



Priority Area

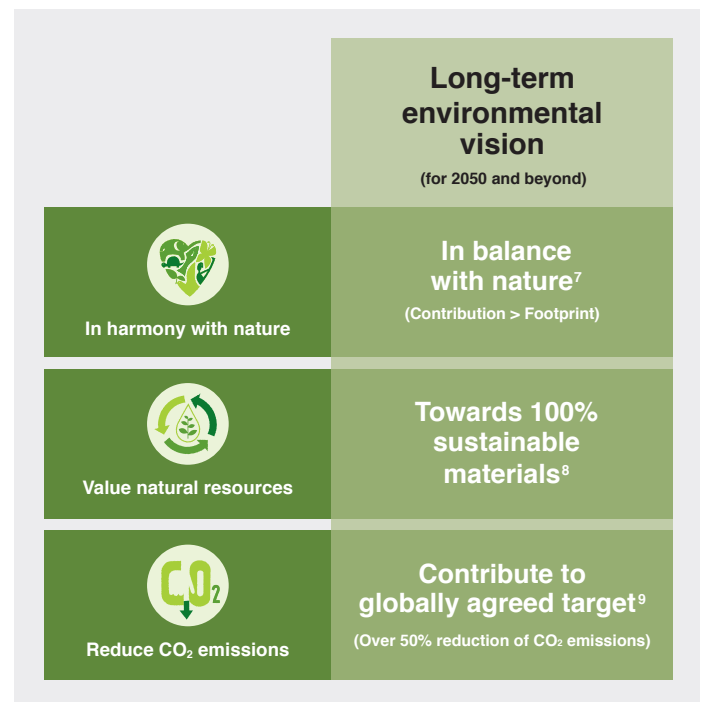
Environment 



**With the social and environmental impact of climate change, resource depletion and biodiversity loss becoming more pronounced, the Bridgestone Group has established a framework to address these challenges within its operations and to contribute—throughout the lifecycle of its products—to addressing them within the larger community.**

The Bridgestone Group is committed to continually working toward a sustainable society with integrity and in unity with its customers, partners, communities and the world.

The Group's long-term environmental vision targeting 2050 and beyond aims to exist in harmony with nature, valuing natural resources and reducing CO<sub>2</sub> emissions.



<sup>7</sup> "In balance with nature" is our commitment to contribute to biodiversity through habitat enhancement, and through environmental education and research.

<sup>8</sup> The Bridgestone Group defines sustainable materials as materials that 1) come from resources with a continual supply, 2) can be used as part of the business over the long term and, 3) have a low environmental and social impact over the lifecycle from procurement to disposal.

<sup>9</sup> At the G8 Hokkaido Toyako Summit (held in July 2008), G8 leaders agreed on a reduction of at least 50 percent in greenhouse gas emissions worldwide by 2050. The same year, at the Major Economies Meeting on Energy Security and Climate Change, developed countries as well as certain emerging nations, such as China, India, etc., adopted this target as a shared global objective.

# In Harmony with Nature

The Bridgestone Group is working concurrently to minimize the environmental footprint of its business operations while also enhancing its environmental contributions.

## Minimizing its environmental footprint

The Bridgestone Group has set a target to reduce water withdrawal by 35 percent by 2020 (per unit from a 2005 baseline)<sup>10</sup>. In 2018, the Group exceeded its goal, reducing water withdrawal by 37 percent, reflecting significant improvements over the prior year.

To achieve these results, the Bridgestone Group reuses/recycles water at many manufacturing facilities, especially operations where there are serious concerns about water shortages, such as China and Mexico. It is also using water resources more efficiently by improving production processes and using rainwater where possible.

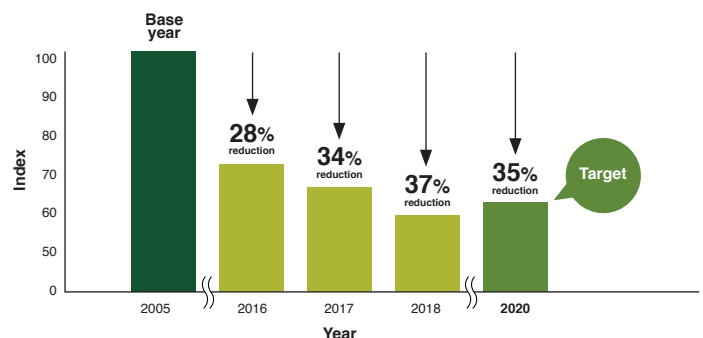
For example:

- At the Izmit, Turkey facility operated by the Bridgestone Group, employees identified ways to reduce the site's dependence on groundwater by recovering, treating and reusing rainwater and waste water. Through these steps—and an education campaign on the importance of using water wisely—the facility nearly halved its water withdrawal in 10 years. This work was recognized with a Bridgestone Group Award in early 2019.
- When building new tire manufacturing facilities, the Bridgestone Group conducts a risk assessment for water quality and volume to ensure that it takes efficient use of water resources and wastewater into consideration. It also uses the [World Business Council for Sustainable Development Global Water Tool](#) and [World Resources Institute \(WRI\) Aqueduct](#) to assess water risks at existing facilities and identify improvement opportunities for each location.

After almost 20 years of research, and in collaboration with the Bridgestone Technical Center in Europe, tire manufacturing facilities operated by Bridgestone in Bilbao and Burgos, Spain; Bari, Italy; Bethune, France and Poznan, Poland **succeeded in drastically reducing (by approximately 83 percent overall) volatile organic compound (VOC) emissions** related to the use of solvent in the production process by reducing solvent use. In particular, the Burgos plant eliminated all cement adhesives in the production process, contributing to an approximately 95 percent reduction in VOC emissions from the use of solvents since 1998, while enhancing the quality of the final products.

The Bridgestone Group's environment-related data is [verified by Lloyd's Register Quality Assurance](#), a third-party institution, to ensure the accuracy and transparency of this information.

Target and Actual Figures of Water Withdrawal at Manufacturing Facilities (per Unit)



<sup>10</sup> Bridgestone manages water withdrawal by unit of production volume and net sales for each business. A weighted average efficiency of the reduction is used as an index. The water withdrawal does not include recycled water from third-parties and rainwater.



**“We are honored that Bridgestone Americas has entrusted The Nature Conservancy to manage this important forest. It is setting an example for how corporations can proactively protect the planet in collaboration with the environmental community.”**

**—Terry Cook, State Director, The Nature Conservancy in Tennessee**

**In addition to minimizing its environmental footprint, the Bridgestone Group is also preserving and restoring habitats and conducting environmental education and research activities around the world as part of its commitment to operating in harmony with nature.**

### **Enhancing its contribution**

In the U.S., Bridgestone Americas celebrated World Environment Day on June 5 by donating 2,332 hectares of the Bridgestone Nature Reserve at Chestnut Mountain to [The Nature Conservancy in Tennessee \(TNC\)](#). The land is adjacent to more than 6,000 hectares of the Bridgestone/Firestone Centennial Wilderness Area the Company gifted to the Tennessee Wildlife Resources Agency in 1998 and 2000. The donation will protect and enhance habitats for a range of endangered plant and animal species. As part of the donation, TNC is completing a forest carbon offset project that will soon fund the management of the Bridgestone Nature Reserve at Chestnut Mountain and offset the carbon emissions from the Bridgestone Tower headquarters building in downtown Nashville, Tennessee, U.S. for an estimated 25 years.

Also in the U.S., as well as in Mexico, 11 of the Bridgestone Group manufacturing locations are Certified Wildlife Habitats. The Group works with the [Wildlife Habitat Council](#) to help manage the more than 1,200 hectares in the program to foster habitat conservation and improve biodiversity.

To help inspire the next generation’s interest in the natural environment, the Company established the [Bridgestone Environmental Education Classroom and Habitat \(BEECH\)](#) at its Warren County facility in Tennessee, U.S. Students in pre-kindergarten through fifth grade learn about wildlife habitats, water conservation and how to care for the environment. Since it was founded in 2008, nearly 20,000 students have visited the BEECH and the program has expanded to four counties in Tennessee and includes programs for children who are homeschooled. As of 2008, BEECH is a fully integrated part of the Warren County School curriculum.



# In Harmony with Nature



**“Bridgestone India's commitment to children, their families and the environment is enabling UNICEF to empower communities to manage water resources in Maharashtra. With their support, we are providing communities with the information, training and planning they need for long-term provision of safe drinking water, while also meeting agricultural and other needs.”**

**— Richard Beighton, Chief, Resource Mobilization and Partnerships, UNICEF India**

Bridgestone also works with local communities to help protect scarce water resources. In 2018, the Company initiated a three-year project with [UNICEF](#) to **improve water conservation and drinking water** in Maharashtra, India's second most-populated state. Water scarcity is one of the key challenges affecting Maharashtra due to long periods of drought that result in crop failure. Bridgestone India is donating JPY 63.6 million/USD 577,900<sup>6</sup> to help ensure that 10 villages have access to a clean, safe water supply.

Near the Bridgestone Kalimantan Plantation in Indonesia, there is a neglected state-owned forest that was destroyed by fire and other disasters. In 2012, **Bridgestone launched the W-BRIDGE project to help local residents restore the forest** in partnership with Waseda University, the Japan International Forestry Promotion and Cooperation Center, Lambung Mangkurat University and the Tanah Laut Regency Forestry Department. Local residents are taught improved land and forest management practices. To date, approximately 70 hectares of distressed land have been restored to productive, mixed-use of forest, Hevea production and agriculture.

In Indonesia and Thailand, local Bridgestone Group employees have planted thousands of mangrove trees to restore mangrove forests that protect people and the environment in coastal villages. Bridgestone Indonesia has also been working with

the [Borneo Orangutan Survival Foundation](#) since 2012 to help protect and reintroduce Bornean orangutans to their natural habitat. To help do so, the Company has committed to plant one hectare of forest each year for eight years. The Company is also sponsoring two orphaned orangutans by paying for their care and rehabilitation until they can be released back into their natural habitat.



<sup>6</sup> Based on the average exchange rate used in the Bridgestone Group's 2018 Financial Report.



## Leadership Commitment



**Paolo Ferrari**  
**Executive Vice President**  
**and Executive Officer,**  
**Bridgestone Corporation**  
  
**Member of the Board, CEO**  
**and President of Bridgestone**  
**Europe NV/SA**

**“The Bridgestone Group wants future generations to have the ability to live in a world where the planet's capacity to regenerate itself is not at risk. The Group also wants to develop and bring to market services and products that are responsibly responding to the needs of society and allowing it and its employees to thrive. At Bridgestone EMEA, we integrate sustainability in our strategy, as well as into our performance management and individual goal setting process because we believe that serving society is not just worthy in itself, but it also leads to profitable business.”**

# Valuing Natural Resources

**Around the world, the Bridgestone Group is working to conserve natural resources through operational improvements and product design. Its long-term vision is to use 100 percent sustainable materials<sup>8</sup> by 2050 and beyond.**

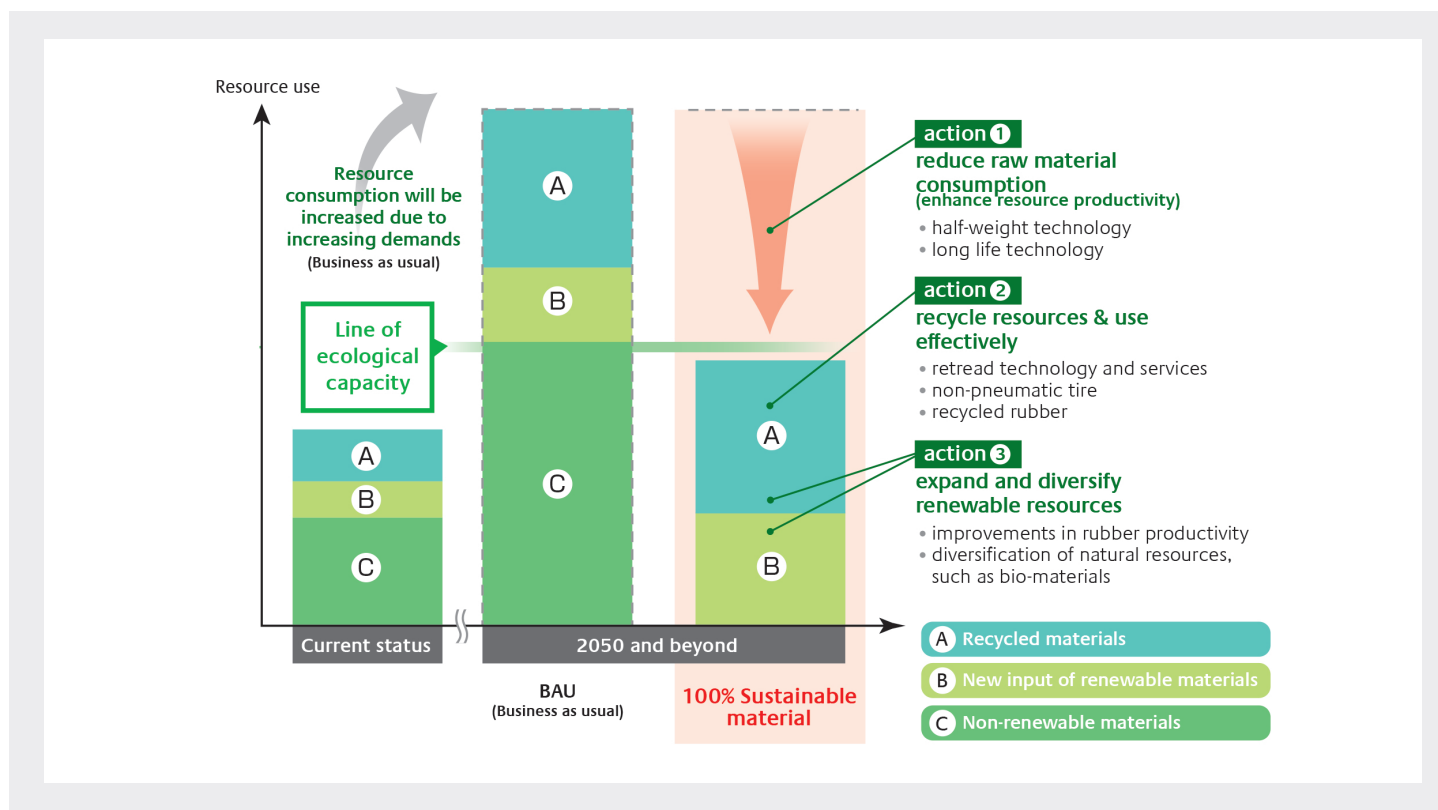
The Group is making progress on this journey by reducing raw material consumption, recycling resources and using them effectively both inside the company and also in collaboration with other companies, and expanding and diversifying renewable resources.

## Reducing raw material consumption

Given the increase in demand accompanying population growth and people's desires for more convenient lifestyles, there are concerns that, if nothing changes, the growth in demand for raw materials will exceed the earth's capacity. To avoid this will require constructing systems to decouple the environmental impacts caused by growing demand. To help assist this decoupling, the **Bridgestone Group is taking steps to improve its resource productivity**. The Group promotes new business models and the development of technology for reducing the volume of raw materials used to make each product.

One such example is the Group's work developing high-strength rubber that received the Environmental Achievement of the Year recognition in March 2019 at the Tire Technology International Awards. The durability and abrasion resistance of this next-generation material exceed that of natural rubber, which will enable the creation of tires that achieve the required levels of performance while using less materials.

## Long-Term Vision Toward 100 Percent Sustainable Materials



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**In the circular economy that is rapidly gaining traction, society works collaboratively to keep resources in use as long as possible before recovering materials and regenerating them into new products.**

## Recycling Resources

**Like many others, the Bridgestone Group envisions a robust circular economy and is assessing the role of its products in this new paradigm.**

The Group recently participated in the U.S. with the [Ellen MacArthur Foundation](#) and [CoreCentric](#) in a dialogue and subsequent [white paper](#) around the impact of remanufactured/ refurbished product sales, and in Europe on the [#BetterThanNew](#) project to promote tire retreading. Bridgestone EMEA is also working with the [R2Pi](#) consortium to explore circular economy opportunities within its business model.

It often surprises people to learn that **end-of-life tires are recycled and recovered at higher rates than aluminum cans, glass, cardboard and paper**<sup>11</sup>. Beneficial uses include construction materials, landscaping mulch, floor mats and even as components in new tires, and utilized as alternative fuel. Around the world, the Bridgestone Group is developing innovative approaches to further their reuse, including:

- Bridgestone Costa Rica's B-Happy Eco-Parks program uses **end-of-life tires to create playgrounds** in parks and education centers. So far, playgrounds have been created in El Salvador, Guatemala and Panama.
- In the U.S., Bridgestone Americas has committed to the beneficial reuse of the end-of-life tires removed from vehicles at Company-owned retail stores. In addition, through the Tires4ward program, **Bridgestone Americas offers free end-of-life tire collection and recycling during community-organized clean-up events** at rivers, lakes and other public waterways. Our goal is that all used tires returned to Company-owned retail stores get a beneficial next use.
- Through a joint research project with the Industrial Transformation Research Program in Australia, Bridgestone Australia is investigating the use of [used tires for various rail track components](#), including ballast and subgrade for improving the durability of ballasted rail tracks.

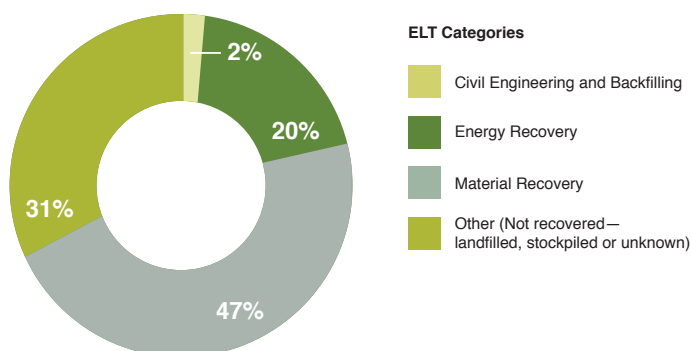
Using recycled materials in its products also helps achieve the Group's goal of using 100 percent sustainable materials by 2050 and beyond<sup>8</sup>.

- Not only are **Firestone Building Products metal roofing systems 100 percent recyclable at end-of-life**, they also include significant amounts of recycled aluminum, copper, steel and zinc.
- The Bridgestone Group **uses micronized rubber powder as a raw material in producing new, high-performance tires**, tires for agriculture and off-road applications, and pre-cured tread for tire retread.

## Expanding and diversifying renewable resources

One natural resource obviously critical to the Bridgestone Group, and one the world recognizes as potentially stressed in future years, is natural rubber. The company continues to actively participate in addressing this challenge in a number of ways. One example is the work **Bridgestone Americas is doing with the U.S. Department of Agriculture (USDA) National Institute for Food and Agriculture to develop a domestic source of natural rubber from guayule**. Guayule is a drought and heat-tolerant crop that produces natural rubber almost identical to that harvested from Hevea rubber trees. Bridgestone Americas was awarded a highly competitive USDA grant to continue this work with researchers from The University of Arizona, Colorado School of Mines, Colorado State University, New Mexico State University and the USDA Agriculture Research Service.

**End-Of-Life Tires (ELT) Global Recovery Rates<sup>11</sup>**



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<sup>11</sup> Industry-wide data based on the World Business Council for Sustainable Development [https://docs.wbcsd.org/2018/02/ELT\\_Fact\\_Sheet.pdf](https://docs.wbcsd.org/2018/02/ELT_Fact_Sheet.pdf).



# Reducing CO<sub>2</sub> Emissions

**As a responsible corporate citizen, the Bridgestone Group is paying close attention to science-based CO<sub>2</sub> emission-reduction goals and ongoing and projected impacts of climate change.**

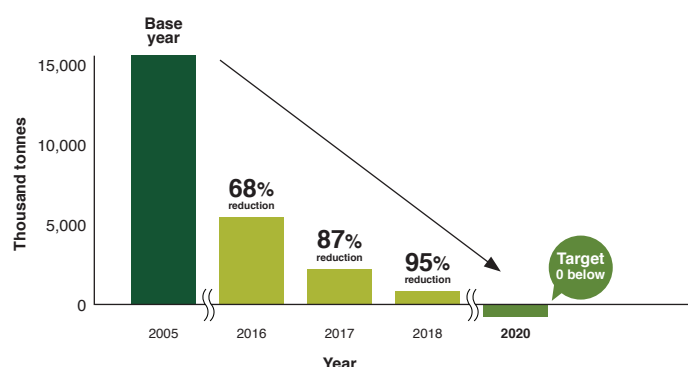
The Group's long-term (2050 and beyond) vision is to contribute to the globally agreed target to reduce CO<sub>2</sub> emissions. In the shorter term, the Group is focusing on reducing its CO<sub>2</sub> emissions from direct operations and, more impactfully, indirect emissions from its products in-use, which offers the greatest overall CO<sub>2</sub> reduction potential—reducing fuel combustion emissions when vehicles are moving. To move toward its 2050 vision, the Bridgestone Group has established a primary 2020 mid-term milestone and target: reduced emissions footprint from customers' use of Bridgestone tires will exceed the Group's emissions from raw material procurement, product manufacturing, distribution and its products' after-use.

Combining the CO<sub>2</sub> reductions from operations and products' in-use, the Group is 95 percent closer to its 100 percent reduction goal, in comparison with the 2005 baseline<sup>12</sup>.

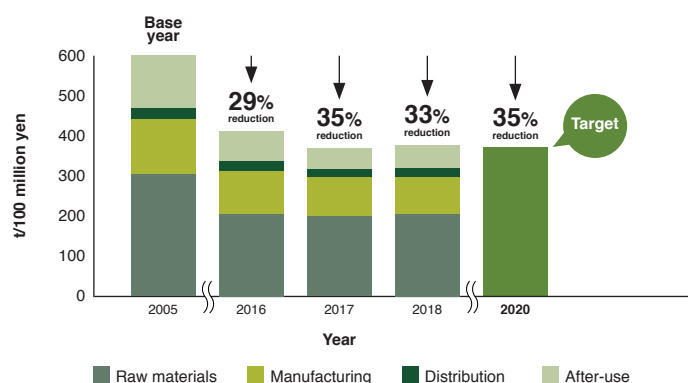
**To achieve the 2020 primary mid-term milestone, the Bridgestone Group established two CO<sub>2</sub> reduction-related sub targets:**

- By 2020, reduce CO<sub>2</sub> emissions per net sales from operations and products' after-use<sup>13</sup> by 35 percent (from a 2005 baseline). In 2018, the Group achieved a 33 percent reduction.
- Also by 2020, reduce tire rolling resistance by 25 percent (from a 2005 baseline). In 2018, the Group achieved a 21 percent reduction.

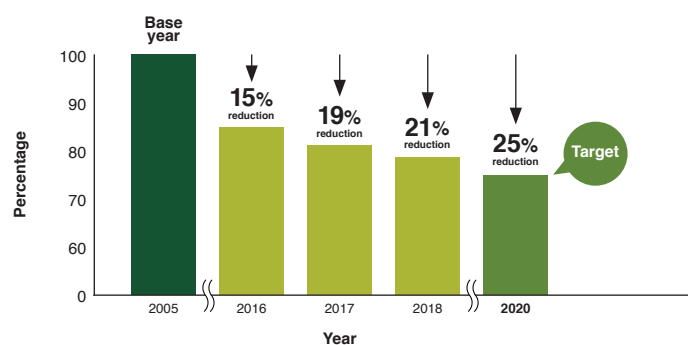
**Difference in CO<sub>2</sub> Emissions from Operations and Products' After-use and Contribution to CO<sub>2</sub> reduction at the Usage Stage<sup>12</sup>**



**CO<sub>2</sub> Emissions Per Sales from Operations and Products' After-use other than Use<sup>14</sup>**



**Tire-Rolling Resistance Coefficient**



<sup>12</sup> Calculated based on "Tyre LCCO<sub>2</sub> Calculation Guidelines Ver. 2.0" (The Japan Automobile Tyre Manufacturers Association, Inc., April 2012).

<sup>13</sup> Lifecycle stages other than use include raw material procurement, manufacturing, distribution and after-use.

<sup>14</sup> Includes CO<sub>2</sub> emissions reduction activities and exchange rate fluctuations of sales.

**The Bridgestone Group has a number of Group-wide and region-specific initiatives underway to reduce CO<sub>2</sub> emissions. For example:**

- Three Bridgestone Group tire manufacturing facilities (Bilbao, Puente San Miguel and Burgos) and one tire cord facility (Usansolo), all in Spain, sourced **100 percent of their electricity from renewable sources** in 2018.
- To reduce CO<sub>2</sub> emissions through its tires' lifecycle, the Bridgestone Group utilizes CDP to engage suppliers on climate change. In 2018, the Group engaged suppliers that account for 87.6 percent based on CO<sub>2</sub> emissions of procured tire raw materials through the CDP Supply Chain Program.

Approximately 71 percent of requested suppliers responded (CDP Climate questionnaire response rate was 53 percent) and 28 percent of responded suppliers received at least a B- rating (Management level) from CDP. **The Bridgestone Group also encourages suppliers to reduce their CO<sub>2</sub> emissions and self-report their environmental data through CDP.**

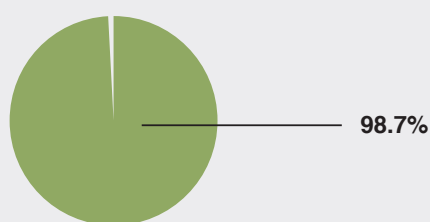
The Bridgestone Group's CO<sub>2</sub> emissions are verified by Lloyd's Register Quality Assurance, a third-party institution, to ensure the accuracy and transparency of this information.

**More information on the Bridgestone Group's commitment to Environment is available [online](#).**

**ISO 14001 certification demonstrates environmental commitment**

The Bridgestone Group requires all manufacturing locations with 50 employees or more (156 locations) to achieve ISO 14001 environmental management certification. Achieving this certification shows that operations are continuously working to minimize their impacts on the environment and comply with applicable environmental laws and regulations. At the end of 2018, 154 manufacturing locations (98.7%) were ISO 14001 certified.

**ISO 14001 Certified<sup>1, 4</sup>**



**Bridgestone Tower achieves LEED certification**

In 2018, the Bridgestone Americas headquarters tower in downtown Nashville, Tennessee, U.S. achieved Leadership in Energy and Environmental Design (LEED®) Gold certification from the U.S. Green Building Council. Many products used in the 48,588 square-meter, 31-story building helped secure the LEED certification. The roof system was manufactured by Firestone Building Products. Having all employees in one building also facilitates new ways of working, encourages collaboration and creates a more inclusive culture. This work was recognized with a Bridgestone Group Award in early 2019.



<sup>1</sup> As of December 31, 2018.

<sup>4</sup> 156 sites are targeted for ISO 14001 certification/154 sites are certified (98.7%).