



CATERPILLAR SUSTAINABILITY IN CHINA

Partnering with Stakeholders in China to Make
Sustainable Progress Possible

2013 Report

CATERPILLAR®

ABOUT THIS REPORT

At Caterpillar, our sustainability practices are designed to maximize the life cycle benefits of our products while minimizing the economic, social and environmental costs of ownership. This report sets forth concrete examples on the themes and developments laid out in our corporate sustainability report and we plan to issue it on an annual basis.

The sustainability highlights selected for this report introduce a series of categorized cases that demonstrate how our business objectives align with our strong commitment to the environment throughout our operations and how this affects our decision-making process.

The Caterpillar brands are listed here: <http://www.caterpillar.com/brands>
Learn more about Caterpillar and sustainable development at: <http://www.caterpillar.com/Sustainability>

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VISION AND MISSION

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 an environmentally sustainable way and a company that improves the quality of the environment and the communities where we live and work.

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

Our strategy is to provide work environments, products, services and solutions that make 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.

CRITICAL SUCCESS FACTORS

Culture. Create a culture of sustainability in all our business units and in all our daily work.

Progress: We promote our employees’ awareness and understanding of sustainability. We continue to foster a corporate culture of transparency, disclosure and engagement.

Operations. Champion our sustainability principles and contribute to 2020 aspirational sustainable development goals.

Progress: The Caterpillar Production System provides the recipe for efficiency and excellence in our facilities. We actively encourage employees to conserve resources and be more efficient. Operating in a more efficient and sustainable manner will reduce impacts on people and the environment, and help us and our customers save money.

Business Opportunities. Identify and pursue business growth opportunities created by sustainable development.

Progress: We are actively embedding sustainability throughout our Caterpillar brand portfolio, our new product development process and our technologies. Our business leaders continue to drive growth in sales of products, services and solutions that help customers meet their sustainability challenges. We utilize 6 Sigma methodologies to focus our work and drive measurable benefits.

We will execute our strategy by working to meet our aspirational sustainable development goals.

CHAIRMAN’S MESSAGE



Doug Oberhelman

Chairman and Chief Executive Officer
Caterpillar Inc.

The world’s resources support seven billion people today, and will need to support nine billion by 2050. As the world’s population increases, demand for resources and infrastructure will increase, too. Sustainable progress to meet these needs and support economic growth will remain absolutely necessary.

Caterpillar is uniquely positioned to be a leader in making this sustainable progress possible. Our commitment is longstanding because we know we can be profitable while also best serving our planet and its people by promoting the common good.

This is not something we discovered recently; it can be traced back to the Caterpillar Worldwide Code of Conduct first published in 1974. For 40 years, our Code has provided a common ground for our business life values. Since 2005, these have been Our Values in Action:

- Integrity:** The Power of Honesty
- Excellence:** The Power of Quality
- Teamwork:** The Power of Working Together
- Commitment:** The Power of Responsibility

I’m proud that in early 2014 we honored our longstanding commitment and recognized sustainability as another value:

Sustainability: The Power of Endurance.

Sustainability has been included for years as a part of our value of Commitment, clearly stating our responsibility to produce sustainable solutions. Raising sustainability to a stand-alone value acknowledges both what we have done in the past and will do in the future.

For Caterpillar, sustainability is an enterprise-wide approach we apply to our own operations, as well as a guide for our suppliers, dealers and customers.

We make sustainable progress possible by:

- Leveraging innovation and technology,
- Increasing productivity,
- Using resources more efficiently,
- Reducing environmental impacts and
- Contributing to the communities where we live and work.

We know that to endure, our company and operations must operate in a sustainable manner. What does this mean to our stakeholders?

To our customers, it means enduring products, services and solutions. Our brands represent long-lasting quality, and our products and solutions help our customers operate more efficiently. Through innovation, we focus on providing products that are more fuel-efficient and require less oil and fluids to operate. Our customers build the infrastructure, supply the power and transport the goods that support economic growth in developing and developed nations alike, and support Caterpillar’s efforts to help make that growth sustainable.

To our stockholders, it means sustainable development strategies and leading-edge products that promote customer loyalty and ensure Caterpillar prospers for another 90 years, and longer.

To our people, it means working for a company they can be proud of, for many reasons. We have a robust risk management process that includes anti-bribery, anti-corruption and other programs and training designed to support Our Values in Action. We’ve reduced our Recordable Injury Frequency to a world class 0.78 level in 2013. We have strong employee training and development programs, intentional efforts to find and retain the most qualified and diverse employees, and are dedicated to diversity and inclusion.

We also invest in and support the communities where we live and work through generous nonprofit gift matching and volunteer programs at our facilities worldwide. We support the Caterpillar Foundation, which has invested more than \$550 million since 1952 to boost economic growth and quality of life around the world.

I encourage you to take the time to read the details presented in this report. I believe Caterpillar is second to none in our commitment to sustainable progress.



CATERPILLAR IN CHINA

Caterpillar is the world's largest manufacturer of earthmoving, construction and mining equipment, a major global producer of diesel and natural gas engines, turbines and diesel-electric locomotives, and a leading services provider through Caterpillar Financial Services, Caterpillar Remanufacturing Services and Progress Rail Services. In China, Caterpillar products and services have been associated with the country's growth and development for many decades.

In 1996, Caterpillar (China) Investment Co., Ltd. was established in Beijing to support increased investment and business development activities

in China. To date, Caterpillar has invested in 27 manufacturing facilities in China. They produce hydraulic excavators, compactors, diesel engines, undercarriages, iron castings, motor graders, track-type tractors, wheel loaders, remanufactured products, machinery components and electric power generator sets.

To support a growing Cat® equipment population in the country, Caterpillar has established satellite offices, Research & Development centers, training centers and service and product support facilities throughout China. A complete service network comprised of authorized, independent Cat® dealers

helps customers in the selection and proper application of Cat equipment for different industries. Dealers also provide customers with comprehensive product support services that add value to owning and operating Cat equipment.

Together with our partners, we are committed to be the leader in providing the best value in machines, power systems and support services for customers—all in support of sustainable progress in China.

CHINA CHAIRMAN'S MESSAGE

Caterpillar is the world's largest manufacturer of earthmoving, construction and mining equipment, a major global producer of diesel and natural gas engines, turbines and diesel-electric locomotives, and a leading services provider through Caterpillar Financial Services, Caterpillar Remanufacturing Services and Progress Rail Services. Since selling our first product to China in the 1970s, Caterpillar has undergone several stages of development in the country. In the 1980s, Caterpillar launched technology transfer agreements with Chinese manufacturers who began building Caterpillar licensed products. Then, in the 1990s, Caterpillar established domestic companies to ship locally manufactured products outside of China. Since that time, Caterpillar has been systematically developing a complete business model throughout China, and today we have a cross-country footprint, including 27 existing manufacturing facilities, two new manufacturing facilities under construction, four research and development centers and three logistics and parts distribution centers. The Caterpillar China team has also grown to include more than 15,000 staff members.

China is an important emerging market for Caterpillar and one of the keys to our future success. We already have an extensive history of commitment and service in China, and we are devoted to long-term investment and growth long into the future. Over the past 35 years, as China has experienced rapid economic growth, Cat® machines have made significant contributions to the development and construction of infrastructure throughout the country.

Along with the rapid development of the Chinese economy, the consumption of resources and energy has also risen, making environmental issues increasingly prominent. In addressing these challenges, Caterpillar has remained committed to sustainable progress. We have actively engaged our stakeholders to jointly support the sustainable development of both industry and the economy. In the energy and power systems industries in China, Caterpillar has participated in many energy utilization projects by offering advanced solutions and playing a positive

role in reducing energy consumption and emissions. In the resource industry, Caterpillar, as the world's largest mining equipment manufacturer, has supported China's efforts to use resources more efficiently and safely. Caterpillar not only produces machines in China, it also manufactures key components and parts, and has introduced China to products incorporating world-leading technologies such as large engines, transmissions and hydraulic systems. Each of these efforts has contributed to the progress of China's manufacturing industry to enable sustainable growth. Moreover, Caterpillar provides remanufacturing solutions to extend the life of existing equipment, while providing lower-cost products and keeping nonrenewable resources in circulation for multiple life cycles.

The Chinese Communist Party's 18th Congress Third Plenary Session in November promoted the development of an ecological civilization that could establish effective measures to protect the country's environment. Based on the clear concept of the "ecological red line" defined at the Plenary Session, a comprehensive approach to sustainability has been emphasized in national plans and processes for the economy, politics and society. This forward-looking concept is consistent with Caterpillar's sustainable growth strategy in China and around the world. Further to our global aspirational 2020 sustainable development goals and ongoing focus on innovation, Caterpillar will continue to promote sustainable growth, supporting the long-lasting success of the company worldwide, and contributing to a promising future for China.



陈其华
Qihua Chen
Vice President of Caterpillar Inc.
Chairman of Caterpillar (China)
Investment Co., Ltd.



OUR SUSTAINABILITY PRINCIPLES & “HOW-TO” STRATEGIES

In 2012, Caterpillar launched three sustainability principles and the “how-to” strategy. The three core sustainability principles will be used to drive our commitment to make sustainable progress possible. As shown in the graphic below, these principles focus on preventing waste, improving quality and developing better systems; and they are relevant to everyone in the enterprise regardless of their role, status or geographic location.

Most individuals and organizations consider **preventing waste** to be an important strategy for competing in today’s markets. Improving the efficiency of products, processes, services and solutions not only reduces cost, but also leads to environmental benefits associated with reduced materials, energy, water and land utilization. Caterpillar recognizes that unnecessary impacts to people, communities and the environment are also a form of waste. Consequently, preventing waste is of paramount importance to improving sustainability.

Improving quality by proactively implementing measures that prevent waste is another key sustainability principle at Caterpillar. Traditionally, this principle applies to the quality of the processes, products, services, solutions and safety practices utilized throughout the Caterpillar enterprise. However, it also applies to the quality of life for our employees, as well as the quality of the communities and the environment in which Caterpillar operates. Healthy people, communities and environmental resources are all valuable components for a thriving Caterpillar enterprise.

Preventing waste and improving quality measures provide the key drivers for **developing better systems** that are inherently more sustainable. When Caterpillar brings people, materials, energy, water and land into the various systems found throughout the enterprise, care must be taken to ensure that these resources are not harmed or wasted. Keeping resources in the value chain through a circular flow of materials, energy and water is critical to maximizing total life cycle benefits while minimizing the cost of ownership. This leads to sustainable progress for communities, the environment and the economy.



The sustainability principles described complement the five key strategies described in the above graphic. It is noteworthy that the strategies described toward the top of this ranking tend to offer more sustainability benefits than those described at the bottom of the ranking. Strategies associated with **preventing waste and emissions** through improved efficiency and quality measures are preferred because they offer the most opportunities to enhance cost competitiveness and reduce the potential for unnecessary impacts to communities and the environment in both the short and long term.

Remanufacture/rebuild options can preserve most of the embedded energy and materials invested in the original production of equipment and components. **Reuse/recycle** strategies also can be effective measures for keeping valuable materials, energy and/or water byproducts in the Caterpillar value chain and out of costly waste streams.

Treatment/control options for waste and emissions can reduce associated environmental impacts and may be necessary when more efficient measures are not feasible. These options tend to be less desirable than waste avoidance or


reuse/recycling options, because most treatments and controls add significant costs and complexity to the production and/or operation of products, services and solutions. As a last resort, **disposal/discharge** of waste and/or emissions in an appropriate and lawful manner may be considered acceptable.



GOALS & PROGRESS

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.

2020 Goals for Operations¹



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

↓50%

Reduce enery intensity by 50 percent.
(Baseline: 2006)

20%

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

↓50%

Reduce greenhouse gas emissions intensity by 50 percent.
(Baseline: 2006)

↓50%

Reduce water consumption intensity by 50 percent.
(Baseline: 2006)


↓50%

Reduce by-product materials intensity by 50 percent.
(Baseline: 2006)


LEED

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

2020 Goals for Product Stewardship¹



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



Products, Services and Solutions
Goal: Leverage technology and innovation to improve sustainability of our products, services and solutions for our customers.

↑100%

Systems Optimization
Goal: Increase managed fleet hours by 100 percent.
(Baseline: 2013)

↑20%

Reman and Rebuild
Goal: Increase remanufactured and rebuild business revenues by 20 percent.
(Baseline: 2013)

¹ Caterpillar does not set country specific sustainability goals.

OUR REMANUFACTURING BUSINESS MODEL FOCUSES ON SUSTAINABILITY

Caterpillar's Remanufacturing



As demand for natural resources continues to increase, the future of Chinese society is now facing major challenges. Based on recent research from the Chinese Academy of Science, China has recently become the world's largest consumer of natural resources, and ranks 56th out of 59 countries for producing waste. Following a comprehensive review of current

environmental and resource concerns, the Chinese government created new requirements to guide China's future development. Advanced technologies such as remanufacturing that minimize waste and emissions will play a significant role in helping China reach its objectives.

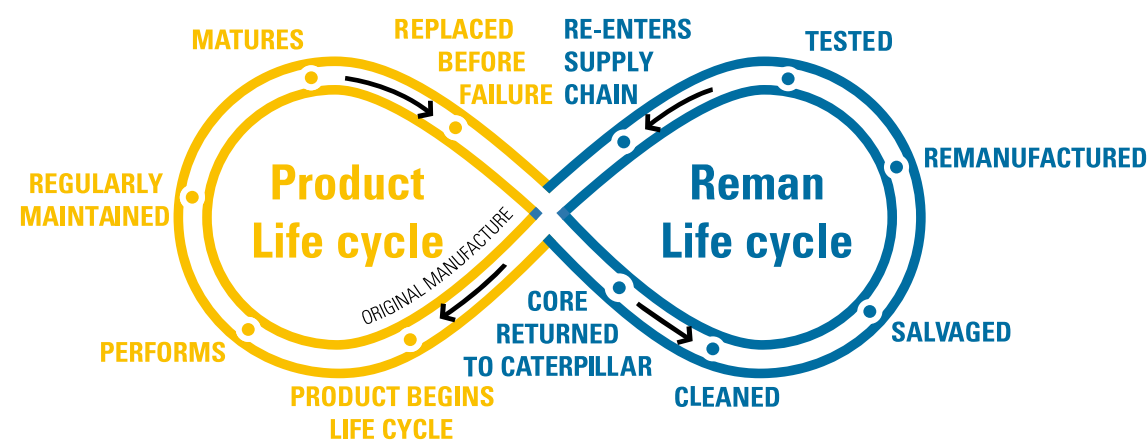
How do you reduce the need for new steel and also reduce the accompanying CO2 involved in the production of steel? Make good use of old steel. This is the concept behind Caterpillar's remanufacturing business that focuses on returning end-of-life products to like-new condition.

The environmental benefits of remanufacturing are clear. Remanufacturing minimizes the need for raw materials to produce new parts through

reusing, salvaging and recovering the cores (the end-of-life component).

By capturing most of the original value added, remanufactured products typically have less embedded energy and water as compared to products manufactured from raw material.

Remanufacturing is also a driving force in minimizing customer-operating costs. The additional life cycles of remanufactured components provide our customers options to extend total machine life cycle with low cost and same-as-new quality and performance. Therefore, it is a great financial alternative to new products that lowers the capital investment and/or operation cost of customers.



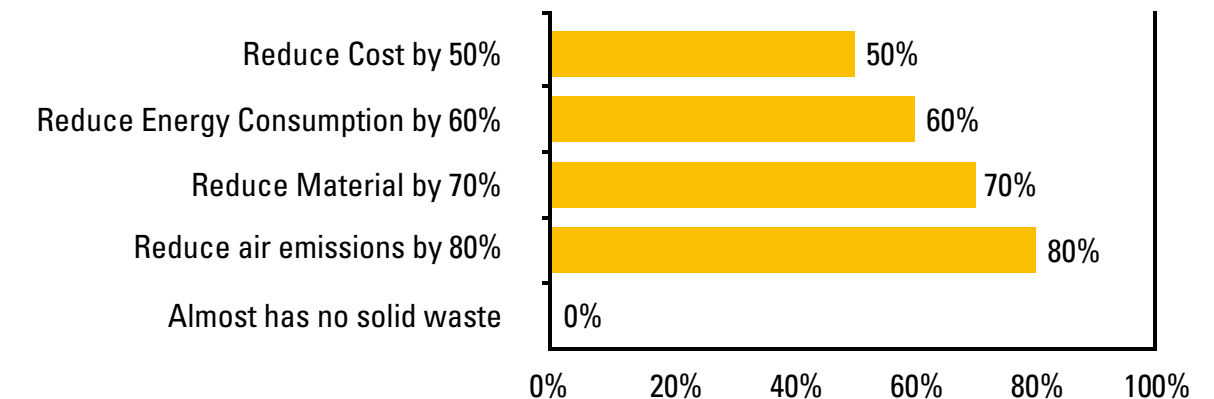
Remanufacturing Activities of Caterpillar in China

Today, 17 Caterpillar remanufacturing facilities can be found in eight countries across the globe: China, France, Mexico, Poland, Singapore, UK, Brazil and U.S. Cat Reman parts and components program provides customers an exchange system where they can return an end-of-life component (called "core") for a remanufactured replacement. In 2013, Cat Reman took back about 2.3 million worn out components and remanufactured or recycled approximately 80 million kilograms of material.

In 2005, Caterpillar set up a remanufacturing facility in Shanghai to serve the China and Asia/Pacific market. Caterpillar's remanufacturing business supports China's goal of achieving a sustainable economy based on industry-leading manufacturing expertise and business practices.

Remanufacturing vs. New Product Manufacturing¹

The Chinese government recognized in The Opinion on Facilitating the Development of Remanufacturing Industry issued on May 13, 2010, that compared with traditional new product manufacturing, remanufacturing results in less impact on the environment.



¹ The Opinion on Facilitating the Development of Remanufacturing Industry jointly issued on May 13, 2010, by China's National Development and Reform Commission, Ministry of Science and Technology, Ministry of Industry and Information Technology, Ministry of Public Security, Ministry of Finance, Ministry of Environmental Protection, Ministry of Commerce, General Administration of Customs, State Administration of Taxation, State Administration for Industry and Commerce and General Administration of Quality Supervision, Inspection and Quarantine.



OUR RESEARCH & DEVELOPMENT FOCUSES ON SUSTAINABILITY



OUR PRODUCTS ARE DESIGNED TO SUPPORT SUSTAINABLE GROWTH

Insight before Iron



Engineers love to solve problems. Developing new products and technologies presents a unique set of problems that can only be solved by trial, error and physics. Engineers analyze design ideas using complex equations that seek to prove that, when built in iron, the design will do precisely what the engineer intends it to do. Before the age of sophisticated virtual design tools, engineers were forced to build numerous, often expensive, prototypes, test them, make improvements and then repeat the process. Now, engineers are building, analyzing and even allowing operators to drive prototypes virtually, all before an iron model is ever constructed. The result is higher-quality design, reduced environmental impact from the design process and more productive engineers.

The Caterpillar Research & Development Center (China) Co., Ltd. Virtual Reality (VR) Lab is used to generate 3D virtual environments for product and process review to reduce resources and time used in building physical prototypes. The system is comprised of three walls, a floor and four high-definition digital 3D

projectors, with a useable work area of 3.25 meters wide by 3.25 meters deep by 2.44 meters high. This technology enables natural interaction with one-to-one scale product models, allowing users to work in the virtual world much like the real world. The user's body position is tracked by an Advanced Real-time Tracking system and the scene is updated based on the person's point of view.

Introducing virtual human-machine interactions during the design process can enhance the design team's understanding of key elements, such as operator visibility, assembly audits, serviceability audits, ergonomic evaluation, design reviews and facility lay-out. It helps the machine design team identify and resolve issues more quickly, avoid late design changes, shorten the design lead timing and save development costs. It also enables facilities and operations personnel to conduct virtual walkthroughs of new Caterpillar facilities prior to construction — and new or modified manufacturing processes. It ensures that engineers have enough time and resources to improve and enhance processes efficiently before

production begins. Caterpillar China R&D Center VR Lab and VR engineers have conducted many review sessions for new products in China, including medium wheel loaders, large wheel loaders, track type tractors and motor graders. The VR Lab also supports the setup of new factories in China as well as the modification of existing factories. For example, the VR Lab was recently used to conduct a virtual review of operator station factory assembly workshop re-layout. Through the virtual review, 45 issues were identified in the area of production line layout, equipment, logistics and material flow. Because these issues were identified prior to actual production, corrective steps were taken with estimated cost savings of RMB 2,814,000 (USD 469,000).

Overall, the VR Lab has brought two main benefits: for process design and improvements, it helps achieve greater efficiency in the manufacturing process; for product design, it helps deliver high-quality design while reducing the time, cost, materials and energy needed throughout the design process. Other benefits may include increased safety and improved ergonomics for operators. Most importantly, better product performance with optimized systems helps lead to greater efficiency and lower customer owning and operating costs.

Built for Customers and Sustainability

Caterpillar continuously strives to increase the efficiency and to reduce the emissions of its products, and to lower owning and operating costs for its customers.

Since 2010, Caterpillar Paving Products (Xuzhou) Ltd. has introduced new products to China that meet emission standards equivalent to either U.S. EPA Tier 3 or Tier 4 interim, or EU Stage IIIA or IIIB standards. This means that all new products also meet China's latest requirements on engine exhaust emissions including local municipal standards. In addition, all compactor models manufactured at the facility are now designed with ECO-mode, reducing fuel consumption by about 10 percent to 50 percent depending on machine application and the settings.

Wheel loaders are among the hardest-working, most versatile machines in the world. They load a variety of materials, from aggregate to timber, at worksites

throughout the world. Furthermore, they are used in a variety of applications — from snow removal and waste applications to stockpiling and truck loading. With a list of tasks that goes on and on, a wheel loader that is more efficient and more sustainable can deliver an exceptional level of value to our customers.

Since its incorporation, Caterpillar (Qingzhou) Ltd. has been focusing on building the wheel loader with an ongoing commitment to develop fuel-efficient products. In February 2013, Caterpillar (Qingzhou) successfully completed the first pilot build of SEM™ 650B Liquid Natural Gas (LNG) powered wheel loader.

As an energy source primarily composed of methane used in power generation and as a transportation fuel, natural gas makes up more than 20 percent of the world's total energy consumption. LNG has a much higher storage density than compressed natural gas, making it

more suitable as an alternative to diesel fuel without sacrificing durability and productivity.

Targeting large ports, small and mid-range enterprises and local retail customers with ownership of LNG stations, the SEM 650B LNG-powered wheel loaders were put into production in September 2013. Caterpillar (Qingzhou) Ltd. plans to launch more models of wheel loaders powered by LNG to meet customers' needs in the future.



WE MANUFACTURE IN A SUSTAINABLE WAY

Consistent with its 2020 Goals for Operations, Caterpillar strives to make its operations sustainable in all of its facilities worldwide. In China, our facilities have achieved significant results concerning safety, emissions reduction, energy saving and waste reduction.

Safety



Caterpillar (China) Machinery Components Co., Ltd. in Wuxi City makes safety a top priority and is dedicated to establishing a culture of safety that includes education, notification and reporting.

The culture of safety is reflected in the facility's practices of identifying key unsafe behaviors (a specific safety observation check card was created for each workstation); setting up various

communication channels to report unsafe conditions; and implementing safety activities, such as annual safety competitions, job hazard analysis competitions and creating a safety training room. Through these efforts the facility's recordable injury frequency in 2013 improved by 61 percent compared to 2012. In 2013, the facility was named a safety culture demonstration enterprise by the Wuxi Government.

Emissions Reduction

Caterpillar (China) Machinery Components Co., Ltd. has focused on reducing two important emissions to the environment: **Total Phosphate** from waste water and **Volatile Organic Compounds (VOC)** from waste air. These emissions are byproducts of the painting and pre-treatment processes. After working with the chemical manufacturer, equipment vendor and R&D team, the facility succeeded in introducing no-phosphate chemicals to these two processes, including the Degreasing Stage and the nano-Ceramics Stage. This action has reduced Total Phosphate emissions by 30 kilograms per year. In addition, by introducing a static painting spray process, the facility has reduced the quantity of VOC emissions and increased painting efficiency. Through this action alone, the facility reduced VOC emissions by around 8.4 metric tons in 2013 and received an award from the



Wuxi Government for its contribution to environmental protection.

Energy Saving



Natural Gas Conservation Project

Since 2012, Caterpillar (Suzhou) Co., Ltd. has reduced natural gas consumption and contributed to greenhouse gas reduction through the innovative Natural Gas Conservation Project. This project used the residual heat of hot water pipes to efficiently send warm air to the central heating system of its office building. In the first eight months of the project's operation from the fourth quarter of 2012 to 2013, the facility saved 116,000 cubic meters of natural gas. This project was recognized by the Suzhou Environmental Bureau and the facility is considered a role model for saving energy in the Suzhou Industrial Park.

Hydraulic Equipment Electricity Conservation Project

There are 27 units of hydraulic equipment used in the fabrications area of Caterpillar (Suzhou) Co., Ltd. This equipment is frequently in standby status during each shift. Previously, the equipment couldn't be stopped even when it was in standby status resulting in

unnecessary power consumption. After a full analysis, two improvements were made. One was to use a button to enable the equipment to be stopped when in standby mode. The other was to adopt a pressure sensor to control the motor, which will work or stop only if reaching the designated degree of pressure. By the end of 2013, the facility saw significant improvements in the amount of power consumed by the hydraulic equipment, which decreased from 380,000 kWh per year to around 23,800 kWh per year. In addition, by saving approximately 94 percent of electric power previously consumed by the equipment, the equipment's life cycle was extended and maintenance costs lowered.

Controlling Lighting to Conserve Energy Project

Caterpillar (Wujiang) Co., Ltd. previously used more electricity than necessary for its lighting system. A Controlling Lighting to Save Energy Project was initiated in 2012 and achieved good results. For example, before the project, many working areas were lit even

when people were not working in them. Beginning in 2012, the facility improved the optical automatic switch and removed superfluous lamps from working and non-working areas. Thanks to this project, electricity usage was lowered by 100,757.22 kWh in one year resulting in cost saving of RMB 84,000 (USD 14,000).

Electricity Saving Project Energy Management Center

AsiaTrak (Tianjin) Ltd. initiated its Electricity Saving Project Energy Management Center in April 2012. With a total investment of RMB 1.2 million (USD 175,000), the project increased the efficiency of electrical equipment in the facility by focusing frequency-converting control of the air conditioning system and the water circulating system. Thanks to this project, the facility saved 360,000 kWh of electricity in one year as well as about RMB 256,000 (USD 37,336).



Waste Reduction



Sustainable Painting Solutions

Caterpillar (Xuzhou) Ltd. powder painting line was built in 2007 to paint excavator booms and sticks. However, powder would often bounce off or spray beyond the desired area and fall to the ground during painting, creating waste. The total powder paint use rate was around 50 percent.

In order to make the line more efficient and reduce waste, the facility created an electrostatic field between the spray gun and the plate with an electrostatic spray gun and grounded the plate to enhance paint efficiency. The facility also implemented a system of powder recycling methods that made it possible to recycle unused powder paint. All of the recycled paint is now recirculated back into production. The paint use rate was increased from 50 percent to 85 percent. Based on the annual production rate of 10,000 hydraulic excavators, the facility is able to save RMB 800,000 (USD 133,333) annually and reduce paint waste.



Sustainable Packaging

The primary functions of packaging are to protect parts during transportation and delivery to the receiver as well as to ensure that the package can be ergonomically managed. In recent years, Caterpillar has started to consider not only the economic impact but also the environmental impact of packaging choices.

Recyclable packaging is the preferred choice for shipping parts from suppliers to Caterpillar facilities. As the number of localization projects underway is increasing, many parts, such as the cylinders, engines and valves, are sourced locally instead of from overseas. Consequently, Caterpillar (Xuzhou) Ltd., Caterpillar (China) Machinery Components Co., Ltd. and Caterpillar (Suzhou) Co., Ltd. replaced the former wooden packaging with newly designed steel recyclable containers and recycled wooden packaging materials, which saved a considerable amount of wood.

Through these projects, Caterpillar (China) Machinery Components Co., Ltd. saved around 5,000 metric tons of wood in 2013, an amount that is expected to increase in 2014. Meanwhile, Caterpillar (Xuzhou) Ltd. was able to reduce its wood consumption by 888.46 metric tons in 2013 and greatly reduced its packaging costs, creating savings of RMB 9.12 million (USD 1.52 million). By re-using wooden packaging materials to create wooden pallets, Caterpillar (Xuzhou) Ltd. made recyclable 300 wooden pallets for internal

usage instead of steel pallets, recycled 36 metric tons of wood and saved RMB 576,000 (USD 96,000). Caterpillar (Suzhou) Co., Ltd. was able to save RMB 9.36 million (USD 1.56 million) in packaging costs, reduced its wood usage by 1,024 metric tons from September 2011 to August 2012 and saved 4,861 hours of operation time.



PARTNERING WITH SUPPLIERS TO PROMOTE SUSTAINABILITY

Collaboration for Supplier Sustainable Development

Caterpillar integrates sustainability into our core businesses around the world. In China, Caterpillar has been supporting local suppliers by leveraging technology and innovation that not only increase efficiency and productivity but also reduce waste and have less impact on the environment.

Painting is one area of focus. The traditional painting method uses liquid paint that has the potential to emit a high quantity of volatile organic compounds (VOC). Through technology and material innovation, Caterpillar has been introducing powder coat paint and liquid paint with high solids to China suppliers. These two emerging technologies could significantly reduce or even eliminate VOC

emissions. Caterpillar actively works with China suppliers to adopt these measures through a variety of activities, such as process improvement projects and developing culture alignment programs to protect the environment. One successful activity was a painting competition among several suppliers that also included three Caterpillar facilities. As a result of these efforts, several suppliers have begun utilizing the powder coat paint in their production lines, reducing the amount of paint wasted by 35 percent, and reducing emissions into the environment.

Caterpillar has also helped suppliers to transform the culture inside their facilities into ones that place great importance on the environment, health and safety

(EHS). Caterpillar worked with suppliers on Caterpillar Production System projects to reduce safety risks by helping them establish safety processes and procedures. One supplier started using robots for painting functions to avoid the risk of employees coming into direct contact with chemicals and gas.

With Caterpillar's assistance, our suppliers in China have improved their product quality and operation efficiency, and more importantly, delivered on a shared commitment to social responsibility through sustainable development.

Caterpillar Production System Overview



Unused Creativity / Capability

Lost opportunities due to poor safety and an underutilized workforce



Defects

Production or rework of out-of-specification parts



Inventory

Excess raw material, work-in-process or finished goods



Over Production

Excess supply beyond the requirements of the next process



Waiting

Lost time due to poor product flow—shortages, bottlenecks, down machines



Excess Motion

Wasted movement made while working



Transportation

Excess movement of work-in-process



Over Processing

Work that adds no value to the customer or business



PARTNERING WITH DEALERS TO SUPPORT OUR CUSTOMERS' SUSTAINABLE GROWTH

CEL Supports Shenhua Energy to Become a Role Model for Mining

A Caterpillar customer, Shenhua Energy Company Limited (Shenhua), operates a surface coal mine on the Xinjiang Zhundong coal field in Wucuiwan, Jimusaer County, a 24-kilometer (15-mile) mine site that boasts reserves of 1.5 billion metric tons of high-quality coal in Xinjiang. The mine has a planned production capacity of 45 million metric tons per year, as well as a power station that will be capable of producing as much as 9.34 million kW. With coal seams just 60 meters (197 feet) below the surface, this coal field is ideal for extended surface mining.

Among the biggest challenges Shenhua faces at the Xinjiang Zhundong coal mine are improving operating efficiency and maintaining the mine safely and efficiently. Shenhua is up to the challenge, though. The company is committed to developing its surface mine into a modern, efficient large-scale mining base that will become a role model for the industry both in China and around the world.

After careful preparation, investigation and evaluation, Shenhua worked with Cat® dealer China Engineers Limited (CEL) to provide reliable, efficient mining equipment that is helping the company reduce its cost per ton. The most important aspect of Shenhua's plan to increase efficiency is its dedication to finding the best machine for every application. This commitment led to its decision to become the first company

in China to use the 218-metric ton (220-ton) Cat® 793D Mining Truck as its main hauling vehicle. Shenhua also relies on a fleet of Cat support equipment to keep haul roads safe for its four Cat 793D trucks. That fleet includes two Cat® 834 Wheel Dozers, two Cat D10 Track-type Tractors, one Cat D7G Track-type Tractor and two Cat 14M Motor Graders.

To ensure that Shenhua has a ready supply of spare parts and access to the maintenance necessary to keep its equipment fleet up and running, CEL has established the largest spare parts supply center in northwestern China. CEL sent a 20-person after-sales service team, led by senior engineers, to set up a spare parts warehouse and maintenance shop in Wucuiwan. This team provides routine maintenance and around-the-clock troubleshooting for Shenhua's Cat equipment through a Cat dealer Maintenance and Repair Contract (MARC).

The MARC team has already had success in achieving high availability rates from the machines in service. It implements best practices and provides even higher availability. CEL is also taking steps to support its partner's efforts to build a pool of highly skilled workers by launching a basic knowledge-training course for maintenance staff. CEL has provided experienced teachers and teaching facilities to the Urumqi Coal Mine Technical School, which is a Shenhua-funded venture that trains

local workers in a wide variety of skills and topics related to work in the mining industry. Graduates are free to seek employment with Shenhua or take their talents elsewhere, providing a strong boost to local employment. It turns out the relationship between Shenhua and CEL has not only ensured the efficient and secured mining in Wucuiwan but also has supported the sustainable development of Shenhua in this area.

The development of the Xinjiang Zhundong mine isn't just a good thing for China's energy supply; it's bringing new life to the region, as well. This project has brought rapid fiscal growth to the region, providing jobs in everything from construction to mining itself. The influx of workers to the region has also created job opportunities and increased revenue in local tertiary industries, increasing the income of local residents and improving the quality of life in Wucuiwan.

With its significant reserves and planned capacity, the Shenhua Zhundong coal mine expects to provide energy and support economic growth to both Wucuiwan and China as a whole for many years to come.



SUPPORTING OUR CUSTOMERS' SUSTAINABLE GROWTH

Solar Turbines Customer is the First Company in China to Receive a Certificate of Avoided GHG Emissions from the U.S. Environmental Protection Agency

"China's next phase of economic growth will be characterized by technology innovation, energy saving and emission reduction as the country shifts its focus to developing an environmentally friendly economy. Caterpillar has been in China for nearly 40 years, and we're well positioned to assist with China's drive for an environmentally sustainable economy and industrial upgrading."

- Qihua Chen, vice president of Caterpillar Inc. & chairman of Caterpillar (China) Investment Co., Ltd.

Caterpillar subsidiary Solar Turbines Incorporated (Solar) is making sustainable power generation available worldwide. Since 2005, dozens of Solar's customers have started using coke oven gas (COG), which is a byproduct of the coking process, for power generation to create electricity and steam in combined heat and power (CHP) plants. Coke is one of the most important ingredients in making steel and is the solid product left over from the distillation of coal. Coke serves as a great resource for regions with a rapidly growing economy, such as China.

In 2013, one of Solar's customers, the Henan-Chengyu Coke & Chemical Co., Ltd. (Henan-Chengyu), located in China, received the "2013 Certificate of Avoided GHG Emissions" by the U.S. Environmental Protection Agency (U.S. EPA) Combined Heat and Power Partnership for its achievement in reducing carbon emissions with CHP. Henan-Chengyu is the first Chinese company to be recognized in this way by the U.S. EPA Combined Heat and Power Partnership.

"As the certificate from the U.S. EPA demonstrates, we are glad to see the use of this technology to lessen any negative impact to the environment and add value to our company's sustainable development," said Chengjie Li, chairman of Henan-Chengyu.

The company uses two Taurus™ 60 gas turbines to burn COG to create electricity and uses exhaust heat from the turbines to produce steam. As a result of using this technology, Henan-Chengyu's 10.7 MW COG-fired CHP system has avoided emissions of approximately 73,400 metric tons per year of carbon dioxide equivalent, compared to conventional energy sources and industry practices. This reduction in carbon dioxide is equivalent to removing 18,350 cars¹ from the roads for one year. The U.S. EPA estimates that the CHP system uses 49.6 percent less fuel than conventional energy sources.

To promote sustainable development, in 2012 the Chinese government prioritized seven strategic emerging industries for

accelerated development, including enhancing energy utilization efficiency and expanding the use of new energies. As the environmental benefits of COG are recognized, Solar is proud to contribute to the success of its customers not only in China but also around the world.

¹ The calculation is based on the emission of a 1.6L car in a year, referring to the data of China Automobile Industry Association.

PARTNERING WITH COMMUNITIES AND THE CATERPILLAR FOUNDATION TO MAKE SUSTAINABLE PROGRESS POSSIBLE

Caterpillar believes that the most successful companies will be those that integrate sustainability into their core businesses and actively promote progress in their communities. That is what we are doing at Caterpillar worldwide. In China, Caterpillar is committed to being a responsible and contributing “local citizen” focused on addressing environmental and educational challenges that arise from trends toward urbanization.

Caterpillar Charity Forest Project

China is in the strategic transformation period of environmental protection and economic development. It is critical to China's industrial restructuring that economic growth is achieved without sacrificing the environment. The Caterpillar Foundation has been investing in social causes as well as engaging more than 35 Caterpillar facilities and business units across China to devote volunteer hours to improving our communities.

The Caterpillar Charity Forest project was launched in 2011 and is aimed at building up green belts to conserve water and soil, protect water resources and sustain the environment through reforestation in key areas of North China and along surrounding areas of Taihu Lake. In 2013, more than 1,000 Caterpillar employees and their families volunteered in tree planting and maintenance activities in six cities. By the end of 2013, 191,640

trees were planted on 162 hectares in China. According to China Environmental Protection Foundation's calculation based on multi-regional environmental records and a commonly used formula, the Caterpillar Charity Forest project has achieved 4,400 kilograms of dust retention per year, 28,000 metric tons of carbon storage per year and 20,000 metric tons of oxygen release per year.

The Great River Partnership

Supported by the Caterpillar Foundation, the Yangtze River Project, part of the Great River Partnership initiated by The Nature Conservancy in 2005, has laid a solid foundation for scientifically carrying out environmental protection planning, policy research, environmental flow practice and aquatic life monitoring standardization along the Yangtze River.

Since 2007, the Yangtze River Project has identified 24 biodiversity conservation priority areas, which enables limited protection resources to be centrally invested in the areas with the highest protection value, maximizing the efficiency of the protection. The project also made tremendous efforts towards establishing an aquatic life-monitoring network by collaborating with related government departments. In particular, it introduced and promoted the environmental flow concept, and submitted an environmental flow proposal



for the dams along upper-middle Yangtze River, including Three Gorges Dam and Xiangjiaba Dam. The concept of environmental flow takes the hydrological environment necessary to sustain aquatic life into consideration during both the project design and operation phases in

order to ensure that discharged water flow better meets downstream ecological needs.

Seeing is Learning



The Rural Education Action Project (REAP) is an impact evaluation organization. Its goal is to help students from vulnerable communities in China enhance their human capital and

overcome obstacles to education so they can escape poverty and better contribute to China's developing economy. REAP's research focuses on three key areas: Health, Nutrition and Education; Technology and Human Capital; and Keeping Kids in School.

Since 2013, the Caterpillar Foundation has been supporting REAP's “Seeing is Learning” initiative that aims to provide vision care to needy communities and develop a blueprint for vision care service. Since the project launched, thousands of students from 94 primary schools in and around Suzhou, Shanghai and Wuxi have received free vision screenings, examinations and eyeglasses. Parents, teachers and students have also received training

from optometrists and opticians on proper vision care. Children from rural areas are the backbone of China's future labor force and integral to the country's development. Due to misunderstanding and lack of awareness regarding vision care, many children underperform and even drop out of school because their vision is not properly corrected. The “Seeing is Learning” project will measure the impact that wearing glasses has on a range of student metrics such as test scores and self-confidence, and evaluate means to deliver vision care services in underserved areas.

The Hope Library Project

Since 2012, the Caterpillar Foundation has supported the China Youth Development Foundation in the Hope Library Project, which will help primary schools in Western China and migrant schools in Eastern China to set up or improve their libraries. So far, 60 schools have been confirmed as project beneficiaries. In 2012 and 2013, more than 60,000 books were delivered to these schools and almost 20,000 students will benefit from this project. In addition, the Caterpillar Foundation followed up its initial donation by launching the “Happy Reading” Campaign at selected Hope Libraries



in 2013 to promote student interest in reading and cultivate good reading habits among them.



Sustainable Urbanization

China is currently undergoing a significant shift in demographics, as more people now live in cities and towns in China than in the countryside. According to the National Bureau of Statistics in China, 51 percent of its 1.35 billion people now live in cities. Experts predict that by 2030 more than 70 percent of Chinese people will live in cities, and that 221 cities will have at least one million residents. Rapid urbanization poses substantial challenges. Poorly-planned, sprawling cities have the potential to undermine efforts to sustain economic growth, improve energy efficiency, curb greenhouse gas emissions and secure clean water supplies. China is not the only country facing these challenges; similar problems exist in many other developing economies.

In an effort to develop solutions to these challenges, the Caterpillar Foundation has been supporting a World Resources

Institute (WRI) project to promote the development of sustainable cities in China, India and Brazil. Through this smart cities initiative, WRI will partner with up to five cities, including Chengdu and Qingdao of China, on strategies to increase energy efficiency, curb greenhouse gas emissions and improve water quality, urban mobility and land use.

Specific project goals include solutions that will reach one billion people with new public transportation options; avoid 617,000 metric tons of CO₂ emissions in the transportation area; reduce nitrogen, phosphorus and ammonia discharges to water by 15 percent; and provide more reliable energy to 11 million industrial, corporate and residential consumers. In total, the Caterpillar Foundation expects to support this project with USD 12.5 million over five years.

“At Caterpillar, we always ask ourselves, ‘What do our customers need? What does the world need?’ WRI asks those same questions about the communities it serves, and truly delivers some amazing results,” said Doug Oberhelman, Caterpillar chairman and CEO.

WRI puts ideas into action, working globally with governments, business and civil society to build transformative solutions that protect the earth and improve people’s lives. Their mission dovetails with the Caterpillar Foundation’s mission to support economic growth through environmental conservation.

Progress of the Project in 2013

Chengdu

- Low-Carbon Development Blueprint Research Report completed
- Smart Strategies on Vehicle Ownership and Usage for Chengdu Report completed
- Study of the Water-Energy Nexus of Urban Water Systems for Chengdu’s Low-carbon Development Blueprint Report completed

Qingdao

- The Comprehensive Assessment of the Current and Future Land Use and Transport Challenges in the Greater Qingdao Metropolitan Area Report completed
- Water-Energy Nexus in Urban Water Source Selection - Qingdao Case Study Report Draft completed

FORWARD-LOOKING STATEMENTS

Certain statements in this report 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 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 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 could increase our cost of borrowing and adversely affecting 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 could adversely affect Cat Financial’s and our earnings and /or cash flow; (ix) an increase in delinquencies, repossessions or net losses of Cat Financials customers could adversely affect its results; (x) new regulations or changes in financial services regulations; (xi) we may not realize all of the anticipated benefits of our acquisitions, joint ventures or divestitures, or these benefits may take longer to realize than expected; (xii) international trade policies may impact 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 highly competitive environment in which we operate could adversely affect our sales and pricing; (xv) we may not realize all of the anticipated benefits from a number of initiatives to increase our productivity, efficiency and cash flow and to reduce costs; (xvi) we could incur additional restructuring charges and may not 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 regulation; (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 investigations; (xxvi) compliance requirements imposed if additional carbon emissions legislation and/or regulations are adopted; (xxvii) changes in accounting standards; (xxviii) failure or breach of IT security; (xxix) adverse effects of unexpected events including natural disasters; and (xxx) other factors described in more detail under “Item 1A. Risk Factors” in our Form 10-K filed with the SEC on February 18, 2014 for the year ended December 31, 2013.

Trademark Information

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