innovative and durable machines and engines. Our customers put them to work on projects that support sustainable progress and improved living standards.

**DOUG OBERHELMAN** Chairman & CEO **Caterpillar Inc** 

Caterpillar faced a tough year in 2015, but we have successfully managed through many economic cycles since our founding in 1925. We remain financially strong and because of the actions we're taking I believe we will, as we have in the past, emerge stronger and always able to compete very effectively around the world. We continue to manage what we can control today while also investing in our future.

### What We've Built

Since our first days as a company, Caterpillar has designed and built the world's most powerful, innovative and durable machines and engines. Our customers put them to work on projects that support sustainable progress and improved living standards. We add value for our customers by helping them achieve the lowest owning and operating costs through our sales and service network that reaches every corner of the globe.

Even in this environment, our market share for machines increased for the fifth year in a row. Our product quality continues to improve and is as strong as I've ever seen it. Our safety record improved again in 2015. As we further deploy Lean, we've already seen improvements in warranty and an up-to-95 percent reduction in internal defects per unit, and we anticipate substantial further improvements.

### Where We're Headed and What We're Solving

Through Across the Table, we're strengthening our expectations of Cat dealers and the Caterpillar teams that support them. There are about a dozen specific projects underway - everything from expanded e-business to digital technology solutions connecting our machines and engines to our customers.

Digital transformation is a reality for our industry, and we're applying advanced analytics and digital-driven technologies - like Cat® Connect and MineStar™ – to improve worksite efficiency across our equipment and other brands, too. We also offer our customers Job Site Solutions, a true collaborative effort focused on improving job site efficiency. We're focused on using less fuel, increasing productivity and creating a safer work environment.

These are a few examples of how sustainability doesn't ever go out of style or focus at Caterpillar. Another is that our products – like distributed power systems, which improve energy access while emitting fewer greenhouse gases than traditional power grid systems - bring traditional, renewable and alternative energy options to urban, rural and remote communities across the world.

In 2015, we joined an effort to emphasize the vital role that restoration of natural infrastructure – forest, prairies, farmlands, wetlands and coastal landscapes - plays in sustainable global development. Additionally, we have been remanufacturing our products for more than 40 years, returning them to same-as-when-new condition, and conserving natural resources.

Caterpillar also supports the Caterpillar Foundation, which has invested more than \$600 million since 1952 to transform lives and alleviate the root causes of poverty.

We were also honored to receive the "Vision for America" award from Keep America Beautiful in 2015 - a recognition for our sustainability commitment and significant progress toward aggressive sustainability goals.

Neither our accomplishments nor our goals are small or inconsequential. Given that we are Caterpillar, that shouldn't surprise anyone.

Doug Cherkelm

Doug Oberhelman Chairman and CEO

# **A MESSAGE TO SHAREHOLDERS**



### **CATERPILLAR®**

# WHERE WE **STARTED.**

The 21st century world you see today has been built with the help of Caterpillar machines and solutions. We've spent the past 90 years creating, building, problem-solving, innovating, testing, servicing and improving. In the process, we've built a global leader.



Cat<sup>®</sup> machines help start the

We form our first overseas

subsidiary - Caterpillar Tractor

Co. Ltd. in England – the start of

building plants outside the United States to be closer to customers.

for results.

## **CATERPILLAR®**





Caterpillar introduces SoLoNox Technology for gas turbines.

# WHAT WE'RE SOLVING. WHERE WE'RE **HEADED**.

\$7.40



# — AT-A-GLANCE — — **2020 SUSTAINABILITY GOALS**



Caterpillar has set aspirational, long-term goals for its operations and product stewardship. We believe these standards affirm our determination to lead our industry to a more sustainable future.



### WATER



Reduce water consumption intensity by 50 percent from 2006.

Reduce energy intensity by 50 percent from 2006.

Use alternative/renewable

our energy needs.

sources to meet 20 percent of



### SUSTAINABLE CONSTRUCTION

### **GHG EMISSIONS**



SAFETY

**ENERGY** 

**ENERGY** 

Reduce greenhouse gas emissions ntensity by 50 percent from 2006.

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# **2020 GOALS FOR PRODUCT STEWARDSHIP**

### SAFETY



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

## **BYPRODUCT MATERIALS**

### **PRODUCTS, SERVICES AND SOLUTIONS**



Leverage technology and innovation to improve sustainability of our products, services and solutions for our customers.

Design all new facility construction to meet Leadership in Energy and Environmental Design (LEED) or comparable green building criteria.

### SYSTEMS OPTIMIZATION



Increase managed fleet hours by 100 percent from 2013.

### **REMAN AND REBUILD**



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

# SUSTAINABILITY GOALS & PROGRESS

### **RECORDABLE INJURY FREQUENCY (RIF)**

Recordable injuries per 200,000 hours worked



### **ENERGY INTENSITY** Absolute gigajoules energy use/million dollars of revenue



GHG EMISSIONS INTENSITY Absolute metric tons of CO2e/million dollars of revenue



### BYPRODUCT MATERIALS INTENSITY Absolute metric tons of byproduct materials/million dollars of revenue



## LOST-TIME CASE FREQUENCY RATE (LTCFR)

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



### ALTERNATIVE/RENEWABLE ENERGY<sup>1</sup>

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





### WATER CONSUMPTION INTENSITY<sup>2,3</sup>

Absolute thousand gallons of water/million dollars of revenue



### REMAN END-OF-LIFE "TAKE-BACK" BY WEIGHT<sup>4</sup> Millions of pounds of end-of-life material received

 161
 171
 174
 166
 154

 2011
 2012
 2013
 2014
 2015

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 Data prior to 2015 has been restated due to data updates realized from improved accuracy.

3 Water consumption intensity does not include non-contact cooling water from foundry operations. 4 Data does not include Progress Rail, Electro-Motive or SolarTurbines.



We're investing in the future and, as we always have, facing challenges head on and delivering the products and services that will keep Caterpillar the industry leader tomorrow, as it is today.

# WHERE WE'RE HEADED

# — WHERE WE'RE HEADED —— **DATA AND INNOVATION**



For 90 years, Caterpillar has delivered breakthrough innovation inside our machines and engines. Today, that innovation is increasingly happening outside the machine. We're going "beyond the yellow iron," harnessing the power of big data to offer our customers insights that decrease operating costs, increase uptime and maximize profitability. In the process, we're shaping a new era for Caterpillar in which we not only manufacture machines and engines, but also deliver value-added solutions that take our customer relationships to an entirely new level.



Iron is the reason Fortescue Metals Group (Fortescue) is there. At full operation, the new Solomon mine is projected to deliver 70 million tonnes of ore annually. It's a big job - and one that demands safety and maximized productivity. That's where Caterpillar's deep understanding of the mining industry and our customers' needs put us in the ideal position to offer semi-autonomous and autonomous solutions such as Cat® Command for Hauling. The realization of a longtime dream of the mining industry, Cat Command has improved safety and productivity.

Trucks operating with Cat Command for Hauling use sophisticated onboard intelligence and advanced guidance technology, so a small number of people can run the whole project and centralize the control. For job sites such as underground mines, autonomous solutions are fast becoming a safety necessity.

Since its inception, Cat Command has gone through a progression of offerings. Semi-autonomous solutions such as Command for Dozing, for instance, allow one operator to oversee up to three semi-autonomous Cat® D11s - Caterpillar's largest dozers - by remote control. There's even an option where the operator has no line of sight to the dozers and uses cameras for feedback.

"Every mine takes a different journey to autonomy," explains Sean McGinnis, product development manager. "But that path always leads to a safer, more productive mine site. Cat Command reduces variations in the way the machine is operating, ensuring that it operates the same way, every time. It's like having the mine's best operator at the controls, but he or she is located safely away from any potential hazards. It's the best of both worlds: increased productivity combined with increased safety."

Today, the Cat Command concept continues to meet customer needs in ways that we couldn't anticipate five years ago. That's what makes innovation exciting and what energizes us to keep finding solutions that make a real difference.



### SIMULATION LEADS TO PRODUCT **DESIGN OPTIMIZATION AND EFFICIENCY**

The increased use of simulation in the development of everything from power systems to machine structures has truly allowed Caterpillar to improve overall product development efficiency, sharpening product quality and reducing time to market. Simulation reduces or eliminates the need for prototypes to be used in the design phase of development.

The large wheel loader team leverages the use of simulation in each new product development program. In fact, the first full phase of the Cat 994K product design, which is the largest wheel loader in Caterpillar history, was done virtually, and simulation touched every area of this new centerline machine at some point along the way.

# **CAT® COMMAND STEERS MINING IN A NEW DIRECTION**

A fleet of gigantic Cat® 793 haul trucks rumbles along the dusty, red-sand haul roads of the Solomon mine in a vast, arid region of Western Australia. Working continuously, 24/7, the trucks maneuver through mine site traffic, back up into loading points and navigate to dump sites - all with minimal human intervention.

New technologies transferred from R&D to the New Product Introduction development pipeline - WHERE WE'RE HEADED ------

# **CUSTOMER SUPPORT**



Our business strategy is a simple one: make our customers more successful. We work with our dealer network every day around the world to ensure that success – at construction sites and mining guarries and power plants. Our goal is to speed the delivery of customer support by being an agile organization positioned to respond efficiently and effectively to customer needs. Because when our customers win, we win.



## **POWER TO PRESERVE THE PAST**

The beautiful grounds and stunning architecture of Thomas Jefferson's historic residence, Monticello, function today as an important U.S. landmark, world-class museum and academic think tank, attracting more than 400,000 annual visitors.

Located outside of Charlottesville, Virginia, Monticello also houses one of the country's oldest and largest collections of historic documents. To help preserve and protect those irreplaceable collections for future generations, Caterpillar donated a 500kW Cat<sup>®</sup> C15 generator set, with local Cat dealer Carter Machinery providing the technical support, commissioning and testing. This followed a previous donation of a 350 kW Cat® C15 diesel generator set that provides standby power for Monticello's Robert H. Smith International Center for Jefferson Studies.

The donations were part of the estate's "Mountaintop Project," a multiyear effort to authentically restore the house and grounds to their appearance during Jefferson's retirement. We are proud to see these valuable assets entrusted to the quality and reliability of Cat<sup>®</sup> products.

# HOMESTEAD DAIRY TURNS **PROBLEM INTO PROFIT**

Based in Plymouth, Indiana, Homestead Dairy began as a modest family farm with only 110 cows. In 1979, brothers Floyd and Dan Houin purchased the farm from their dad and turned it into the massive dairy operation that it is today. The dairy now hosts 1,800 milking cows and 300 dry cows, while an additional 1,700 cows come in from three nearby facilities for milking. However, more cows means more manure, and the odor directly impacted nearby residents.

The Houins saw the possibility to turn a problem into a profit. They decided to build a biomass waste-to-energy facility that could convert the manure into electric power. Floyd knew that Homestead Dairy's equipment would need to run 24/7 with minimal downtime, so dependability was the deciding factor in choosing Caterpillar to supply the power. In researching the project, Floyd Houin toured a farm with a renewable energy facility that ran at peak efficiency, even with their older-model Cat® generator sets. That's when the Houins knew they'd trust their project to Caterpillar.

Homestead Dairy partnered with local Cat<sup>®</sup> dealer, Michigan Cat, to customize a power generation system for Homestead Green Energy, the energy-producing business within the dairy - two Cat<sup>®</sup> G3512A generator sets and ancillary equipment.

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Homestead Green Energy has been in constant operation since October 2013, and the Cat<sup>®</sup> generator sets are essential to the waste-to-energy process. The manure is collected in pools and piped 1,700 feet to a pair of mixing tanks that empty into two anaerobic digesters. Once inside the tanks, the waste is heated and treated with microbes that produce methane gas, which is used to fuel the gas generators. Generator exhaust heat and jacket water heat are used to warm up the digesters as part of the fermentation process.

### **CATERPILLAR®**



Beyond odor reduction and the financial return from producing electricity, Homestead Dairy uses the dewatered solids from the digesters as clean bedding for the cows. Additionally, the liquid nutrient byproduct is held in lagoons and used to fertilize the farm fields.

"By turning this abundant substance into an income stream, we've made the dairy more profitable," said Ryan Rogers, plant operator for Homestead Green Energy. "It also helps increase nutrient value, which is great for the environment. The crops absorb the manure better, and odor reduction for the community is a huge benefit."

The Homestead Green Energy installation demonstrates the economic viability of smaller-scale, waste-to-energy operations to create wins for business, the community and the environment.



-WHERE WE'RE HEADED-----

# **EFFICIENCY**



In an insistent and urgent world, winning organizations make the most of every minute, resource and opportunity. Caterpillar is going after that win by leveraging Lean, Engineered Value Chains and building strong Foundational Capabilities throughout our value chain to fulfill our Customer Service Promise, maximize Operating Profit After Capital Charge (OPACC) and create a competitive advantage. We're becoming a more disciplined, less complex organization that is committed to finding smarter and faster ways to work across the enterprise. This translates into a powerful competitive advantage that helps Caterpillar improve market position and sustain long-term success.



# A GLOBAL SUPPLY NETWORK THAT **DELIVERS UNDER PRESSURE**

Nearly 40 percent of U.S. trade to and from Asia passes through West Coast ports in California. Keeping the flow of goods through these ports moving swiftly and efficiently is a priority for logistics and procurement networks across countless companies, including Caterpillar.

When a three-month labor dispute at one of these ports resulted in significant terminal congestion, the expertise of Caterpillar's logistics team translated into millions of dollars in savings, as well as ensuring that our supply flow remained resilient.

When business operations eventually returned to normal, many companies were left dealing with severe financial impact. While Caterpillar experienced added costs and some slowing in our materials flow, these were a fraction of the impact on other companies. That's how we know our Global Supply Network can deliver under pressure – not merely reacting to fluctuations in logistics, but truly taking charge of and managing our supply network.

Our staying power throughout the slowdown was due, in very large part, to the collaboration and flexibility of our Global Supply Network. Using a winning combination of procurement and logistics data and innovative thinking, a clearer inventory picture emerged to help streamline and divert shipments.



Since 2013, we have been committed to Lean to drive process and quality improvements at Caterpillar. Lean challenges all employees to get closer to the customer so they can deliver products and services based on the customers' true expectations. Our Lean journey goes beyond manufacturing to include all functional areas that execute business processes on a daily basis, including engineering, marketing, purchasing, accounting and human resources.

## **CATERPILLAR®**



"We were able to see not only the best ports, but also the best terminals in those ports," explained Global Supply Network Director of Logistics Scott Shepherd, "so we could react faster and accurately reroute shipments. This allowed us to move material more quickly, while limiting added costs and overall supply disruption."

## **AN INDUSTRY LEADER WITH WORLD CLASS RESULTS**

Caterpillar continues to improve upon historical best safety performance, and we are an industry leader with worldclass results. Beginning in 2003, we implemented an enterprise-wide initiative to focus on safety called Vision Zero. Today, we're proud that our Recordable Injury Frequency has improved 91%, but there is more work to do. Breakthrough safety performance is continuing with our Lean Transformation by focusing on standard work, which means more folks are going safely home, every day.

- WHERE WE'RE HEADED —

**PEOPLE** 



Best quality. Best reliability. Best endurance. The same attributes that define our products define our people - more than 105,000 of them around the world. For 90 years, Caterpillar people have been building the machines that have built our world. We're confident that Caterpillar's long-term future is secure thanks to our global team's drive to perform at a superior level. It's a commitment that extends beyond the workplace where Caterpillar employees contribute their time and talents to making the world around us a better one.

# **REAL CAT FOLKS**

To showcase the rich diversity, passion for life and strong work ethic present in our Caterpillar family, we began the Real Cat Folks project. Inspired by Humans of New York, the project highlights that Caterpillar employees are real people – with real families, real pasts, real dreams and real stories. Visit caterpillar.com/RealCatFolks to see dozens of published profiles, and check back weekly for updates.

"I grew up on a cotton field on the coast and came to Suzhou for school. Suzhou is a beautiful city with the combination of modern industry and ancient history. I like to spend my spare time playing soccer and climbing mountains in the neighborhood. I've always wanted to learn to play guitar and want to play for my son in the future. He's 14 months old, and my biggest wish is to watch him grow up happily."



-YOUXIANG ZHANG, CHINA



"Caterpillar gave me a chance after being unemployed for five years. I never thought they'd hire me because of my age. When my youngest was having a rough time, I told her to fill out an application. The next thing I knew, she was hired on full time after three months of being an agency worker. Today she's a team lead, going strong and learning as much as she can. I'm very proud of her."

— HARRY, UNITED STATES

# **MARKING MILESTONES AT BOTH ENDS OF A CATERPILLAR CAREER**

In 2015, two Caterpillar employees marked career milestones in two very different journeys. Their stories illustrate the satisfaction that comes at the end of a long career and the exhilaration that comes from being given the first chance to give your all.

In early 2015, Ed Flesburg retired after 60 satisfying years of service with Caterpillar. As a 6 Sigma Black Belt within the Global Supply Network Division (GSND), and over the course of his notable career, Ed achieved much success and delivered many outstanding results for the company.

Ed began his career in 1955, as a chip wheeler in East Peoria, Illinois. After returning from deployment to Korea, he spent the next 51 years in many different roles with the company, from janitor to drafting, designing and engineering.

Throughout his tenure, Ed achieved four company patents to his name, developed 14 major design changes, resolved 11 major design problems and generated more than \$55 million in cost reductions. In addition, he pioneered the development of the heat transfer coolant category, where his experience and expertise was priceless.

Ed's manager, James Dryden, sums up Ed's outstanding tenure: "Famous basketball coach John Wooden once said 'Who can ask more of a man than giving all within his span? Giving all, it seems to me, is not so far from victory.' I cannot think of a better quote to describe Ed's work ethic and outstanding accomplishments to make Caterpillar the successful company it is today."

As Ed was accepting well wishes for the future from his grateful team, thousands of miles away 19-year-old Farooq Kahn was looking "We strongly believe it to be part of our social responsibility to give forward to the future for the first time in a long time. Farooq is training young people like Farooq the possibility to enjoy a good education." as an industrial mechanic at Caterpillar Mining in Lünen, Germany. His arrival at Caterpillar marks a milestone in a remarkable journey. Faroog's aim is to successfully complete his industrial mechanic

Faroog escaped from his home country of Afghanistan when he was only 15 years old, leaving his parents and siblings and all he knew behind him. It took him five months to arrive in Germany. He spoke not one word of German, had a very dangerous escape behind him and was completely on his own.

After his graduation from German elementary school, Faroog sent over 70 applications to companies, but only Caterpillar in Lünen was willing to give him a chance. At the time his German language skills were limited, and, as a refugee, he only had a temporary residence permit.

## **CATERPILLAR®**



According to a study conducted in Germany, only 15 percent of companies are ready to hire young people with foreign roots. Caterpillar in Lünen has been a part of this small group of companies for years, but Faroog, now successfully integrated into the company, was the first refugee hired.

Caterpillar employees come to us in many different ways, with many different stories. But we are humbled by what they have in common: the loyalty and dedication to put their talents and enthusiasm to work to help us build the world.

training and then possibly continue his studies. His instructor is very enthusiastic about his curiosity, ambition and commitment. "All I want is to build a new life for me here," said Faroog.

Caterpillar employees come to us in many different ways, with many different stories. But we are humbled by what they have in common: the loyalty and dedication to put their talents and enthusiasm to work to help us build the world.

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Caterpillar continues to help make sustainable progress possible by offering solutions to ongoing challenges in our world today.



# — WHAT WE'RE SOLVING — **SAFE WORKPLACE SOLUTION**

# **REVITALIZING A CULTURE OF SAFETY**

As we work to reduce our enterprise Recordable Injury Frequency (RIF), there are countless large and small steps we have taken, as demonstrated by our progress to date. But even the most dedicated facilities sometimes reach a "safety plateau," where further improvements become more difficult to achieve. When our Mapleton, Illinois, Cast Metals Organization facility found their safety numbers plateauing at the end of 2012, they deployed facilitywide initiatives to break through to the next level of safety excellence.

The safety team, aided by the commitment of each of the nearly 600 employees on site and the Caterpillar Safety Services Zero Incident Performance (ZIP™) Process, undertook a cultural shift in how they address safety, thinking of the program as 'creating the presence of safety' rather than 'the absence of injuries.' Part of this shift involved making the concept of safety personal. An acronym like RIF is not easy to relate to daily work, but seeing and discussing how each injury affects real people in their work and personal life truly drives home the importance of safety. The safety team encouraged this viewpoint by dedicating all-employee meetings to recent on-site injuries and dialogues about how to make safety proactive instead of reactive. In 2015, Mapleton reduced its injury rate by 18.3 percent over the previous year, and injury rates have fallen by 66.3 percent since 2010.

> Many of the safety improvements that Mapleton has implemented to break through its safety plateau have been generated by the employees themselves using a "Green Card" program to document and communicate when employees identify, and proactively fix, a safety risk. In 2015, Mapleton employees submitted nearly 5,000 Green Cards representing potential hazards or conditions that they worked on independently or with management to address, and believed could be improved. The facility also uses a "Star Green Card" system to allow department heads to fur-

In 2015, Mapleton reduced its injury rate rates have fallen by 66.3 percent since 2010.

by 18.3 percent over the previous year, and injury ther recognize employees who have gone above and beyond to fix a potential safety risk. The facility has implemented a full-time Safety Champion position for each department, empowering employees to apply their specific knowledge of shop floor and safety practices to work with department heads to enact health and safety initiatives.

Because safety communication has been fundamental to the success of Mapleton's efforts, the safety team created a safety improvement video, which is screened throughout the facility and updated each month to reflect the process and facility safety improvements that have been implemented. Often these videos highlight innovative solutions developed and implemented by the employees. Facility Manager Gary Bevilacqua attributes the success of the videos to the fact that it is a communication method that allows a different type of dialogue. "People are starting to talk about safety more openly and listening to the messages on the videos," he said. "It's generating awareness and more individuals are coming forward with new ideas and aren't afraid to discuss them with their teams."







## **BRINGING RENEWABLE ENERGY TO ANYWHERE IN THE WORLD**

Renewable energy technologies are showing great promise to change how energy is produced around the globe, while addressing basic human needs. In 2015, Caterpillar launched a number of initiatives that will provide reliable, cost-effective and sustainable energy wherever it is needed.

For example, microgrid technologies that couple renewable energy generation with traditional generators and energy storage systems can be deployed to places where the grid is weak, or does not reach. In 2015, Caterpillar entered a strategic alliance with solar industry leader First Solar to develop and distribute Cat branded photovoltaic modules for incorporation into microgrid systems that can be utilized anywhere from remote villages to mining operations. Caterpillar will distribute this innovative technology through our global network of dealers, providing value to our customers by integrating solar energy systems with Caterpillar's trusted expertise in distributed power generation technologies.

Caterpillar is also leveraging the advanced thin film solar panel technology for our traditional commercial and industrial customers' energy needs in more developed markets such as the United States and China. The thin film solar panel technology has higher energy capture characteristics than traditional solar panels, yielding increased annual energy production for our customers. Integration of these products with traditional standby generator sets allows customers to leverage the benefits of renewable energy even if the grid goes down, providing an even higher level of energy independence.

Another important technology that is rapidly progressing is energy storage systems, which allow customers to capture surplus renewable energy and store it for later use. Caterpillar, leveraging our bi-directional inverter technology developed for mining trucks and hybrid tractors, offers a full range of energy storage technologies, ranging from ultracapacitors for short duration storage to long duration metal- air energy storage products. Recognizing the benefit that energy storage technology can offer our customers, in 2015 Caterpillar invested in Fluidic Energy, the makers of metal-air energy storage technologies. We chose Fluidic Energy for this endeavor because the company's technology offers potentially significant advantages in terms of energy storage cost, depth of discharge, cycle life and safety over some traditional energy storage products.

Leading by example, Caterpillar is first deploying world-class microgrid technologies at some of its own facilities. Many Caterpillar operations resemble the commercial/industrial operations of our customers, so microgrid installations at Caterpillar facilities provide a hands-on educational and training experience for customers and dealers while simultaneously providing cost and emission reductions for the company. A prime example is the Caterpillar Tucson Proving Ground facility located in Arizona. Caterpillar performs validation testing of its mining equipment at this site, which comprises an office building, shop areas and large open-air test areas. Existing Cat<sup>®</sup> C15 diesel generator sets operate continuously to provide approximately 400kW of electricity to the site, consuming approximately 250,000 gallons of diesel fuel per year. Extending the local utility grid to this remote location is cost-prohibitive, but microgrid technology is now a cost-effective complement to diesel generators alone. We are installing 500kW of Moving forward, we intend to deploy similar microgrid systems. solar panels, 500kW of energy storage and a microgrid controller to solar panels and energy storage systems to customers throughout seamlessly integrate these sources with the existing diesel generathe world - whether in remote villages, mining sites, islands, military tors. The system will carry the site load during daylight hours, installations, telecommunications facilities, or commercial/indusenabling the diesel generators to reduce power output and shut trial facilities. By expanding Caterpillar's broad power generation down. Fuel consumption and exhaust emissions are expected to be portfolio and solutions, we are reducing customer costs and site reduced by 33 percent, and generator maintenance is expected to emissions, while expanding access to electricity to those in the be reduced by 25 percent, with the resulting cost reductions providgreatest need. Our goal is simple - to provide our customers and ing an attractive return on the investment in the microgrid. Real-time the communities where they work and live a brighter future performance of the system will be monitored remotely and will be no matter where they are in the world. available for viewing online by select Cat® dealers.



# MATERIAL RECOVERY SOLUTION

# **MATERIAL RECOVERY**

Caterpillar encourages circular economy principles through our remanufacturing and rebuild businesses. This starts with durable products, many designed to be rebuilt multiple times. Through our remanufacturing and rebuild programs, components and machines are overhauled, rather than simply repaired or replaced. Reuse of parts, still within factory specifications, reduces waste and minimizes the need for additional raw materials necessary to produce new parts. This system is where Caterpillar is making some of its greatest contributions to sustainable development – keeping nonrenewable resources in circulation for multiple life cycles.

For more than 40 years, Caterpillar's remanufactured products have provided same-as-when-new performance, reliability and warranty at fraction-of-new costs, as well as availability that gives customers more options at repair and overhaul time.

In addition to giving our customers lower operations and maintenance costs, using remanufactured equipment gives Cat<sup>®</sup> dealers a competitive advantage.

An excellent example of how our reman programs deliver value to customers can be found in the island nation of Dominica. There, almost all energy is produced using a combination of gas, diesel and fuel-oil generators. Rimco, the Cat® dealer in the Eastern Caribbean, has put a priority on offering remanufactured parts and components to the local electricity companies and customers. Remanufactured parts are more affordable, helping to manage operating costs, and are more readily available on the market, allowing faster turnaround time in the event of emergency repairs.



For instance, a local energy company uses 11 Cat<sup>®</sup> generators – primarily Cat<sup>®</sup> 3516, Cat<sup>®</sup> 3608 and Cat<sup>®</sup> 3612 engines – to supply the majority of the island's electricity. During 2015, two of the main generators needed emergency replacement parts, reducing the backup power available and increasing the risk to a disruption in energy supply to the island. Rimco provided remanufactured parts to the energy company, ensuring they could keep the power flowing without interruption.

In addition to giving our customers lower operations and maintenance costs, using remanufactured equipment gives Cat<sup>®</sup> dealers like Rimco a competitive advantage and has helped the 35-year-old company meet the needs of its customers across the Eastern Caribbean efficiently and affordably.



# SANITATION IMPROVEMENT SOLUTION



# SUPPORTING GLOBAL SANITATION IMPROVEMENTS

When we seek to meet basic human needs around the world, In 2015, the United Nations adopted the Sustainable Development particularly those of women and girls, sanitation is a high-impact Goals (The Global Goals), a series of 17 goals with 169 targets to be achieved by 2030. Included in these goals were two key area where we can focus our efforts. In 2015, the Caterpillar Foundation continued our support of The Global Poverty Project aspects of our policy partnership with GPP: the recognition of the (GPP) with an investment to support universal access to sanitaneed to ensure access to adequate sanitation and hygiene for all, tion. The grant will help GPP advocate for policies around the and a commitment to end open defecation, especially for women, world that enable entrepreneurship, especially for women, by girls and those in vulnerable situations. GPP will continue to work removing barriers caused by poor and inequitable access to sanion other aspects of our sanitation-policy partnership, including tation – such as places to hand wash or use the toilet – and lack securing a \$10 million-per-year increase in Water, Sanitation and of access to basic education. GPP estimates universal sanitation Hygiene (WASH) aid from the United States government, and urgwould improve the entrepreneurial potential of women by freeing ing four new governments or companies to allocate new, additional up more than 200 million hours for women and girls each day, financial resources to sanitation efforts. enabling them to achieve an education, have time for paid employment or to run their own small enterprises. Combined, these measures would return an estimated \$220 billion to the global economy annually.

GPP estimates universal sanitation would improve the entrepreneurial potential of women by freeing up more than 200 million hours for women and girls each day, enabling them to achieve an education, have time for paid employment or to run their own small enterprises.



# — WHAT WE'RE SOLVING —— NATURAL INFRASTRUCTURE SOLUTION

# **SHINING A LIGHT ON THE CLIMATE BENEFITS OF NATURAL INFRASTRUCTURE**

Cat<sup>®</sup> products are used to support infrastructure projects around the world, including natural infrastructure projects such as the restoration of forests, wetlands and other landscapes. We believe that Caterpillar's expertise across industries puts us in a prime position to drive the global discussion on the importance of natural infrastructure and its restoration. Not only is sustainability one of our Core Values, but over our 90-year history we have also built relationships across a wide range of infrastructure businesses that will be critical to restoring the world's natural landscapes. Already, Caterpillar has supported a number of major natural infrastructure restoration projects, including Everglades restoration projects in Florida, cleanup work in the wake of Hurricanes Sandy and Katrina and remediating Superfund sites across the United States.

Around the world, governments, industries and individuals are talking about climate change, the threats it poses to our livelihoods and the best ways to address it. The majority of the conversation has focused on the role energy plays in our global carbon footprint. Natural infrastructure – forests, prairies, agricultural lands, coastal landscapes, wetlands and other landscapes – also plays a vital role in managing carbon and supporting global sustainability. In 2015, to complement our existing initiatives focused on reduction of greenhouse gases, Caterpillar spearheaded an effort to raise awareness of the benefits of natural infrastructure.

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Natural infrastructure sequesters billions of tons of carbon for productive use in plants and soils. Scientists say that more carbon resides in soil than in the atmosphere and all plant life combined; there are 2,500 billion tons of carbon in soil, compared with 800 billion tons in the atmosphere and 560 billion tons in plant and animal life. The food, fiber and lumber produced from natural infrastructure provide our nourishment and much of the raw materials for clothing and housing. With the earth's population expected to grow from 7 billion to more than 9 billion in the next few decades, ensuring the health and productivity of our natural infrastructure will be integral to meet the growing need for food and other basic human needs.



Land and Water Resources for Food and Agriculture (SOLAW), found 25 percent of the world's lands are now considered "highly degraded" as a result of poor management practices. This means that an area roughly the size of North America may suffer from deforestation, desertification, severe erosion and wetland contamination. As a result, communities that depend on these lands may experience less productive farmland, poorer water quality and lower storm resilience. According to Ohio State University's Carbon Management and Sequestration Center, restoring soils of degraded and desertified ecosystems has the potential to provide an additional 1 billion to 3 billion tons of in-soil carbon storage capacity annually, equivalent to approximately 3.5 billion to 11 billion tons of CO2 emissions.

In November 2015, Caterpillar hosted the first major national summit in the United States of diverse stakeholders who have a part to play in natural infrastructure restoration. The summit brought together leaders from engineering, construction, finance, governments, academia and nongovernmental organizations to establish a coordinated effort across these industries to develop and deploy sustainable development solutions. Participants delved into the scientific and business cases for natural infrastructure restoration and brainstormed policies, business models and financing solutions needed to expand the world's natural infrastructure restoration efforts.

Following the summit, Caterpillar has published a comprehensive white paper detailing the summit discussions. The paper highlights the recommendations that businesses and governments may consider to increase the effectiveness of efforts to restore natural infrastructure and keep pace with our need for the critical services, including carbon sequestration and resources, that natural ecosystems provide. Through the use of our products for natural infrastructure restoration projects and continuing to increase awareness, this is another way that Caterpillar can continue to build a more sustainable world.



# VISION

Our vision is a world in which all people's basic needs - such as shelter, clean water, sanitation, food and reliable power - are fulfilled in a sustainable way and to be a company that improves the quality of the environment and the communities where we live and work.

## MISSION

Our mission is to enable economic growth through infrastructure and energy development, and to provide solutions that support communities and protect the planet.

## **STRATEGY**

Our strategy is to provide work environments, products, services and solutions that make safe, productive and efficient use of resources as we strive to achieve our vision. We apply innovation and technology to improve the sustainability performance of Caterpillar's products, services, solutions and operations. We believe sustainable progress is made possible by developing better systems that maximize life cycle benefits, while also minimizing the economic, social and environmental costs of ownership, as reflected in our sustainability principles. We will execute our strategy by working to meet our aspirational sustainability goals.

# SUSTAINABILITY PRINCIPLES

Sustainability is part of who we are and what we do every single day. We recognize that progress involves a balance of environmental stewardship, social responsibility and economic growth.

Caterpillar Sustainability Principles drive our commitment to make sustainable progress possible.

Prevent Waste (Improve Safety, Efficiency and Productivity):

By increasing the safety, efficiency and productivity of processes and products, we reduce cost and minimize the use of materials, energy, water and land. We provide a safe work environment and the tools and training employees need to work safely. We provide customers with products, services and solutions that improve the sustainability of their operations.

Improve Quality (Team, Community, Environment and Operations):

We focus on improving quality for our company, customers, communities, environment and the quality of life for our employees. We use Lean and 6 Sigma to improve our operations and products. Our employees and their families experience a better quality of life when the quality of our company, communities and the environment is maintained. We attract and develop the best teams.

### **Develop Better Systems (Innovate):**

We leverage innovation and technology to maximize efficiency and productivity. We remanufacture, rebuild and recycle to conserve resources for multiple life cycles. We develop products that contribute to communities through infrastructure development and energy access. We develop better systems throughout the value chain, "engineering the whole chain, not just the links," in order to maximize life cycle benefits.

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# SUSTAINABILITY VISION, MISSION, **STRATEGY & PRINCIPLES**



# LEGAL STATEMENTS



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Denise Johnson –

effective 2016

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**Assistant Secretary** 

Joni J. Funk

Reports at http://reports.caterpillar.com/

2016, for the year ended December 31, 2015.

we do not undertake to update our forward-looking statements.



# **BOARD OF DIRECTORS**

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Forward-Looking Statements Certain statements in this 2015 Sustainability Report relate to future events and expectations and are forwardlooking 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

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) government monetary or fiscal policies and infrastructure spending; (iii) commodity price changes, component price increases, fluctuations in demand for our products or significant shortages of component products; (iv) disruptions or volatility in global financial markets, limiting our sources of liquidity or the liquidity of our customers, dealers and suppliers; (v) political and economic risks, commercial instability and events beyond our control in the countries in which we operate; (vi) failure to maintain our credit ratings and potential, resulting in increases to our cost of borrowing and adverse effects on our cost of funds, liquidity, competitive position and access to capital markets; (vii) our Financial Products segment's risks associated with the financial services industry; (viii) changes in interest rates or market liquidity conditions; (ix) an increase in delinquencies, repossessions or net losses of Cat Financial's customers; (x) new regulations or changes in financial services regulations; (xi) a failure to realize, or a delay in realizing, all of the anticipated benefits of our acquisitions, joint ventures or divestitures; (xii) international trade policies and their impact on demand for our products and our competitive position; (xiii) our ability to develop, produce and market quality products that meet our customers' needs; (xiv) the impact of the highly competitive environment in which we operate on our sales and pricing; (xv) failure to realize all of the anticipated benefits from initiatives to increase our productivity, efficiency and cash flow and to reduce costs; (xvi) additional restructuring costs or a failure to realize anticipated savings or benefits from past or future cost reduction actions; (xvii) inventory management decisions and sourcing practices of our dealers and our OEM customers; (xviii) compliance with environmental laws and regulations; (xix) alleged or actual violations of trade or anti-corruption laws and regulations; (xx) additional tax expense or exposure; (xxi) currency fluctuations; (xxii) our or Cat Financial's compliance with financial covenants; (xxiii) increased pension plan funding obligations; (xxiv) union disputes or other employee relations issues; (xxv) significant legal proceedings, claims, lawsuits or government investigations; (xxvi) changes in accounting standards; (xxvii) failure or breach of IT security; (xxviii) adverse effects of unexpected events, including natural disasters; and (xxix) other factors described in more detail under "Item 1A. Risk Factors" in our Form 10-K filed with the SEC on February 16,

To learn more about Caterpillar in 2015 and our sustainability journey, please visit the full 2015 Year in Review and Sustainability

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