

Bridgestone Group  
Environmental Report

2013

—Toward a sustainable society—



**Bridgestone Corporation**

Strategic Environmental Planning Department  
3-1-1, Ogawahigashi-cho, Kodaira-shi, Tokyo, 187-8531, Japan

For more information, please visit our website.

<http://www.bridgestone.com/responsibilities/environment/>

**One Team,  One Planet.**

# About this report

## Editorial Policy

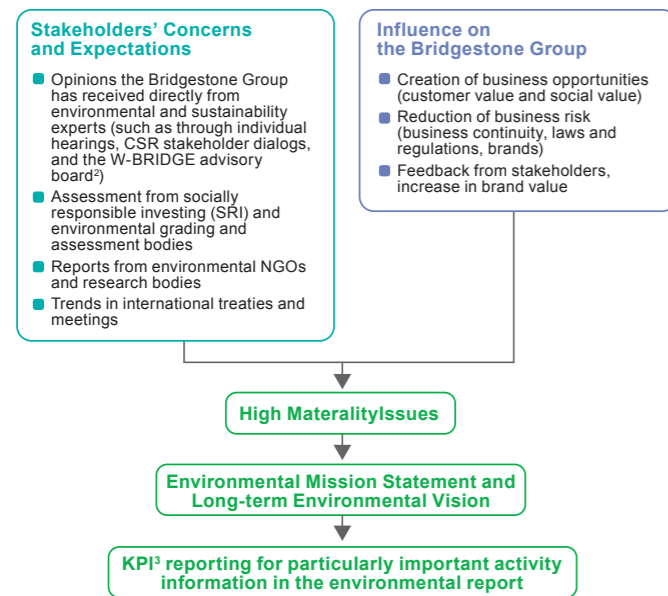
Bridgestone produced its first environmental report in 2000, disclosing information about its environmental activities. Since 2007<sup>1</sup> the Bridgestone Group has prepared annual reports annually giving details of activities for each region. To reach all of our global stakeholders and convey the Bridgestone Group way of thinking as well as its activities in an easy-to-understand form we have focused on presenting the most essential information in both Japanese and English. The Bridgestone Group also communicates to its stakeholders in regions including Japan, the United States, Europe, and China through detailed disclosure of information in environmental reports and on web sites.

1: In 2007, information about activities was given in a social and environmental report, while in 2009 it was part of a CSR report. Since 2010 we have produced separate CSR reports and environmental reports, disclosing greater detail about environmental activities in the environmental report.

## Materiality

Biodiversity, sustainable use of resources, and climate change are high priority environmental issues for the Bridgestone Group in its commercial activities. In order for the group to meet the challenge of these issues as one body, in 2011 we refined our Environmental Mission Statement, making the goal of our activities clear. In 2012, we also drew up our Long-term Environmental Vision, looking ahead to the year 2050, to promote concrete action.

### Materiality and the Environmental Report



2: A joint research project between Bridgestone and Waseda University  
3: Key Performance Indicator

## Period

In principle, this report covers activities for fiscal 2012 (1 January, 2012 to 31 December, 2012), but some of the information covers activities up to April 2013.

## Scope of the Report

This report presents information about Bridgestone Group activities including domestic and international subsidiaries and affiliated companies of the Bridgestone Corporation. To distinguish between the two, "Bridgestone" refers to the Bridgestone Corporation, while the "Bridgestone Group" is the group, including domestic and international subsidiaries and affiliated companies.

## Prepared with Reference to:

- GRI (Global Reporting Initiative) 3.1
- Environmental Reporting Guideline (Japan Ministry of the Environment, 2012)

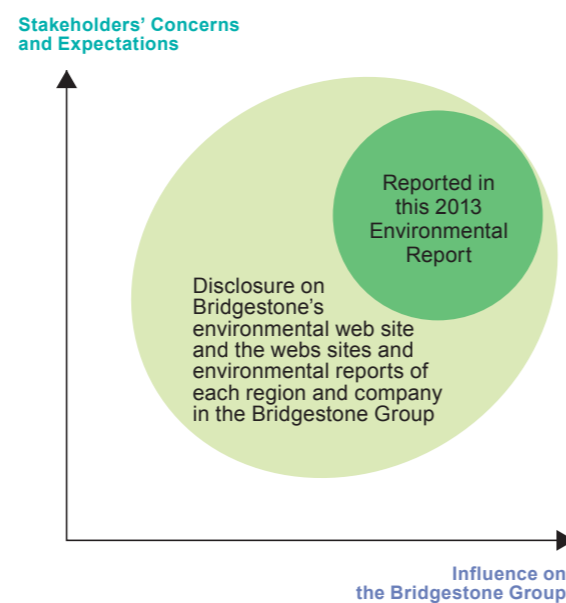
## Published

July, 2013

## Next Publication

Planned for July 2014

### Focus of the 2013 Environmental Report



# Environmental Mission Statement

The Bridgestone Group has more than 180 production and development centers in 25 countries, conducts business activities in more than 150 countries, and has more than 140,000 employees. The group's shared Environmental Mission Statement acts as a basis to keep employees from a wide range of backgrounds, who work each day at the company, working together toward established environmental goals. Setting as our mission our unchanging vision from the mission statement that we aim "to help ensure a healthy environment for current and future generations," we are committed to continually working toward a sustainable society with integrity, together with our stakeholders.

To ensure everyone in the Bridgestone Group is exposed to the Environmental Mission Statement, it has been translated into 18 languages and is displayed in every Bridgestone Group business. We also use various educational opportunities, such as e-learning, training programs and environmental intranets, to support employees in understanding the connection between the Environmental Mission Statement and the work they do each day.

### The Bridgestone group's Environmental Mission Statement



## Bridgestone Group Environmental Report 2013

—Toward a sustainable society—

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"Concept tire of 100% sustainable materials"

## Highlights

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Top Commitment

# To steadily implement activities which will support the achievement of our long-term environmental vision—2050 and beyond



**Masaaki Tsuya**  
CEO and Representative Board member



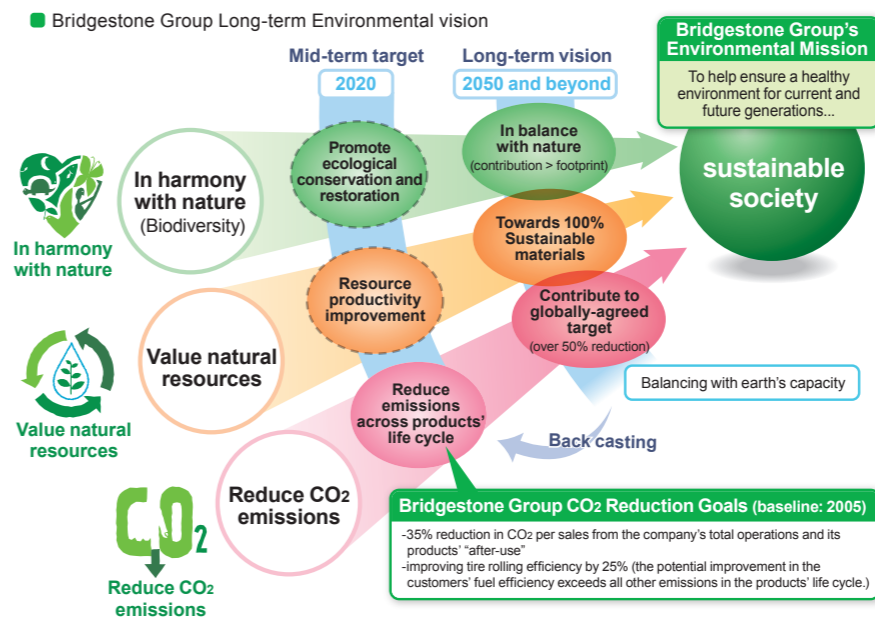
We are implementing activities that focus on the objective of “in balance with nature” from two perspectives: “minimizing impact” on biodiversity and “maximizing contribution” to biodiversity. In regard to “minimizing impact,” initiatives to reduce environmental impact on air and water, are also important from the perspective of living in harmony with nature. We have worked to foster an understanding of the importance of these initiatives throughout the Group, and our goal is to ensure that each employee maintains a high level of environmental awareness in daily business activities. In the area of “maximizing contribution,” our activities include providing support to the farms where we produce natural rubber—an indispensable raw material for tires—in order that they be more productive as well as positively contribute to the ecosystem. We also believe in supporting conservation initiatives in Bridgestone plant and facility locations in cooperation with local communities.

As for “100% sustainable materials,” we think it especially important to make effective and sustainable use of limited natural resources. Based on this concept, we will implement strategic efforts using a comprehensive approach that

includes reducing the use of raw materials, creating technologies and systems for recycling resources, and expanding and diversifying renewable resources. In 2012, we made great progress in developing technologies in support of this initiative. For example, we introduced the “Concept Tire of 100% Sustainable Material” at the Paris Motor Show 2012.

## Making steady progress with activities to realize a low-carbon society

In connection with the global target to reduce greenhouse gases 50% by 2050, Bridgestone locations worldwide, including our sites in both developed nations and emerging economies, will participate in efforts to help reduce CO<sub>2</sub> emissions on a Group Global basis. Looking at CO<sub>2</sub> emissions over the entire life cycle of a tire, the period during which the tire is in use accounts for the largest share, about 90% of the total emissions. The Group believes that it is important to find ways to reduce CO<sub>2</sub> emissions not only through improvements in the manufacturing process but also through reduced rolling resistance when the customer is using the tire. Consistent



### Striving to create a balance and harmony between our business and the environment as the world's largest tire and rubber company

In June 2012, the United Nations Conference on Sustainable Development—Rio + 20—was held in Rio De Janeiro, Brazil. To foster progress toward the common worldwide goal of sustainable development, the conference confirmed the importance of green economy, that is, the achievement of a balance between the economy and the environment. The Bridgestone Group also reached a turning point in 2012. With a focus on 2050, we formulated our “long-term environmental vision” and began to implement specific initiatives targeting the achievement of those goals. The formulation of our objectives was based on the approach of decoupling, in which economic growth and environmental impact are separated (please refer to pages 5 and 6). This approach was proposed in the United Nations Environmental Programme (UNEP). Currently, tires and other automotive-related products and services account for more than 80% of the Bridgestone Group's sales. The number of automobiles in use around the world is expected to increase in the years ahead. As the world's largest tire and rubber company, our approach will be to reduce the environmental impact of our operations even as we continue to grow our business. On that basis, we have begun to implement a variety of initiatives targeting “a balance between our business and the environment.”

### Long-term environmental vision targeting 2050 and beyond, and mid-term targets for 2020 to support progress toward that visions

Our long-term environmental vision is to fully develop and implement business operations that will contribute to building a sustainable society, in balance with the planet's ecological capacity, throughout the Bridgestone Group's business and product lifecycles. We have identified three objectives that will help us achieve this ultimate goal: “In balance with nature”<sup>1</sup>, “Towards 100% sustainable materials”<sup>2</sup>, and “Contribute to globally agreed target for reduced emissions”<sup>3</sup> (reducing CO<sub>2</sub> emissions by 50% or more).<sup>4</sup>

<sup>1</sup> “In balance with nature” is our commitment to contribute to biodiversity through habitat enhancement, and through environmental education and research. Our business operations will take into account impacts on the ecosystem as a whole.

<sup>2</sup> The Bridgestone Group defines sustainable materials as “resources other than those that are expected to ultimately become exhausted if we continue to consume them, as in the case of fossil fuels.” We are committed to continually enhancing natural resource conservation through operational and product design improvements.

<sup>3</sup> At the G8 Hokkaido Toyako Summit (held in July 2008) the G8 leaders agreed on a reduction of at least 50% in greenhouse gas emissions worldwide by 2050. The same year, at the Major Economies Meeting On Energy Security and Climate Change, the developed countries plus certain emerging nations such as China, India, etc, adopted this target as a shared global objective.

with this approach, we have developed our CO<sub>2</sub> targets for 2020 through a “back casting”<sup>4</sup> method, based on our 2050 goal. We are also using a system of “carbon management” to tackle reduced CO<sub>2</sub> emissions. This approach is steadily producing results, with a CO<sub>2</sub> reduction of about 18% per unit of sales in manufacturing, and a decrease of about 7% in rolling resistance in tires, in 2012 compared to 2005.

<sup>4</sup> A planning method whereby the desired state at a future time is assumed, and the actions needed to meet the future targets are planned and executed by working backwards from that future time to the present.

### Aiming for “Dan Totsu,” in environmental activities as well as business activities, through technology and business model innovation

To achieve our long-term environmental targets for 2050, we must do more than simply continue our current activities; we must tackle issues from new perspectives. The Group's operations extend from the upstream region of the supply chain—in-house raw material production bases—to downstream, where it operates networks of retail sales and service bases (vertical expansion). The Group also has R&D, manufacturing, and wholesale bases around the world (horizontal expansion). We will continue to develop this vertical and horizontal approach to our business, which is one of the Group's strengths; advance “technical innovation” and

“business model innovation;” and create innovative new technologies, products, and services that address both our customers' needs and our commitment to the environment. In this way, we will make steady progress toward the realization of a balance between our business and the environment and the achievement of our long-term 2050 environmental targets.

In order to achieve concrete progress in our activities, we have incorporated our 2020 targets into the company's mid-term management plan; as noted earlier, these 2020 targets have been developed through a “back casting” approach based on our long-term environmental vision. We will review our results each year as we carefully manage our progress toward these goals. We are already seeing the positive impact of this approach as it relates to our CO<sub>2</sub> reduction initiatives. Moving forward, we will strive to achieve similar progress toward our other targets. Also, in the future we will continue to actively communicate with our stakeholders regarding our environmental vision and the results of our activities, and we welcome feedback from them. In this way, we will endeavor to achieve further improvements. The Bridgestone Group is committed to supporting the many communities around the world around the world in which it has operations, and moving forward the Group's 140,000 employees will apply the principle of “Dan-Totsu”—absolute and clear leadership—to its environmental activities and will work to foster the realization of a sustainable society.

# Long-term Environmental Vision

## Groupwide Activity Looking Ahead to 2050 and Setting Firm Goals

We have prepared mid-term targets and positioning to meet goals looking ahead to 2050 while working to build a sustainable society. With the increased demand accompanying population increase and improved lifestyles, the world will face significant problems in climate change and resource consumption. As the world's leading tire and rubber company the Bridgestone Group aims to contribute to the realization of a sustainable society by balancing our operations with the earth's capacity, maintaining harmony with nature while meeting the various needs of the market.



**2012 Highlights** ▶ P. 11-14

- Research into and support of more efficient natural rubber production
- Regional ecosystem protection
- Reduction of production bases' environmental impact

Supporting increased productivity of natural rubber

Protecting wildlife habitats

**Key Activities**

- Reduction of negative impact on biodiversity
- Increased contribution to biodiversity

**Long-term Vision for 2050 and Beyond**

**In balance with nature<sup>1</sup>**  
(contribution > footprint)

1: "In balance with nature" is our commitment to contribute to biodiversity through habitat enhancement, and through environmental education and research. Our business operations will take into account impacts on the ecosystem as a whole.

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**2012 Highlights** ▶ P. 15-18

- Concept tire of 100% sustainable materials
- Water management initiatives

Expansion and diversification of natural rubber resources with guayule

Retread tires contributing to resource productivity

**Key Activities**

- Resource productivity improvement
- Development of technologies and business practices that encourage the recycling of raw materials and utilization of renewable resources
- Reduction of water consumption in manufacturing process and increased recycling of water

**Long-term Vision for 2050 and Beyond**

**Towards 100% sustainable materials<sup>2</sup>**

2: The Bridgestone Group defines sustainable materials as "resources other than those that are expected to ultimately become exhausted if we continue to consume them, as in the case of fossil fuels."

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**2012 Highlights** ▶ P. 19-22

- 17.9% reduction of CO<sub>2</sub> emissions in the product's life cycle (compared with 2005, emissions per sales)
- 7% improvement in tire rolling efficiency (compared with 2005)

Using renewable energy in the workplace

Developing and selling fuel efficient tires

**Year 2020 Objectives**

- 35% reduction of CO<sub>2</sub> emissions in the product's life cycle (compared with 2005, emissions per sales)
- 25% improvement in tire rolling efficiency, contributing to a reduction in CO<sub>2</sub> emissions greater than the CO<sub>2</sub> emissions related to Bridgestone Group's operations and its products' after use (compared with 2005)

**Long-term Vision for 2050 and Beyond**

**Contribute to globally-agreed target<sup>3</sup>**  
(over 50% reduction of CO<sub>2</sub> emissions)

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

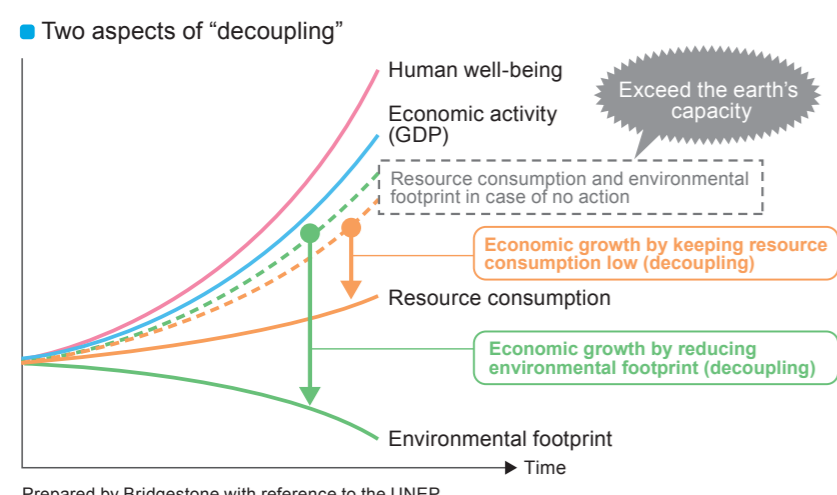
**Sustainable Society**

The Bridgestone group's Environmental Mission Statement

To help ensure a healthy environment for current and future generations...

▶ P. 2

## The Importance of "Decoupling" in Working Toward a Sustainable Society



"Decoupling" is a key concept in our Long-term Environmental Vision. The total number of automobiles worldwide is expected to increase with the global population and economic development in emerging nations. As a result, resource consumption will increase and the environmental footprint will become greater. There is a possibility of exceeding the earth's capacity, through global warming or resource depletion. To work toward a sustainable society, we shouldn't simply accept that resource consumption and environmental footprint come alongside population increase and economic development, but work to separate them. The United Nations Environment Programme (UNEP) calls this separation "decoupling."

**Population: 9 billion<sup>4</sup>**  
(7 billion in 2011)

**Number of automobiles: 2.3 billion<sup>5</sup>**  
(900 million in 2010)

**CO<sub>2</sub> emissions: 57 Gt<sup>6</sup>**  
(28Gt in 2008)

4: OECD Environmental Outlook 2050 (OECD, 2012)  
5: Effects of reduced CO<sub>2</sub> emissions in the automobile sector (The Institute of Energy Economics, Japan, 2010)  
6: Energy Technology Perspectives 2010 (IEA, 2010), RITE Sekai no CO<sub>2</sub>/GHG haisyutsu mitooshi 2011 ni tsuite (RITE, 2011)

Focus Interview

**Bridgestone's Vision of a Sustainable Society**

# Concept tire of 100% sustainable materials

In September 2012, at the Paris Motor Show Bridgestone unveiled its concept tire made from 100% sustainable materials. The development of our concept tire could be considered a response to one of the three central concepts of our Long-term Environmental Vision: "Value natural resources." To find out more about this tire and the thinking behind it, Professor Hideki Ishida of Tohoku University spoke to Bridgestone employees.



Navigator

**Hideki Ishida**

Professor  
Tohoku University Graduate School of Environmental Studies



**Akiko Hayashi**

Bridgestone Corporation  
eco-Innovative Planning Unit  
Strategic Environment Planning Department



**Yoichi Ozawa**

Bridgestone Corporation  
Fellow (General Manager)  
Tire Materials Development Division I and Central Research



*It's an amazing challenge that you set for yourselves, roadmap from where you wanted to go.*

*We want to share this tire with everyone as a symbol of our thought and determination.*



\*Titles and job details were correct at the time of the conversation (November 2012)

**An embodiment of the balance between business and the environment: the concept tire of 100% sustainable materials.**

**Hayashi** In Bridgestone's Environmental Mission Statement, three environmental goals have been adopted as we work towards a sustainable society. These are to be in harmony with nature, to value natural resources, and to reduce CO<sub>2</sub> emissions. To make these into realizable targets, in April 2012 we set a Long-Term Environmental Vision for 2050 and beyond. As a goal for valuing natural resources, we are aiming towards 100% use of sustainable materials<sup>1</sup>, and this concept tire is a visible embodiment of the Bridgestone approach.

**Ozawa** We consider sustainable materials to be materials 1) that come from resources with a guaranteed continual supply, 2) that can be used as part of our business over the long-term, and 3) that have an extremely low environmental impact over their whole life cycle. Products made from these kinds of material are considered 100% sustainable. Because of this, we didn't present the new concept tire thinking only "we've made a new kind of tire." Instead, it has the great significance for us of a new way of thinking about resource recycling, roadmap from our Long-Term Environmental Vision for 2050 and beyond, as well as presenting a new way of business that helps the move toward a sustainable society.

**Ishida** Setting long-term goals for 2050 is a challenge in itself, but balancing business and environmental concerns in those goals requires considerable courage. When did you start working on developing the technology?

**Ozawa** We have been working on resource recycling technology for a long time, but the preliminary research for our current activity began about 10 years ago. We started to see a steep rise in the cost of raw materials and instability in supply as well as structural changes related to those phenomena. What's more, to increase the interchangeability of petroleum-based synthetic rubber with natural rubber, we would have had to expand our number of rubber farms using the Para rubber tree. This would have led to over-concentration in Southeast Asia where more than 90% of Para rubber trees are grown. From a perspective of preserving biodiversity and to help ensure a stable supply of resources, we started to think about how to diversify and to ease the over-concentration of our production areas. This way of thinking was a factor in our current work.

1: The term "sustainable materials" as used by the Bridgestone Group is defined as materials other than those materials, including fossil resources, expected to be exhausted if consumption continues.

2: Effects of reduced CO<sub>2</sub> emissions in the automobile sector (The Institute of Energy Economics, Japan, 2010)

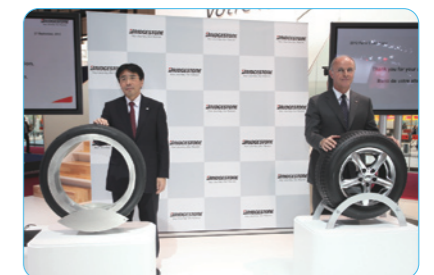
**Technology for resource recycling mass-production**

**Ishida** Can you tell me in detail how this tire puts resource recycling into practice?

**Ozawa** As the number of automobiles worldwide is expected to approximately double between now and 2050 to over 2 billion<sup>2</sup>, recycling is essential to tire production. On the other hand, as about half of tires are made of organic polymers, until now it has been difficult to recycle them. The reason for this is that when the polymer chains are broken in the recycling process they need to be joined together again, and this requires a great deal of energy in the form of heat and pressure. While considering this, we thought that if we could harness the ability of plants to efficiently use the energy from sunlight in forming organic matter – in the process of photosynthesis – then a closer approach to the ideal of resource recycling would be theoretically possible. However, as demand for tires increases, relying solely on plants will accelerate future supply problems for natural rubber, so this is not sustainable in terms of either business or supply. Accordingly, we started working on developing technologies to diversify and expand our natural rubber supply sources.

This concept tire uses the guayule plant as a new resource instead of the Para rubber tree which is currently effectively the only source of natural rubber. Guayule is a shrub indigenous to arid regions in the United States and Mexico, and it contains natural rubber in its bark and roots. We also produced carbon black, which is essential for strengthening rubber, from plant resources and we produced synthetic rubber, another important material, from bioethanol. For fiber reinforcement, necessary for strengthening the tire, we used a new kind of cellulose fiber that we developed ourselves.

**Ishida** The idea to make use of photosynthesis is very interesting. While tires have previously been based on petroleum, an underground resource, this new tire is made of resources from above ground – you could say it was nurtured by the sun. In any case, it's moved beyond the traditional tire concept.



Unveiling at the Paris Motor Show

**Ozawa** I think the reason we could put this into practice is the vertically integrated structure at the Bridgestone Group from the production of raw materials at one end of the process to sales at the other. Tires are constructed from more different parts than you would imagine. This concept tire was made as the culmination of steady progress in technological development of many of those parts from before we started looking ahead to the future. To use the technology practically we will have to continue to cooperate closely with our suppliers. For example, we will need to work to improve the breeding of guayule to improve its productivity so that it can support ordinary farmers as an agricultural business. For that reason, I think we will need to strengthen our unified approach with our partners more and more in the future.



Guayule

### Toward 100% Sustainable Materials

**Ishida** Are you making progress in other areas of tire production apart from expansion and diversification of renewable resources?

**Hayashi** We are making progress in reducing raw material consumption as well as recycling resources and using them efficiently. The half-weight tire exemplifies our efforts to reduce raw material consumption. We are developing technology to allow for a reduction of about half in the use of raw material while achieving the same level of quality or greater. Also, our run flat tires make it possible to safely travel a certain distance at a reasonable speed even with a puncture, meaning a spare tire isn't needed. This reduces the use of materials, while losing the weight of spare tires also makes cars lighter and more fuel-efficient.

Looking at the efficient use of resources a good example is retread tires where worn-down tires have their treads removed and replaced with fresh treads so they can be used again. We are currently doing business using retread technology for truck, bus, and aircraft tires.

Also, the airless tire, which has a unique structure of spokes so air isn't needed, is a new environmental tire technology. As these tires don't use air to keep their shape, there is no need to worry about a puncture, and the spokes are made of a recyclable resin. We aim to make the tires commercially viable in the near future.

Air-free Concept Tire



**Ishida** Preparing quantitative measures to track progress and degree of completion makes it easy for consumers to understand Bridgestone's activities. If we can precisely determine a tire company's environmental footprint and contributions, it may be possible to devise new standards for evaluation.

**Ozawa** I think it's important to consider social and economic aspects such as the development of new resource and material industries as well as environmental aspects when thinking about sustainable materials. At present, in Japan automobile tires are judged under the industry's voluntary standards on their fuel efficiency and wet grip. However, it might be a good idea if we could convey to the public how much tires contribute to the environment and society through a "sustainability indicator" or something similar.

**Ishida** Guayule, which was mentioned earlier, is indigenous to the new growth area that spreads from the south of North America to Central America rather than tropical rainforests. If guayule production is commercialized and also creates jobs, that will be wonderful.

### A passion for challenges in the DNA

**Ishida** I imagine you need an incredible amount of hard work to make progress in this kind of project, but how have you reached this stage?

**Ozawa** Bridgestone has always had a great passion for challenges. The tougher the goal, the more we want to reach it. We've overcome a series of problems by challenging ourselves again and again, such as through research into synthetic rubber production in the 1940s, establishment of domestic synthetic rubber technology in Japan for the first time in the 1960s, development of studless tires because of the roadway particle problems caused by studded tires, and our involvement in Formula 1. The creation of this concept tire is a good example of teamwork between less experienced, passionate young employees and highly experienced employees. If you say something is "100%" it has to be 100%. Because you need results from

the research projects for each individual part, all of the teams bear a heavy responsibility. In this case, all of the teams were highly successful. As well as this, many employees were involved in the realization of this project worldwide, taking charge of different aspects of the project including the environment, technology and publicity.

**Ishida** It's truly wonderful to have that passion for challenges in the Bridgestone DNA.

**Hayashi** While we aim for a balance between business

and the environment, we'd like to share our thinking on environmental activities and sustainable resources with our customers. We believe we have that responsibility.

**Ishida** I think the world will be very excited to hear about what Bridgestone is doing, and I look forward to your next challenge.



Navigator

**Hideki Ishida**

Professor  
Tohoku University Graduate School of Environmental Studies

### Final Word

Manufacturing that considers the planet and manufacturing that considers people are the two key elements in being sustainable. It's easy to forget when we talk about the environment, but the value of companies is in improving people's lives. Products are built for people, not the planet. Bridgestone's goal of 100% sustainable materials targets meeting people's needs as our products have always done, while at the same time achieving the rare precedent of contributing to the development of the recyclable society through use of sustainable resources. We're pursuing our environmental strategy with this in mind as we look ahead to 2050.

Born in 1953. Worked at INAX Corporation (now LIXIL) before starting present position in 2004. Extensively promotes a paradigm shift in manufacturing, in Japan and abroad. Has advocated "nature technology", a new kind of manufacturing that intelligently applies the power of nature, since 2004. Also deeply involved with environmental education for the general public and children.

*At Bridgestone the tougher the goal the more we want to reach it.*

*Give the world more to be excited about as we look ahead to 2050.*



# In Harmony with Nature

In order to help establish a more sustainable society, the Bridgestone Group is committed to being "in harmony with nature." To facilitate its efforts in this area, the Group has defined the goal of being "in balance with nature" as the long-term vision for 2050 and beyond set forth in its long-term environmental vision. This goal was established in accordance with the ideals embodied in the Aichi Biodiversity Targets, which were formulated at the tenth meeting of the Conference of the Parties (COP 10) held in 2010. To accomplish this goal, we will maintain a constant understanding of the relationship between our business and biodiversity, based on which we will define the priority areas that we must address. Biodiversity preservation activities will then be conducted in these areas.



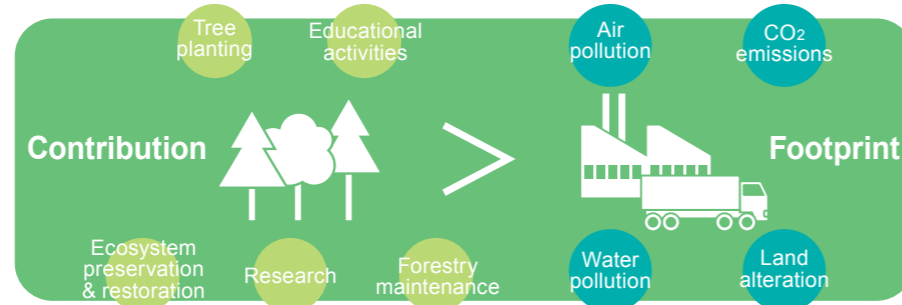
In harmony with nature

## Target

Long-Term Vision

In balance with nature  
(Contribution > Footprint)

## Activity Concept



\* "In balance with nature" is our commitment to contribute to biodiversity through habitat enhancement, and through environmental education and research. Our business operations will take into account impacts on the ecosystem as a whole.

## Bridgestone's Concept of Being in Balance with Nature

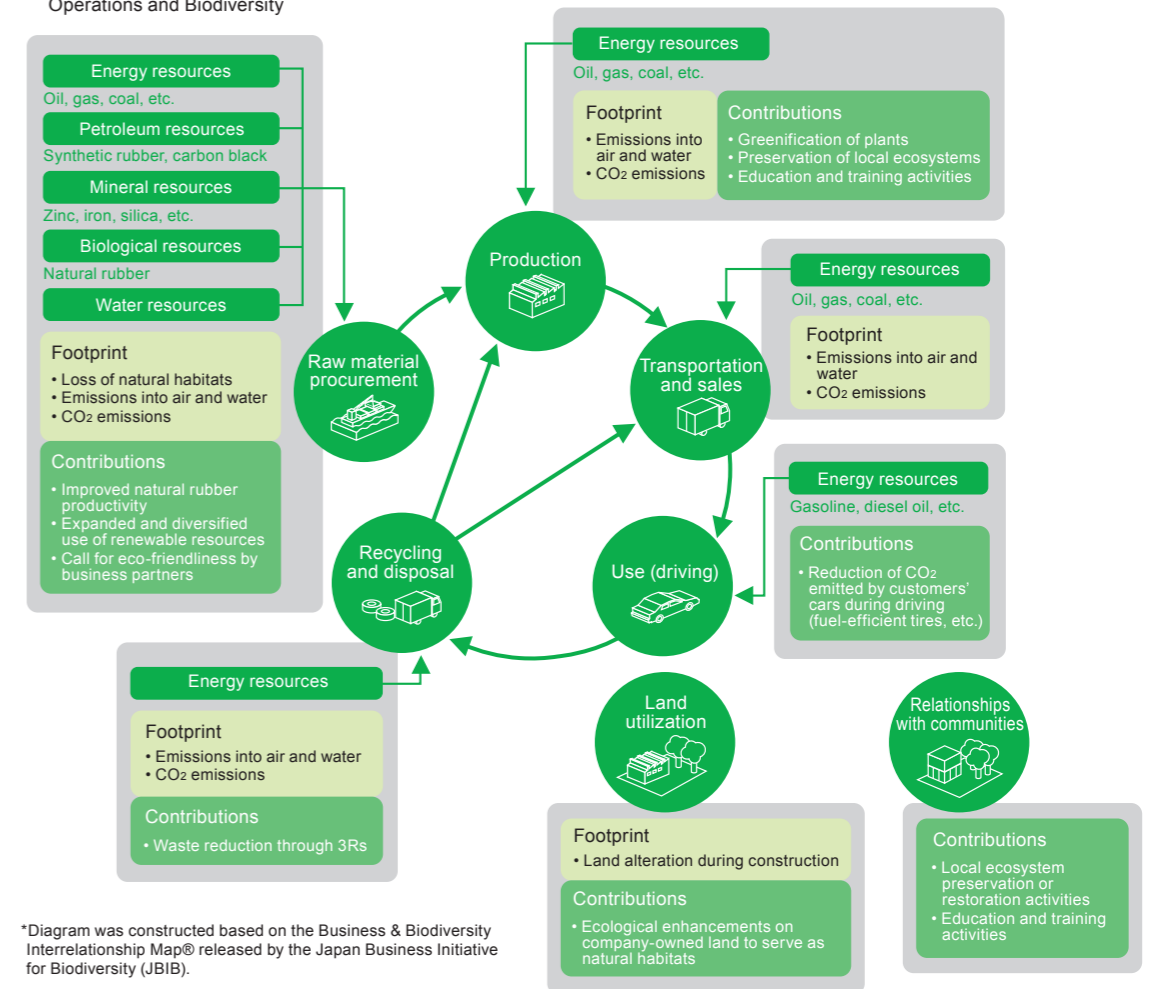
To contribute to the development of a sustainable society that is in harmony with nature, the Bridgestone Group has defined in its long-term environmental vision the goal of being "in balance with nature" to guide it in implementing biodiversity preservation initiatives targeting the realization of such a society. When Bridgestone speaks of being "in balance with nature," it is referring to the process of minimizing the impacts of its operations on the biodiversity and then compensating for these impacts by conducting activities that contribute to the preservation of biodiversity, and thereby prevent the loss of ecosystems. The balance we seek will be achieved when the extent of the Bridgestone Group's contributions to biodiversity preservation or restoration exceeds the degree of the combined impact of all of the Group's activities (including the provision of products and services, manufacturing, and social contribution activities). Activities targeting such a balance are being conducted throughout all business areas.

ECOPIA's Forest Yokohama

## Relationship Between the Bridgestone Group's Operations and Biodiversity

In order to accomplish the long-term vision of being "in balance with nature" defined in the Bridgestone Group's long-term environmental vision, we are actively working to establish a quantitative understanding of the relationship between the Group's operations and biodiversity. Based on the findings of such efforts, we have been advancing activities geared toward minimizing our footprint on ecosystems and maximizing our contribution to biodiversity preservation. Further, in 2011, we began investigating our products to determine the impact of Bridgestone's lineup on biodiversity.

### Relationship Between the Bridgestone Group's Operations and Biodiversity



\*Diagram was constructed based on the Business & Biodiversity Interrelationship Map® released by the Japan Business Initiative for Biodiversity (JBIB).

## Column

### Biodiversity Preservation Initiatives in Product Development

Bridgestone aims to contribute to biodiversity preservation during the product development phase and has therefore established a category for biodiversity initiatives in product development evaluation procedures. We are working to reduce or eliminate the usage of lead and other substances that are harmful to the environment in our products while also cutting back on usage of volatile organic compounds (VOCs) in our manufacturing processes.



Lead-free seismic isolation rubber bearing

### Biodiversity Preservation Initiatives in Procurement

In its CSR Procurement Guideline, the Bridgestone communicates its desire for suppliers to reduce the impact of their products on biodiversity throughout the entire lifespan of these products. Further, this document provides guidelines for appropriately managing chemicals; minimizing the environmental impacts of waste water, sludge, and exhaust; and reducing greenhouse gas emissions, measures that Bridgestone has continued to conduct together with its suppliers. In addition, Bridgestone has formulated a list of chemical substances that are forbidden from inclusion in its products to supplement these guidelines, and utilizes this list to ensure that products procured by the Bridgestone Group do not contain these substances. In this manner, we have established a system for managing the use of chemicals together with suppliers.

Examples of Initiatives

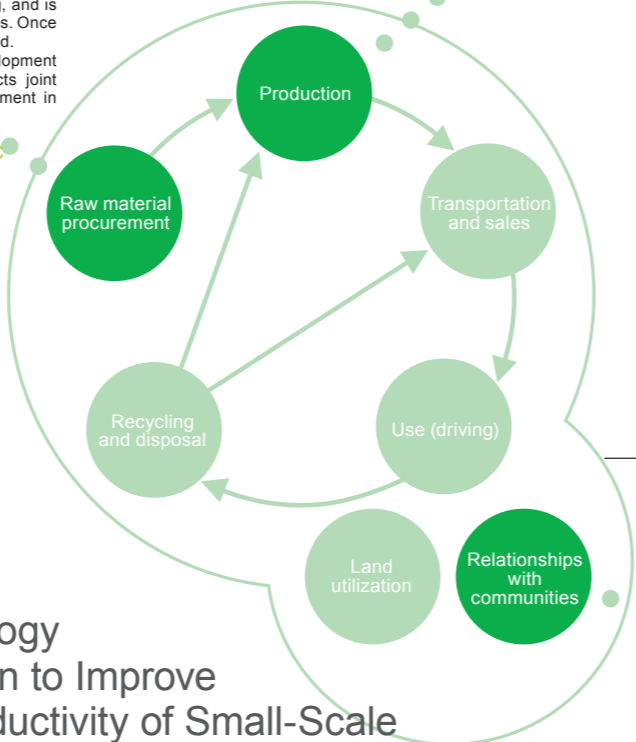
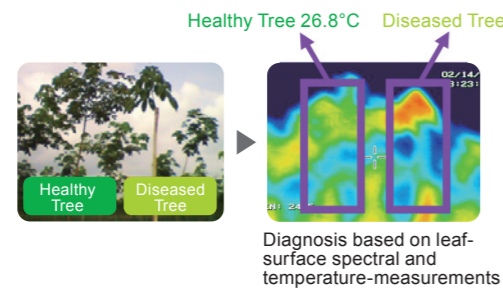
Approach for Raw Material Procurement

### Diagnostic Technology for Para Rubber Trees that Prevents Declines in Productivity

Bridgestone Corporation / NEDO | Japan / Indonesia

Tire demand is expected to continue to grow going forward. For this reason, as well as from the perspective of biodiversity, it is important that we work to prevent declines in production volumes of natural rubber, an indispensable natural resource in producing tires. The most common source of natural rubber is the Para rubber tree (*Hevea brasiliensis*). This tree is currently suffering from the spread of white root disease<sup>1</sup> in Indonesia and accurate diagnosis is essential in reducing the damages caused by this disease. In 2012, through a NEDO research collaboration project<sup>2</sup>, Bridgestone successfully developed a technology that diagnoses diseases in Para rubber tree based on scientific methodology. Going forward, we will strengthen collaboration with universities in Indonesia and Japan to promote the standardization of this technology while developing others.

1: White root disease (*Rigidoporus microporus*) is a filamentous bacterium disease that infects *Hevea brasiliensis*. It infects roots, killing trees through rotting, and is difficult to detect in its early stages. There are no radically effective remedies. Once onset, chemical treatments are applied after diseased sections are removed.  
2: A project operated by New Energy and Industrial Technology Development Organization (NEDO, an independent administrative agency, it conducts joint research on technology for resolving issues with technological development in developing countries.



Approach for Initiatives at Production Sites and in Surrounding Areas

### Habitat Reconstruction Activities at Site of New Plant

BSAM | U.S.

Bridgestone's new Aiken Off Road Radial Plant is being constructed in Aiken County, South Carolina. Scheduled to be completed and commence operations in 2014, this plant will produce large and ultra-large off-the-road radial tires for construction and mining vehicles. Bridgestone is taking steps to reconstruct the natural habitats present at this site by planting species of vegetation that are indigenous to the site. Among these is the Longleaf Pine (*Pinus palustris*), a species of tree that is important to the lifecycles of various wildlife and other organisms. In the southern United States, humans have continued to encroach upon the habitat of this tree over the past 150 years. Aiming to restore this precious tree, Bridgestone Americas, Inc. (BSAM), has been planting Longleaf Pine trees under the guidance of the Wildlife Habitat Council, and its plan is to plant 30,000 trees. BSAM plans to use the site at which these trees are being planted to conduct educational activities directed toward employees and members of the surrounding community.



Employees planting Longleaf Pine trees

### Minimization of Environmental Footprint at Plants

Bridgestone Corporation | Worldwide

To minimize the impacts on the atmosphere and water habitats of all of its plants across the globe, the Bridgestone Group has developed a unique environmental management system based on ISO 14001, an international standard for such systems. As the Group develops its various business operations around the world, it is also participating in environmental preservation activities spearheaded by local organizations in regions it operates in. Going forward, we will work to further enhance our system for regulating such environmental preservation measures by improving employee education systems and establishing tools for quantifying the effects of our efforts in this area. Through these efforts, we will work to reduce the environmental footprint of the entire Bridgestone Group.



Participants at a workshop held in Europe

### Social Forestry Support Activities

BSKP/W-BRIDGE | Indonesia

In 2012, a joint social forestry project began in South Kalimantan, Indonesia, between Waseda University, P.T. Bridgestone Kalimantan Plantation (BSKP), Lambung Mangkurat University's Faculty of Forestry, the Japan International Forestry Promotion and Cooperation Center (JIFPRO), and the forestry department of Tanah Laut Regency. Bridgestone is participating in this project as part of the support activities conducted by the W-BRIDGE joint industry-academia project with Waseda University. The goal of the project is to transform grassland into forests. By planting Para rubber trees and various other species of trees, the project aims to turn these areas into social forests that have significant economic value for the surrounding communities. It is anticipated that the economic value of these forests will encourage communities to continue caring from them over the long term. BSKP is supporting this project in a variety of ways, including providing technical assistant and trainers for farmers. It has also donated a total of 5,500 Para rubber tree saplings.



Para rubber tree planting

### Technology Provision to Improve the Productivity of Small-Scale Natural Rubber Farmers

BSRE | Indonesia

The majority of natural rubber production in the world is conducted by small-scale rubber farmers in Southeast Asia, and the Bridgestone Group uses large volumes of natural rubber produced by such farmers. However, the productivity of the rubber trees raised by these farmers is low, and the quality and volume of natural rubber produced varies, making it difficult to maintain stable harvests. To help such small-scale farmers improve the quality of their operations, P.T. Bridgestone Sumatra Rubber Estate (BSRE), a subsidiary that directly operates rubber farms in Indonesia, provides these farmers with the productivity improving technologies Bridgestone has developed on its own rubber farms.



BSRE employee providing rubber farmer with highly productive saplings

Approach Toward Relationships with Communities

### Support for the Cape Leopard Trust's Preservation Program

BSAF | South Africa

The Cape Leopard Trust is an organization working to preserve a species of mountain leopards endemic to the Western Cape region. The Trust also focuses on environmental education programs for children. Bridgestone South Africa (PTY) LTD. (BSAF) supports the Trust in its preservation activities and also participates in its environmental education activities targeting local elementary school students. One such effort in 2013 is the Leopard Calendar Competition. In this competition, students at local elementary schools were asked to draw pictures of the wildlife present in the Western Cape region. Superior pictures we will be chosen for inclusion in a 2014 calendar, and this competition is expected to help raise biodiversity awareness among elementary school students.

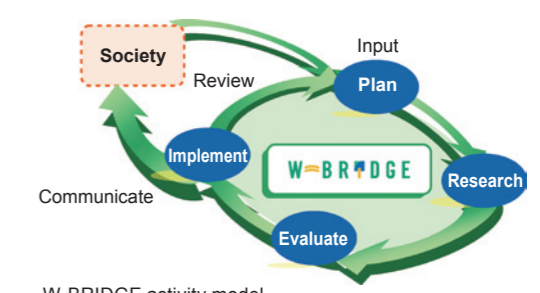


The Cape Leopard Trust's Preservation Program

### Biodiversity Preservation Activities through the W-BRIDGE Project

Bridgestone Corporation | Japan

Bridgestone has been involved in W-BRIDGE (Waseda-Bridgestone Initiative for Development of Global Environment), a joint industry-academia project with Waseda University designed to contribute to environmental conservation. With the aim of finding ways for companies to exist in harmony with the environment, the W-BRIDGE project supports various research ventures that help contribute to the preservation of biodiversity. Activities conducted under this project include research and education initiatives advanced through collaboration between university researchers and private organizations with relation to biodiversity preservation in areas surrounding rubber farms as well as projects to reconstruct natural habitats in local communities. Through such activities, the project is conducting research related to restoring natural environments and communities.



W-BRIDGE activity model



# Value Natural Resources

In its long-term environmental vision, the Bridgestone Group has declared its intent to “value resources.” For valuing natural resources, the Group has defined the long-term vision for 2050 and beyond of working “towards 100% sustainable materials,” and it is advancing initiatives to meet this goal in accordance with the Bridgestone Approach to Resource Conservation. This approach is based on the preface that the Group will use the Earth’s natural resources effectively and promote the 3Rs (reduce, reuse, and recycle). We believe that new resources employed in Bridgestone Group’s operations should be sustainable from the perspectives of the environment, business operations, and supply.



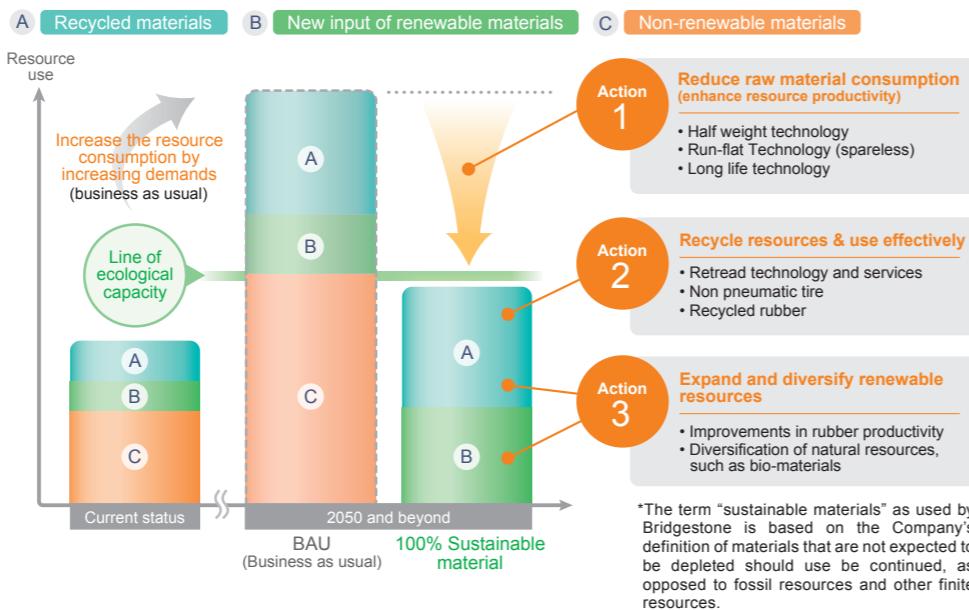
## Target

- Long-Term Vision

## Towards 100% Sustainable Materials

## Activity Concept

- Bridgestone’s Concept of Working Towards 100% Sustainable Materials



## The Bridgestone Approach to Resource Conservation

We, the Bridgestone Group, are committed to ongoing improvement to be an ever better steward of our natural resources. We continually innovate our processes, products and services to reduce, reuse or recycle raw materials, water and energy.

### Key Activities

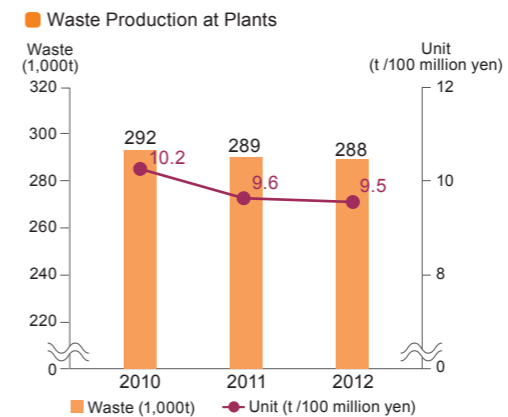
- We continually improve resource productivity, doing more with less, based on sales per raw material use.
- We promote the development of technologies and business practices that encourage the recycling of raw materials, utilization of renewable resources and conservation of finite natural resources.
- We reduce water consumption in our manufacturing processes by efficient use and recycling, while also promoting the protection and preservation of water in our global communities.

Factory where treads of used tires are replaced so they may be reused as retread tires (Bandag retread factory)

## Improvements in Manufacturing

### Waste Production at Plants: 0.5% Reduction (Compared to 2011)

At its various plants, the Bridgestone Group is working to reduce the volume of waste produced during manufacturing processes and lower the amount of defective products created through comprehensive quality management. It is also committed to recycling waste, either within the Company or at other organizations. As a result of these efforts, we were able to reduce the volume of waste produced in 2012 by 288,000 tons, representing a year-on-year reduction of 0.5% from 2011. Going forward, we will continue to reduce waste production volumes to contribute to the development of a society that actively recycles.



## Column

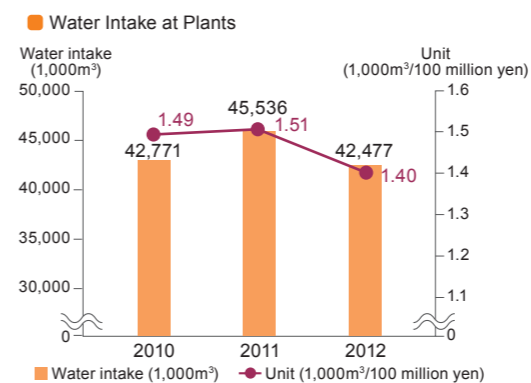
### Zero Waste to Landfill Status

The Bridgestone Group defines full zero waste to landfill status\* as having consistently eliminated the portion of industrial waste products designated for final disposal. All Bridgestone Corporation plants achieved this status in 2005. Then, in 2010, this status was achieved by the plants of all Bridgestone Group companies in Japan and four tire plants in China. We will continue to encourage plants to achieve this status in the future.

\*To achieve this status, a plant must conclude outsourcing agreements providing for the recycling of each item of industrial waste.

### Water Intake at Plants: 6.7% Reduction (Compared to 2011)

The Bridgestone Group’s approach to water management, which it considers to encompass initiatives designed to promote sustainable use of water resources in manufacturing, includes using water resources efficiently, aggressively managing wastewater, and disclosing activity results. In the process of producing tires, water is primarily used for cooling purposes or to generate steam, and both fresh water and salt water are used. In water management efforts, we are prioritizing the reduction of fresh water usage, as it is a highly usable water resource. The total volume of fresh water intake in 2012 was 42,477,000m<sup>3</sup>, 6.7% lower than in 2011.



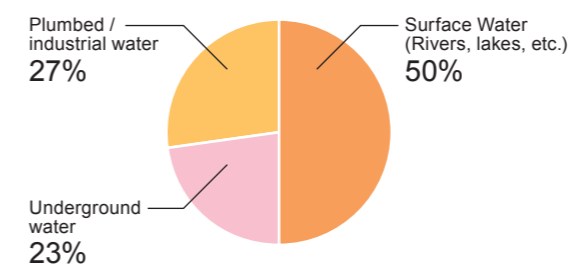
\*Figures used in graph are for fresh water intake. Total water intake volumes including salt water are as follows: 79,753,000m<sup>3</sup> (2010), 86,641,000m<sup>3</sup> (2011), and 82,145,000m<sup>3</sup> (2012)

## Column

### Water Management Initiatives

One example of Bridgestone’s water management initiatives is the introduction of cooling towers in seven tires plants located in Spain, Italy, and other European countries. These towers enable cooling water to be recycled and also contributed to improvements in manufacturing processes, realizing significant reductions in water usage. In addition, the Company plans to introduce closed water systems into two plants scheduled to be constructed in Southeast Asia (Vietnam and Thailand). These systems will allow approximately 80% of the water used in these plants to be recycled. Further, in 2013, the Company began conducting full-fledged investigations regarding the water usage situations at plants in Japan and overseas.

### Water Intake by Source (2012)



Water recycling system at Kitakyushu Plant (Japan)

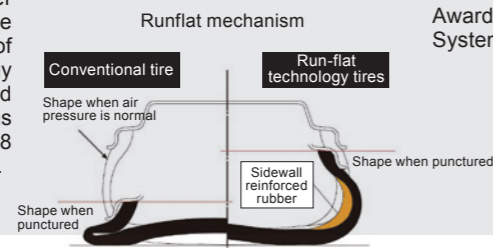
Examples of Initiatives

**Action 1** Reduce raw material consumption (enhance resource productivity)

Reduction of Spare Tire Production Through Spread of Run-flat Technology Tires

Bridgestone Corporation | Worldwide

Run-flat technology tires can operate at a set speed over a determined distance even after air pressure has been lost due to a puncture or some other cause. Not only do these tires contribute to improved safety in automobiles, they also eliminate the need for spare tires, which are often disposed of after having never been used, thereby helping reduce resource usage. In addition, eliminating spare tires makes vehicles lighter, meaning that fuel efficiency benefits can also be attributed to run-flat technology tires. In 2011, the Bridgestone Group began expanding its lineup of run-flat technology tires for the replacement market to supplement its selection of run-flat technology tires for the original equipment market. This further advanced the spread of these tires, and on December 31, 2012, the cumulative total of run-flat technology tires sold around the world was approximately 28 million as a result.



Light-Weight Vibration-Isolating Rubber Receives 2012 Award for Resource Recycling Technologies and Systems

Bridgestone Corporation | Japan

Bridgestone's light-weight, resin vibration-insulating rubber for passenger cars realizes substantial reductions in weight of over 20% when compared to vibration-insulating rubber made through traditional methods. This revolutionary rubber is a culmination of the Company's proprietary analytical technologies and the expertise it has accumulated over more than 20 years of mass production. Not only does this rubber require fewer resources to be produced, it also contributes to weight reductions in automobiles, and subsequently helps improve fuel efficiency as a result. These benefits won this product the Japan Environmental Management Association For Industry Chairman's Award in the 2012 Awards for Resource Recycling Technologies and Systems.



Award ceremony

**Action 2** Recycle resources and use effectively

Ground-Breaking Truck and Bus Tire Manufacturing Technology Utilizing Retread Technology

Bridgestone Corporation | Japan

In 2012, Bridgestone successfully developed a ground-breaking new truck and bus tire manufacturing technology that will result in both significant resource conservation and enhanced fuel efficiency. This technology, known as TRISAVER, utilizes the retread technology of Bandag, Incorporated, which was acquired by Bridgestone in 2007. Bandag's retread technology bonds together a separate and previously vulcanized casing and the tread (the rubber component of the tire that makes contact with the road). The TRISAVER technology realizes lower costs and enhanced fuel efficiency, creating value for customers, and at the same time enables resources to be used more effectively and reduces CO<sub>2</sub> emissions, thereby contributing to environmental preservation.



Structure of tire employing TRISAVER technology



Initiative to Recycle 100% of Used Products

BSAM | U.S.

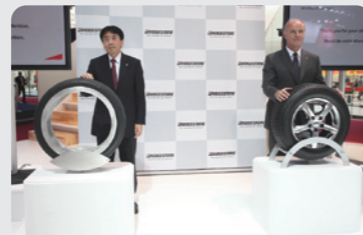
On April 22, 2012, in conjunction with Earth Day, Bridgestone Americas, Inc. (BSAM), announced its One Team, One Planet Spent Tire Initiative, a program geared toward promoting effective recycling in which the company collects one used tire for every new tire sold. All tires sold by BSAM in the United States are applicable for this program. The program has achieved exceptionally high levels of recycling while building upon the 98% rate of valuable reuse that had been achieved by BSAM's 2,200 Bridgestone Retail Operations stores nationwide before the program started. One year after the program was commenced, BSAM had successfully recycled all tires collected by directly operated stores. Through cooperation with recycling companies and other business partners, these tires were recycled as materials in making various products, in construction or engineering projects, or as fuel. As another initiative through this program, BSAM is supporting the efforts of NGOs and community members to collect tires that have been abandoned in rivers or lakes. Over the year following the start of the program, BSAM offered its support to over 80 such collection projects across the United States, helping collect and recycle approximately 25,000 use tires.

**Action 3** Expand and diversify renewable resources

Concept Tire of 100% Sustainable Materials Displayed at the 2012 Paris Motor Show

Bridgestone Corporation | Japan

Bridgestone displayed a concept tire of "100% sustainable materials" at the 2012 Paris Motor Show. The tire on exhibit represents an example of Bridgestone's use of advanced materials technologies to achieve the commitment of using "100% sustainable materials" in its tire manufacturing for 2050 and beyond. The development of the concept tire is the result of collaborative efforts between industry and academia. In order to achieve the level of "100% sustainable materials," Bridgestone is diversifying the regions where it produces natural rubber and also expanding the range of reinforced plant fibers it uses. Additionally, synthetic rubber, carbon black, and other materials generally made from finite resources were instead synthesized from renewable materials. As the next step in the process, the Bridgestone Group will establish a framework of research and development and initiate the necessary core technologies to begin mass production. Further, Bridgestone is targeting the year 2020 for commercial sales of certain sustainable materials used in the manufacturing process.



Concept tire exhibit at 2012 Paris Motor Show



Concept Tire of 100% Sustainable Materials

Main materials in the concept tire of "100% sustainable materials"

Today	Sustainable Materials		
Natural Rubber from Para Rubber Tree	Expand the range of renewable resources	Conventional Natural Rubber + Guayule	Guayule grown in arid region will diversify the source of natural rubber.
Rayon (Reinforcing Fiber)		Rayon + New Cellulosic Fiber	General grade pulp can produce the new fibers, resulting in more suppliability.
Synthetic Rubber from Petroleum	Replace fossil resources with renewable materials	Synthetic Rubber from Biomass	Butadiene from bioethanol
Rubber Materials from Petroleum		Rubber Materials from Biomass	Curing agent and anti-aging chemical from biomass
Filler from Petroleum and Coal		Filler from Biomass	Reinforcing carbon black from vegetable fats and oils

Employee Testimony

John Sheerin

(Environmental Director, Bridgestone Retail Operations, LLC.)

The goal of this program is to reduce the amount of tires disposed of as waste to zero, and thereby help protect the environment. This goal is simple, but at the same time very ambitious. Failure is not an option when it comes to ensuring the future health of our environment, and the peace of mind of future generations. And that's why we're not doing it alone. By working together with our affiliated retailers, community partners, academia, government entities, and others in our industry, we can and will find even better solutions for our products at the end of their useful lives.



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

Based on the projections of the Intergovernmental Panel on Climate Change (IPCC) and other international organizations, the Bridgestone Group has established the long-term vision goal leading up to 2050 for its efforts to reduce CO<sub>2</sub> emissions as we "contribute to the globally-agreed target (over 50% reduction)." Further, the Company has defined a clear mid-term target of reducing emissions by a certain percentage of 2005 levels by 2020. Dedicated to meeting these goals, we are advancing emissions reductions measures at operating sites across the globe.



Solar power generation facility using Bridgestone's adhesive film from photovoltaic modules

## Target

### Long-Term Vision

**Contribute to the globally-agreed target<sup>\*1</sup>**  
(over 50% reduction of CO<sub>2</sub> emissions)

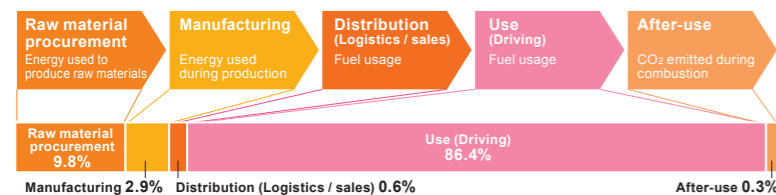
### Mid-Term Target (Improvements by 2020 Based on 2005 Levels)

- Bridgestone has established a global goal of 35% reduction in CO<sub>2</sub> per sales from the company's total operations (raw material and component procurement, manufacturing and logistics) and also its products' "after-use."
- Bridgestone is pursuing a challenging goal to improve tire rolling efficiency by 25%, resulting in less fuel use and CO<sub>2</sub> emissions from driving, while also extending the life of its tires. Bridgestone estimates that the potential reduction in CO<sub>2</sub> emissions from helping improve their customers' fuel efficiency exceeds the emissions related to Bridgestone's operations and its products' after-use.

## Approach CO<sub>2</sub> Emissions Throughout Tire Lifecycle

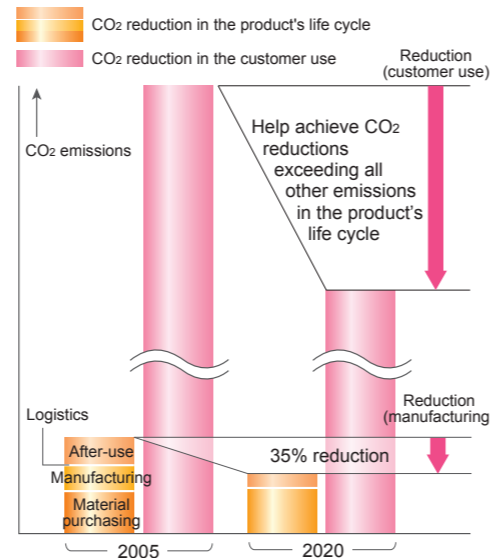
Looking at the lifecycle of tires, the stage that accounts from the largest volume of CO<sub>2</sub> emissions is usage, where approximately 90% of total emissions occur. For this reason, reducing tire rolling resistance can contribute to substantial reductions in CO<sub>2</sub> emissions. The Bridgestone Group's mid-term goal for 2020 is to reduce tire rolling resistance to a degree that realizes CO<sub>2</sub> emissions reductions exceeding the amount of CO<sub>2</sub> emitted in all other lifecycle stages. At the same time, we are working to reduce emissions in other stages of the lifecycle of tires as well.

### Greenhouse Gas Emissions by Tire Lifecycle Stage (Converted to CO<sub>2</sub> Base)



\*1 The current goal agreed upon by the G8 nations is the goal of reducing overall emissions of greenhouse gases around the world by at least 50% before 2050. This goal was approved at the G8 Hokkaido Toyako Summit held in July 2008. The goal was then designated as a shared target at the Major Economies Meeting On Energy Security and Climate Change, which was attended by representatives from developed nations as well as from nations such as China and India.

### Mid-Term Goal for Reducing CO<sub>2</sub> Emissions



\*The Company's ability to control CO<sub>2</sub> emissions from disposal is limited, but we are working to reduce emissions by making products lighter and promoting usage of retread tires. Calculation methods can be found on the Company's homepage.

Greenhouse gas emissions throughout lifecycle of 1 fuel-efficient passenger car tire (195/65R15): 243.9kgCO<sub>2</sub>e  
\*Greenhouse gas emissions from after-use stage: 13.1kgCO<sub>2</sub>e (emissions reductions: 12.5kgCO<sub>2</sub>e)  
(Source: *Tire LCCO<sub>2</sub> Calculation Guidelines Ver. 2.0*, Japan Automobile Tyre Manufacturers Association, Inc.)  
\*Lifecycle stages other than use include raw material procurement, manufacturing, distribution, and after use.

## Performance

**CO<sub>2</sub> Emissions from Lifecycle Stages: 17.9% Reduction**  
(Compared to 2005, Per Unit of Sales)

**Fuel Efficiency-Influencing Tire Rolling Efficiency: 7.0% Improvement**  
(Compared to 2005)

The Bridgestone Group has set the goal of reducing CO<sub>2</sub> emissions per unit of sales from tire lifecycle stages other than use by 35% of 2005 levels before 2020. As of 2012, Bridgestone Group achieved a reduction of 17.9%. Our CO<sub>2</sub> emission reduction efforts undergo review by third-party organizations, which issue statements based on these reviews, thereby ensuring the transparency of discloses.

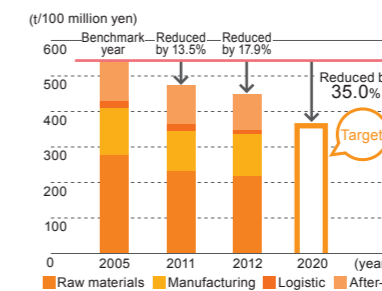
Likewise, the Bridgestone Group is targeting a 25% improvement in tire rolling efficiency based on 2005 levels, and this goal is set to be accomplished by 2020. As of 2012, we achieved an improvement of 7.0%. Improving rolling efficiency while maintaining safety is a difficult task that requires sophisticated technologies. Bridgestone's proprietary NanoPro-Tech<sup>2</sup> technology enables such improvements, and we are helping reduce the volume of CO<sub>2</sub> emitted by customers when they drive by selling fuel-efficient tires that use this technology around the world.

\*2 The NanoPro-Tech is an ultrafine technology that allows engineers to analyze and control the molecular structure of rubber at the nano-scale level.

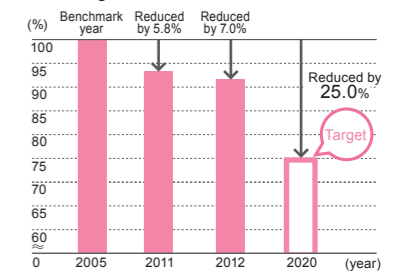


Statement issued by third-party organization regarding review of the Bridgestone Group's CO<sub>2</sub> emissions report

### CO<sub>2</sub> Emissions Per Unit of Sales from Lifecycle Stages Other Than Use



### Rolling Resistance of Tires



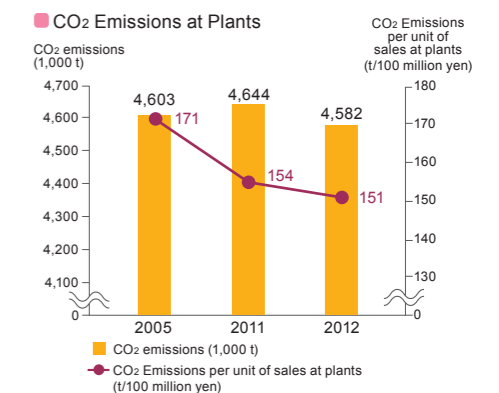
### CO<sub>2</sub> Emission Reduction Rates by Lifecycle Stage (2012)

Raw materials	Manufacturing	Distribution	After-use
reduced by around 21%	reduced by around 14%	reduced by around 15%	reduced by around 17%

\*Rates of reductions in CO<sub>2</sub> emissions per unit of sales in comparison to 2005

**CO<sub>2</sub> Emissions at Plants: 0.5% Reduction** (Compared to 2005)  
**CO<sub>2</sub> Emissions Per Unit of Sales at Plants: 11.9% Reduction** (Compared to 2005)

At its plants, the Bridgestone Group is working to reduce CO<sub>2</sub> emissions by using energy more efficiently and switching to alternate forms of energy that have resulted in lower emissions. As a result of these efforts, CO<sub>2</sub> emissions in 2012 were 0.5% lower in total quantity than in 2005 and 1.3% lower in total quantity than in 2011. Similarly, emissions per unit of sales were 11.9% lower than in 2005 and 1.9% lower than in 2011. Going forward, we will introduce more energy-efficient equipment and implement stringent energy management measures to realize further reductions in CO<sub>2</sub> emissions.

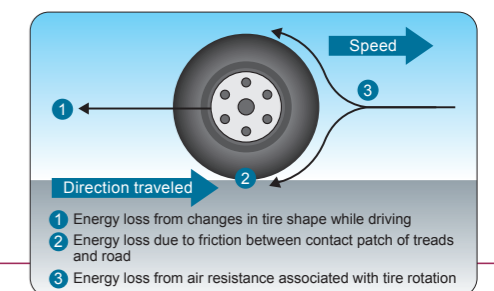


## Column

### Factors Behind Rolling Resistance

Tire rolling resistance is primarily caused by three factors: changes in the shape of the tire while driving, friction between the contact patch of treads and the road, and the air resistance associated with the rotation of the tire. Bridgestone is committed to reducing the energy losses that result from rolling resistance. To this end, we are advancing tire R&D ventures from the perspectives of structure and shape as well as materials.

### Composing elements of rolling resistance



Examples of Initiatives

**1** CO<sub>2</sub> Reductions in Lifecycle Stages

Acquisition of ISO 50001 for US Tire Plant and Italian Technical Center

BSAM | U.S. | BSEU | Italy

In October 2012, Bridgestone Americas, Inc. (BSAM)'s Wilson Plant acquired certification under ISO 50001, an international standard for energy management systems, making it the first tire plant in the world to receive this certification. The Wilson Plant is implementing a number of initiatives to ensure that it can continue production activities well into the future. These initiatives include switching the fuel source at the plant from oil to natural gas, which results in lower CO<sub>2</sub> emissions; ceasing operation of unproductive facilities; taking steps to reduce energy losses; and shifting to more energy-efficient lighting and other energy-saving equipment.

In addition, Bridgestone Europe NV/SA (BSEU) acquired ISO 50001 certification for its technical center in Italy in May 2012. This was the first such facility to acquire this certification in Italy. As part of its energy management efforts, the center identified major causes of energy consumption, defined indexes for improvements, set goals, and communicated these to employees. In addition, it is working to improve the expertise of facility technicians and has assembled specialized teams of experts in the field of energy savings.

New Eco-Friendly Technical Center Receives "Environmental Achievement of the Year" Award

BSAM | U.S.

In April 2012, BSAM opened its new Americas Technical Center, which was established to conduct research and development of advanced tire-related technologies. Designed in an environmentally friendly manner, the building is expected to emit significantly less CO<sub>2</sub> emissions than similar facilities, and has earned LEED Gold certification in accordance with the LEED<sup>®</sup> specifications for environmentally-conscious buildings in the United States. The technical center has earned recognition for these features, leading to BSAM winning the "Environmental Achievement of the Year" Award at "Tire Technology International Awards for Innovation and Excellence 2013." Nominees for this award are selected by Tire Technology International, a magazine for industry specialists published by UKIP Media & Events, of the United Kingdom.

\*1. LEED (Leadership in Energy and Environmental Design) is an index for the evaluation of green buildings. The LEED program is operated by the U.S. Green Building Council (USGBC), a nonprofit organization based in the United States.

"Environmental Achievement of the Year" trophy



Third-Party Reviews of CO<sub>2</sub> Reduction Initiatives

Bridgestone Corporation | Worldwide

Since 2010, the Bridgestone Group has been having third-party organizations review disclosures relating to its progress toward meeting its 2020 mid-term target for CO<sub>2</sub> emissions reductions. In this way, we aim to ensure that such disclosures are transparent, complete, and accurate. These reviews are conducted by in-house carbon management specialists and third-party organizations, who evaluate CO<sub>2</sub> emissions monitoring measures and related reports based on the standards described in ISO 14064. As of April 30, 2013, a total of 26 plants and other operating sites located in 13 different countries have been reviewed. Based on these reviews, we are identifying issues at operating sites so that we may formulate concrete response measures, and pursue greater reductions in CO<sub>2</sub> emissions.



Staff at Lake Charles Plant (U.S.) participating in third-party review

Diversified Product Initiatives

Launch of Highly Functional EVASKY Film that Prevents Efficiency Declines in Solar Power Systems

Bridgestone Corporation | Japan

In conjunction with the rapid spread of large-scale solar power systems in 2012, photovoltaic modules began being exposed to higher voltages, leading them to suffer from potential induced degradation (PID), which results in declines in generation efficiency. Leveraging its material technologies, born out of rubber and macromolecular technologies, together with its molding technologies, Bridgestone has developed a new type of EVASKY film that improves resistance to PID, allowing modules to be used over long periods of time with minimal declines in generation efficiency. By helping solar power systems maintain levels of generation efficiency, this film is expected to facilitate the spread of this source of renewable energy. Moreover, the film also contributes to reductions in resource usage by making photovoltaic modules more durable.

Photovoltaic modules installed at the Chemical & Industrial Products Technical Center, where highly functional EVASKY films are developed



**2** CO<sub>2</sub> Reductions through Improving Tire Rolling Efficiency

ECOPIA EP001S with Highest Rank for Fuel Efficiency Receives Eco-Products Award

Bridgestone Corporation | Japan

ECOPIA EP001S, a fuel efficient tire launched in July 2012, received the Chairperson's Award from the Eco-products Awards Steering Committee (Award for Excellence) at the 9th Eco Products Awards, held by the Eco Products Awards Council in Japan. ECOPIA EP001S is a union of Bridgestone's proprietary NanoPro-Tech™ technology and the technologies for improving grip performance the Company has developed through the creation of tires for use in motor sports. Featuring a new grip-enhancing pattern, this tire has achieved the highest rank under Japan Automobile Tyre Manufacturers Association's "Labeling System" for both rolling resistance performance and wet grip performance, which are conflicting characteristics.



ECOPIA EP001S

Development of Innovative Technologies to Further Improve Tire Fuel Efficiency

Bridgestone Corporation | Japan

In October 2012, Bridgestone succeeded in developing a technology that can contribute to substantial improvements in tire fuel efficiency. Developed through a NEDO (New Energy and Industrial Technology Development Organization) project aiming to put advanced materials using nano technologies into practical use, this technology entails manipulating the materials used to make the rubber for passenger car tires to optimize them at the nano level. This enables the creation of rubber that reduces energy loss by over 40% and improves abrasion resistance by more than 25% in comparison to the rubber currently used in Bridgestone's fuel-efficient tires<sup>2</sup>. Going forward, we will advance R&D initiatives targeting the development of tires with even lower levels of rolling resistance.

Further, in March 2013, Bridgestone completed development of its new "Large & Narrow concept tire." This tire is narrower and features a larger diameter than conventional tires, allowing it to achieve superior levels of fuel efficiency and safety. The benefits of this tire's narrower width, larger diameter, and resulting higher air pressure simultaneously reduce rolling resistance and improve wet grip performance. The Company aims to quickly put this tire into use as a new category of ECOPIA brand fuel-efficient tires, possibly marketing it for use as original equipment on next-generation automobiles.

\*2. The rubber used in the treads of Bridgestone's ECOPIA brand fuel-efficient tires for passenger cars

Sales of Fuel-Efficient ECOPIA Tires in China Exceeds 1 Million

BSCN | China

Bridgestone (China) Investment Co., Ltd. (BSCN), began marketing ECOPIA brand fuel-efficient tires in China in March 2010. Since then, we have seen a rise in the level of environmental awareness in this country, resulting in a subsequent increase in sales of ECOPIA tires. In 2012, BSCN commenced sales of ECOPIA tires for use on sport utility vehicles (SUVs), and otherwise bolstered its lineup to meet an even wider range of customer needs. As a result, the cumulative total of ECOPIA tires sold in China since the brand was launched exceeded one million in that year. Going forward, BSCN will promote usage of ECOPIA and other fuel-efficient tires to encourage as many customers as possible to use these tires.



Promotional display for ECOPIA brand fuel-efficient tires in China

Promotion of Fuel-Efficient Tires in South Africa

BSAF | South Africa

Bridgestone South Africa (Pty) Ltd. (BSAF) participated in an event sponsored by the DAD (Drink and Drive) Project in November 2012. The purpose of this event was to facilitate understanding with regard to the dangers of drinking and driving, and raise awareness among children about the importance of traffic safety. At this event, BSAF let children ride specially designed tricycles equipped with Bridgestone's ECOPIA brand fuel-efficient tires, enabling them to compare the performance of ECOPIA brand tires and standards tires, thus making it easy for them to understand the benefits of fuel-efficient tires.

Employee Testimony

Mandy Lovell (PR Manager, Bridgestone South Africa Pty Ltd.)

I believe that our participation in events such as this will enable us to communicate, in a practical manner, the benefits of using fuel efficient tires, thereby reducing the impact of CO<sub>2</sub>. We're hopeful demonstrations like these will accelerate the consumer shift towards more environmentally-friendly tires in the future throughout South Africa.



Child riding specially designed tricycle equipped with ECOPIA tires



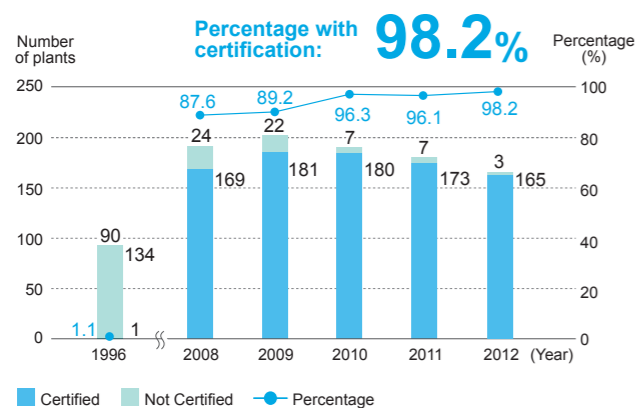
# Environmental Management

The Bridgestone Group has developed TEAMS (Total Environmental Advanced Management System), a proprietary environmental management system (EMS), to serve as a foundation for its environmental activities. Based on the ISO 14001 international standard, as well as EMSs compliant with that standard, TEAMS was refined by adding the concepts of "Total" (denoting the participation of all business units, facility functions, and employees throughout the Group) and "Advanced" (denoting the Group's commitment to active disclosure and the consistent pursuit of advanced, world-class activities).

## ■ Total Environmental Advanced Management System (TEAMS)

In the Bridgestone Group, following the TEAMS concept, each strategic business unit (SBU) and each facility prepares and adopts an EMS as specified by ISO 14001. Then, environmental activities are improved through the use of the PDCA (plan, do, check, act) cycle at three levels: individual facilities, SBUs, and globally or Group-wide. As of December 2012, of the companies in the Group that have production sites, both domestic and international, 165<sup>1</sup> (98.2%) production sites have obtained the ISO 14001 certification. We plan to strengthen our activity even further by getting the ISO 14001 certification for all target sites<sup>2</sup>. We are also timely preparing EMSs for new production sites according to the Bridgestone Group's proprietary factory production certification system and plan to successively gain ISO 14001 certification for these sites. We have an EMS for all Bridgestone operations in Japan—including all factories, the head office, and technical centers—and have received a single multi-sites ISO 14001 certification. In this way we are working to be eco-friendly in every area of our operations, from product development and design, through production, distribution, and manufacturing, to sales and service.

### ■ ISO 14001 Certification in the Bridgestone Group



<sup>1</sup>Data for sites defined by Bridgestone as needing ISO 14001 certification.

As a basis for supporting TEAMS we are also striving to provide and consolidate shared global information systems, working toward improvement by analyzing each SBU's environmental activities and data through the Group's PDCA cycle.

1: The number of sites has decreased since last year due to closures and business consolidation.  
2: Sites defined by Bridgestone as needing ISO 14001 certification.

## ■ Global Environmental Management

The Global Head Office (GHO), Global Management Platform (GMP), and SBUs work together to pursue TEAMS activities to help achieve the objectives of the Mid-Term Management Plan (MTP). The GHO draws up overall strategy and basic policy, communicating this to the GMP which directs the SBUs, providing support and assistance.

The environmental management headquarters at GMP is made up of the Strategic Environmental Planning Department, which creates detailed environmental plans based on management strategies and collaboration with the Environmental Management Department, implementing the strategies to meet set targets. For top management review purposes, there is a Group Environmental Committee where the CEO and corporate officers make decisions about environmental activities in the Group as a whole. Also, as well as holding regular Global Environmental Meetings, we are continually striving to improve our environmental approaches by sharing issues and activities at regular liaison meetings between SBUs and facilities.

## ■ Company Environmental Awards

Every year the Bridgestone Group holds the Bridgestone Group Awards, including the Bridgestone Group Award for Environmental Excellence, to recognize achievements by organizations and employees within the Group. These awards have been presented since 2008, with the goal of increasing interest in and motivation toward environmental activities among all our employees. In the 2012 Bridgestone Group Awards ceremony, awards were presented to Bridgestone Americas, Inc. (BSAM), for "Achievement of sustainability in areas of the environment, cultural change, economic contribution and community involvement, all as manifested in the New Americas Technical Center" and to Bridgestone for "Development of low-carbon inert gas generation system". We are also planning to enhance the awards system for the Bridgestone Group Award for Environment Excellence to include preliminary contests by country and region.



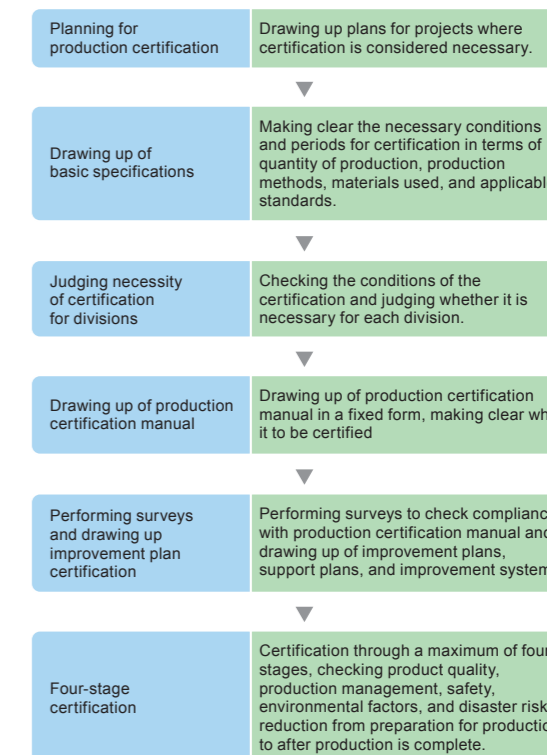
BSAM at the awards ceremony

## ■ Factory Production Certification System

The Bridgestone Group has adopted a proprietary factory production certification system based on ISO 14001 to rapidly identify and minimize environmental risks at new factories and production lines.

To be specific, it is a four-stage system for checking and certifying the environmental management structures at new factories, such as the establishment of a basic plan for environmental measures, the implementation of a preliminary environmental review at the time of construction, the preparation of environmental policies, legal compliance, and environmental training. In 2012, five facilities in four countries received certification.

### ■ Factory Production Certification System



Factory production certification at a materials factory in Mexico

### ■ Global Environmental Management

#### Global Head Office (GHO)

- Draws up top-level environmental management policy
- Implements management review

#### Global Management Platform (GMP)

- Implements GHO policy
- Provides support for each environmental management platform and SBUs

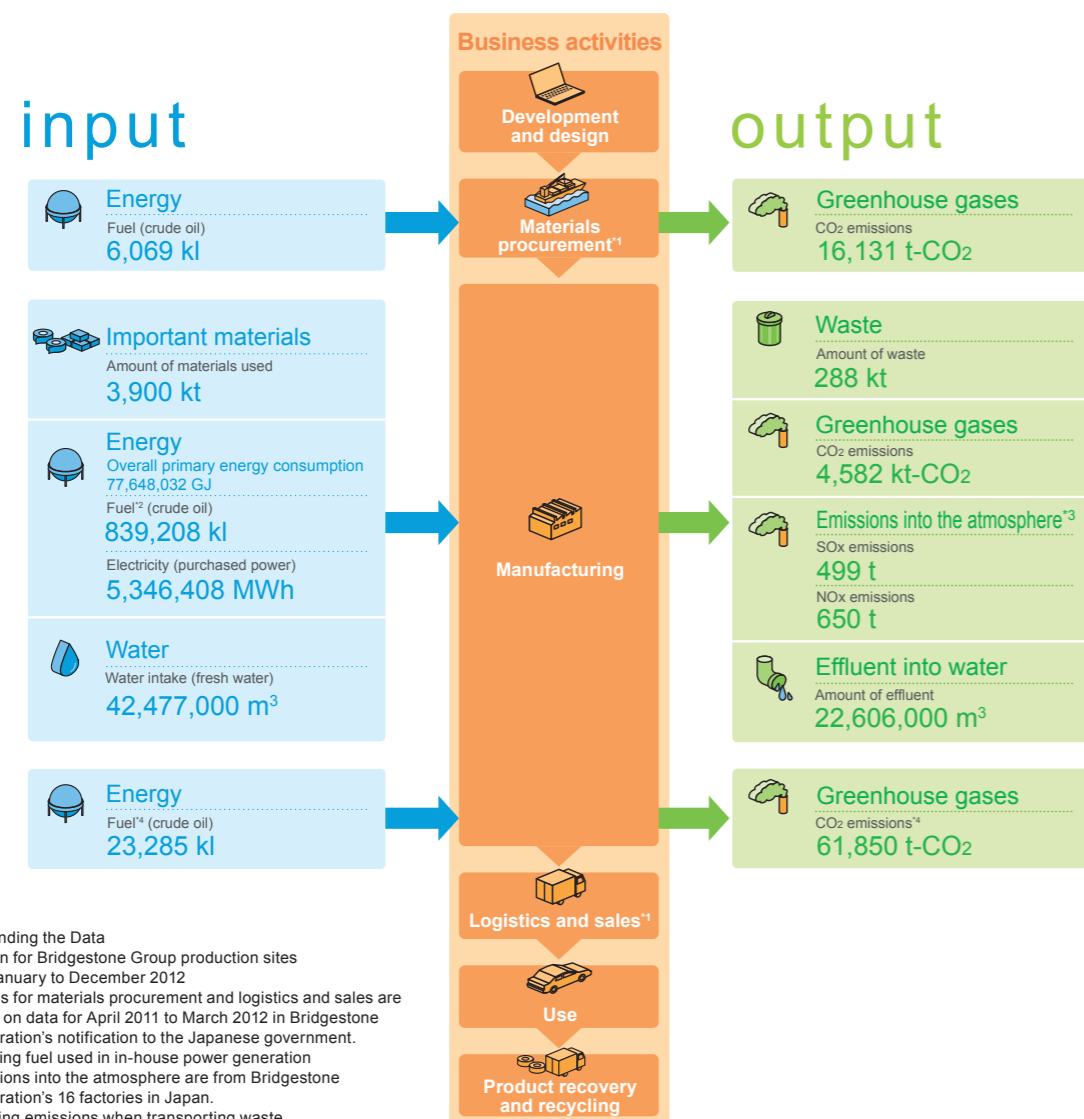
#### Strategic Business Unit (SBU)

- Collects, analyzes, and assesses risks for environmental data



## The Environmental Footprint of Our Business Activities (Material Balance)

The Bridgestone Group is working to build a sustainable society and reduce its environmental footprint throughout the life cycle of its products, from raw materials procurement through to the disposal stage.



Understanding the Data  
Data given for Bridgestone Group production sites  
Period: January to December 2012  
\*1: Figures for materials procurement and logistics and sales are based on data for April 2011 to March 2012 in Bridgestone Corporation's notification to the Japanese government.  
\*2: Including fuel used in in-house power generation  
\*3: Emissions into the atmosphere are from Bridgestone Corporation's 16 factories in Japan.  
\*4: Including emissions when transporting waste

## Eco-Products

The Bridgestone Group is working together with its customers to reduce its environmental footprint by providing products and services which have been developed considering the environment throughout the entire life cycle, from the procurement of raw materials to the disposal or recycling of products. This is in line with the goals set in the Group's Environmental Mission Statement: to achieve harmony with nature, value natural resources, and reduce CO<sub>2</sub> emissions. The Bridgestone Group has developed Standards for Eco Products for all of its products and services based on the three environmental goals as well as comfort and safety for a total of six assessment areas. We are also striving to develop new products and services which contribute to a reduction in environmental impact.

### Criteria for Eco-Products

Assessment area	Assessment criteria (examples)
In harmony with nature	Harmony with nature Consideration of sustainability in use of resources Reduction of chemicals used
Value natural resources	Minimization of resources used Weight reduction, water-saving functionality, increased lifespan, waste reduction
Reduce CO <sub>2</sub> emissions	Recycling Use of recycled resources, reusability, possibility and ease of dismantlement
	Prevention of global warming CO <sub>2</sub> emissions, low fuel consumption / power saving
	Comfort Low road noise
	Safety Wet grip, ice traction

## External Assessment

### Major Environmental Ranking and Rating Systems (2012)

Ranking / Rating System	Assessment
CDP (Carbon Disclosure Project) disclosure score	88
DJSI (Dow Jones Sustainability Index) Asia Pacific	selected
The 16th Nikkei Environmental Management Survey	25th (manufacturing) / 438 companies in Japan
The 13th Nikkei Environmental Brand Survey	14th / 560 companies in Japan
The 25th Nikkei Corporate Image Survey	2nd (business person), 5th (individual) / 1,200 companies in Japan

### Major External Environmental Awards and Certifications (2012)

Award / Certification	Reason for award	Recipient of award / certification
<b>Products and services</b>		
The 14th Green Purchasing Prize (distinction)	Eco Value Pack	Bridgestone Corporation, Bridgestone Tire Japan Co., Ltd.
Good Design Prize	The fuel-efficient tire ECOPIA EP001S The fuel-efficient tire brand ECOPIA Motorcycle sport radial tires BATTLAX HYPERSPORT S20	Bridgestone Corporation
The 9th Eco-Products Awards (Eco-Products Category) Eco-Products Award Steering Committee Chairperson's Award (distinction)	The fuel-efficient tire ECOPIA EP001S	Bridgestone Corporation
FY2012 Awards for Circular Resource Techniques and Systems JEMAI Chair's Award	Reduction in weight of anti-vibration rubber due to the replacement of metal parts with resin	Bridgestone Corporation
<b>Operations</b>		
FY2012 3Rs (Reduce, Reuse, and Recycle) Awards 3Rs Promotion Council President's Award	Working towards a sustainable society through the reduction of waste and recycling	Bridgestone Corporation Seki Plant
Yamaguchi Prefecture FY2012 Green Curtain Photo Contest (distinction)	Green curtain (growth of climbing plants over building windows for energy saving)	Bridgestone Corporation Shimonoseki Plant
FY2012 Cogeneration Prize (Industrial Category) (distinction)	Efficient use of energy through adoption of a cogeneration system	ENERGY ADVANCE CO., LTD. Bridgestone Corporation Nasu Plant
Japan Ministry of Land, Infrastructure, Transport and Tourism Kinki Regional Development Bureau (Bureau Chief's Eco-Friendly Workplace Award)	Environmental activities as a whole	Kyotanabe Tire shop, Nagaokakyo Tire shop (Bridgestone Retail Japan co., Ltd.)
Development Bank of Japan Environmental Rating Certification	Environmental activities as a whole	Asahi Carbon Co., Ltd.
"Tire Technology International Awards for Innovation and Excellence 2013" "Environmental Achievement of the Year"	Consideration of environmental factors in the new North America technical center	BSAM
Summit of Sustainability Award - Large Business Category	Bridgestone Americas Research & Technology	BSAM
Shenyang City Environmental Protection Bureau, Corporate Environmental Trust Rating (Green)	Environmental activities as a whole	BSCN
<b>Contributions to Society</b>		
Good Design Prize	Bridgestone "ECOPIA's Forest" projects	Bridgestone Corporation
WILSON CARES AWARD, "CARES" Community Awareness Restoration Environmental Stewardship	The construction and continual additions to the Bridgestone workers and volunteers through the community to make the Refuge a place for everyone	BSAM Wilson Plant
Wildlife Habitat Recertification	Protection of wildlife habitats	BSAM Wilson Plant
ISO50001 Certification	Energy management	BSAM Wilson Plant
WHC Wildlife at Work recertification	Protection of wildlife habitats	BSAM Warren Plant
ISO50001 Certification	Energy management	BSEU Technology Center
Eco Japan Cup 2012 Eco-Conscious Community "Genki Grand Awards" 2012 (Genki Grand Award)	Lakeside renewal project at a crested ibis habitat, Lake Kamo in Sado City, Niigata Prefecture	KAMOKEN Research Center*
Eco Japan Cup 2012 Eco-Conscious Community "Genki Grand Awards" (7-Eleven Foundation Award)	Yanbaru Kunigami Forest area revitalization project through the renewal of waterways and provision of rice paddy biotopes	Kunigami Tourist Association (specified non-profit organization (NPO))*
<b>Communication</b>		
The 16th Environmental Communication Awards Environmental Reporting Category, Global Warming Countermeasures Reporting Award (Minister of the Environment's Award)	Bridgestone Group Environmental Report 2012	Bridgestone Corporation
The 16th Environmental Communication Awards, TV Environmental Commercial Category, (distinction) (Global Environmental Forum President's Award)	TAIYA CAFE Retread Episode	Bridgestone Corporation
Eco Test Award 2012 (Eco-Unit Category) (distinction)	Bridgestone Group's power-saving project, and Bridgestone Group employees' "Green Curtain Project"	Bridgestone Corporation

\*Activities carried out by W-BRIDGE, the joint research project between Bridgestone Corporation and Waseda University  
Abbreviations for recipients of awards / certifications: BSAM (Bridgestone Americas, Inc.), BSCN (Bridgestone (China) Investment Co., Ltd.), BSEU (Bridgestone Europe NV/SA)

# Disclosure of Financial and Non-Financial Information

The Bridgestone Group is following discussion about the disclosure of non-financial information taking place around the world and working to disclose information that meets all of our stakeholders' needs. Apart from environmental information, including this environmental report, we disclose corporate social responsibility (CSR) information through CSR reports and on our website as part of our non-financial information

disclosure. Financial information is available on the sections of our website aimed at investors through various reports as well as articles with the latest information. Also on our global website is environmental and CSR information for the Group as a whole that is available in English, and also environmental and sustainability reports in each of the regions where we operate.

## ■ [Non-Financial Information] Environmental Information

### Environmental report (this report)

Web <http://www.bridgestone.com/corporate/library/index.html>



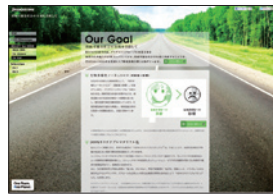
### Bridgestone homepage (Environment) Japanese

Web <http://www.bridgestone.co.jp/csr/eco/index.html>



### Special environmental site (READY for 2050) Japanese

Web <http://www.bridgestone.co.jp/sc/readyfor2050/>



## ■ [Financial Information]

### Investor Relations

Web <http://www.bridgestone.com/ir/index.html>



### CSR report

Web <http://www.bridgestone.com/responsibilities/csr/report/download/index.html>



### Bridgestone homepage (CSR)

Web <http://www.bridgestone.com/responsibilities/csr/index.html>



### Global site (Environment)

Web <http://www.bridgestone.com/responsibilities/environment/index.html>



### Annual Report

Web [http://www.bridgestone.com/corporate/library/annual\\_report/2012.html](http://www.bridgestone.com/corporate/library/annual_report/2012.html)



## Overview of Bridgestone Group

### ■ Overview

Company name	Bridgestone Corporation
Headquarters	10-1 Kyobashi 1-chome, Chuo-ku, Tokyo, 104-8340, Japan
Representative Director	Masaaki TSUYA, CEO and Representative Board Member, Concurrently Chairman of the Board
Paid-in capital	JPY 126,354 million (As of December 31, 2012)
Net sales	Consolidated JPY 3,039.7 billion Non-consolidated JPY 939.3 billion
Employees	Consolidated 143,448 (As of December 31, 2012) Non-consolidated 15,409 (As of December 31, 2012)
Summary of Bridgestone's manufacturing plants	178 plants in 25 nations (Bridgestone Group total as of April 1, 2012)

### ■ Products and Operations

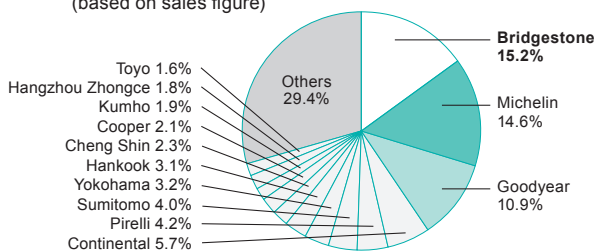
#### Tires

Tires and tubes for passenger cars, trucks and buses, construction and mining vehicles, industrial machinery, agricultural machinery, aircraft, motorcycles and scooters and others automotive parts, retreading materials and services, automotive maintenance and repair services, raw materials for tires and other products and services

#### Diversified Products

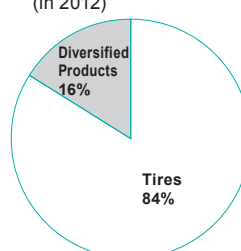
<Chemical and industrial products> Antivibration and noise-insulating materials, Polyurethane foam products, Electro-materials, Industrial rubber products, Building materials, Belts, Hoses, and other products  
<Sporting goods> Golf balls, Golf clubs, Golf wear, Tennis goods and other products  
<Bicycles> Bicycles, Other bicycle goods and other products

### ■ Global Tire Market Share in 2011 (based on sales figure)



Source: Tire Business—2012 Global Tire Company Rankings

### ■ Sales by Business segment (in 2012)



### ■ Sales by Market (in 2012)

