

Bridgestone Corporation - Climate Change 2018

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Bridgestone is a global leader in the tire industry, whose business consists of the "Tire sector"; manufacturing/sales of tires/tubes, sales of tire related products and car maintenance/repairs, "Diversified products sector"; chemical & industrial products, sports products, bicycle manufacturing and sales, and other various businesses, and "Solution Business"; new "solutions" service package by combining maintenance services, IT/sensing technology, tires and diversified products. The CSR, Environment and Quality Management Planning Division responds to CDP. This division plays the role of coordination and management on a global level based on our Environmental Mission Statement, providing environmental support to business sections (Strategic Business Units).

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Row 1	January 1 2017	December 31 2017	No	<Not Applicable>
Row 2	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 3	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 4	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>

C0.3

(C0.3) Select the countries/regions for which you will be supplying data.

Argentina

Australia
Belgium
Brazil
Canada
China
Costa Rica
France
Hungary
India
Indonesia
Italy
Japan
Liberia
Malaysia
Mexico
Philippines
Poland
South Africa
Spain
Taiwan (Province of China)
Thailand
Turkey
United Kingdom of Great Britain and Northern Ireland
United States of America
Viet Nam

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

JPY

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.

Operational control

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	The CEO is a member of the board, and has the highest-level responsibility for climate-related issues. The CEO is responsible for deciding policies and measures or presenting to the board and overseeing company-wide management activities about management vision, mid-term strategies, annual policies, etc. including climate-related issues.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
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Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding business plans Setting performance objectives Monitoring and overseeing progress against goals and targets for addressing climate-related issues	Senior-level CSR responsible officers report to the board various topics including environment and climate change issues which have been reviewed by Global Executive Committee (G-EXCO), Bridgestone highest-level execution committee. In 2017, (1) establishment of a collaborative network made up of a global CSR management system, a regional CSR management system, and working groups for specific areas and functions including Environmental Working Group which promotes environmental activities such as CO2 reduction, and (2) Social expectation and our response including climate-related topics such as the Paris agreement and our Environmental mid-term target were reported to the board.

C1.2

(C1.2) Below board-level, provide the highest-level management position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored.

At Bridgestone, the CEO is the highest-level management position and has ultimate responsibility for management strategy and overall management including climate-related issues. And the highest-level committee associated with Bridgestone Group Global business execution is the Global EXCO. Members of the Global EXCO are nominated from full-time corporate officers by CEO/COO.

Under the Global EXCO, Bridgestone has the Global CSR Enhancement Committee (GCEC) which reports to the Global EXCO and is comprised of executive officers in charge of CSR and representatives of Strategic Business Unit(SBU)s and functions.

Under the GCEC, Bridgestone has 7 working groups* which are related to the areas focused in our CSR Commitment; "Our Way to Serve". Each working group comprised of members from corresponding function in each SBU and report to the GCEC. Among the 7-working group, "Environment Working Group" summarizes and reports previous year results related to CO2 and proposes next strategies to the GCEC, taking into account the latest social trend especially which has possibility to be environmental risks/opportunities.

According to deliverables from the working groups including that from the Environment Working Group as written above, the GCEC prioritizes CSR initiatives in areas pertaining to a variety of global issues including climate change , formulates global CSR strategies, confirms the progress of activities in each area. Then the GCEC reports their deliverables to the Global EXCO and ask them for decision making on important items.

By the way, as for risk management/assessment, the Bridgestone Group broadly divides risks into two categories: business strategic risks, which are related to management decision-making, and operational risks, which include climate change risks and are related to daily operations. The former is handled through business operations, while the latter is handled by the Chief Risk Officer (CRO), who has overall responsibility for managing risks and reports to the CEO.

*7 working groups under the GCEC: "Mobility", "People", "Environment", "Compliance, Fair Competition", "BCP, Risk Management", "Human Rights, Labor Practices" and "Procurement"

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

Yes

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues.

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Monetary reward

Activity incentivized

Energy reduction project

Comment

At Bridgestone, business, departments and individuals who have made outstanding achievements, including various climate change mitigation actions and results, such as achieving a CO2 reduction target, reducing energy use, and improving efficiency or reducing waste among others can be recognized by the CEO and COO in a company-wide event held on March 1, the foundation day, and also can be recognized every year by the head of the worksite in a regional event. Bridgestone's commemorates its history and philosophy at its foundation day while reconfirming the direction the company will take in the future. This event aims to raise employees' awareness of corporate activities. A monetary recognition as well as a regional recognition is in place.

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Recognition (non-monetary)

Activity incentivized

Emissions reduction project

Comment

Bridgestone Group Awards is a program for all employees that recognizes efforts of organizations and individuals in five award categories. One of award categories, Environment award, recognizes efforts related to climate change, such as achieving a CO2 reduction target, reducing energy use, and improving efficiency or reducing waste for the purpose of raising the awareness of each employee to participate in environmental activities.

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	0	5	Short-term is in line with Business Mid-term Plan and climate change related measures such as investment on equipment for energy saving are incorporated into the plan globally.
Medium-term	5	10	Bridgestone has Environmental mid-term target including CO2 reduction in line with the Medium-term.
Long-term	10	40	Bridgestone has Long-term Environmental vision including CO2 reduction in line with the Long-term.

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
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	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Annually	>6 years	

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

1. Risk Assessment Structure in the Bridgestone group

The Bridgestone Group broadly divides risks into two categories: business strategic risks, which are related to management decision-making, and operational risks, which include climate change risks and are related to daily operations. The former is handled through business operations, while the latter is handled by the Chief Risk Officer (CRO), who has overall responsibility for managing risks and reports to the CEO. We promote risk assessment as a part of comprehensive activities to appropriately manage risks common to the Group, with consideration for the scale and characteristics of each site and Group company. Through the dual promotion of Group global unified activities and autonomous risk management activities by branches, important risks common to the Group (Corporate risk) and risks of each site and Group company are identified.

2. The process for assessing the potential size and scope of identified risks

In the Bridgestone group, both corporate and facilities conduct risk identification at least once a year, utilizing globally common direction. Then, they evaluate risks, utilizing a globally unified criteria which consists of viewpoints of their impact and possibility of occurrence. We standardized the degree of impacts of risks by impact-type such as human life/health, financial loss, operational impact (period of suspension of sales and plant operation or time necessary for response), social trust and so on, regardless the possible timing of occurrence. The criterion to determine rank differ by the impact-type. But as for environment related risks including climate change and CO2 emission etc., we consider its possible impact is substantive when it falls under one of the following criteria: "Strong feeling of discomfort extending to areas surrounding the office/plant, accompanied by health damage in some cases, or health damage caused externally over a wide area", "Excess limit of financial amount (determined by company)", "Over two weeks' impact on division (period of suspension of sales and plant operation or time necessary for response)", or "Trust damaged in terms of the company's constitution (falsified reports, organizational scandal)". On the other hand, we also estimate possibility of occurrence and classify them into 4 ranks based on the likelihood.

3. How climate-related risks are identified and assessed at a company/asset level

As the result of the evaluation based on impact and possibility of occurrence, the risks “with a high possibility of occurring and major impact” and “with a significant impact of it should occur, although its possibility is low” are considered “Significant risk” and classified into “Corporate risk”. And others are into “Asset Risk”.

4.The process to determine the relative significance of climate-related risks in relation to other risks

The process for risk identification and assessment mentioned above is also applied to the risks other than environment related ones including climate change, so various risks which we may face can be assessed in comparable manner.

5.The definitions of risk terminologies used and references to existing risk classification frameworks

Bridgestone’s definition of “risk” is events (incidents, accidents, natural disasters or problems, etc.) that may cause damage to organizations, employees, products and services, financial conditions, brands, customers, shareholders, business partners or neighbors. In addition, We promotes improvement of risk identification and management framework referring ISO 31000, the international standard for risk management.

6.How we defines substantive financial or strategic impact on our business

Through the process written above, we figure out substantive risks. From financial perspective, the threshold for the judgement is whether the risk is anticipated to cause more financial loss than a standardized amount. And also, from strategic point of view, the standardized degree determined by impact-type such as human life/health, financial loss, operational impact(period of suspension of sales and plant operation or time necessary for response), social trust and so on is utilized to judge. And the concrete criteria including the amount of financial loss is determined by each of corporate, sites and Group companies which conduct the risk assessment, with consideration for the scale and characteristics of them.

C2.2c

(C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Recently, various regulations have been introduced for the purpose of curbing climate change. With respect to tires also, maximum limits on rolling resistance and the labelling system have been introduced. Following the new regulations, operational cost such as to develop low rolling resistance tires, to measure rolling resistance coefficient value and to print labels has been increased. There is a possibility of further increase of operational cost in case such regulations become stricter and/or expand globally. The global Environment Working Group is monitoring social trend including current regulations and Bridgestone encourages to develop and launch low rolling resistance tires to contribute to CO2 emissions reduction activities.
Emerging regulation	Relevant, always included	There are discussions about introducing carbon pricing in many countries, and since Bridgestone has facilities in over 20 countries, there is a possibility of increasing operational cost. The global Environment Working Group is monitoring social trend including emerging regulations such as carbon tax, etc. and Bridgestone encourages CO2 emissions reduction activities.
Technology	Relevant, always included	There is a possibility of sales decrease in case of becoming less competitive because of delay in low carbon technology development enhancing energy efficiency of products/manufacturing. By introducing such energy- efficient technologies, Bridgestone encourages providing products and services which can contribute to reduce CO2 emissions, such as fuel-efficient tires.
Legal	Relevant, always included	Bridgestone encourages ESG disclosures, however, there is a possibility of litigation claim in case of providing inaccurate information on climate-related issues such as description of energy efficiency on tire label.
Market	Relevant, always included	Bridgestone encourages providing products and services which can contribute to reducing CO2 emissions, such as fuel-efficient tires. However, change in market requirements possibly impacts our sales. For instance, expectations for fuel efficient tire and retread tire are increasing, however, there is a possibility of losing competitiveness and drop in market share in case of delay in developing and providing tires which can improve customer satisfactions related to CO2 reductions. The global Environment Working Group is monitoring social trend including market requirements from customers such as automakers.
Reputation	Relevant, always included	Bridgestone encourages ESG disclosures, however, there might be a potential of criticisms and drop in stock price in case of providing inaccurate information on climate-related issues. The global Environment Working Group is monitoring ratings of Bridgestone by externals. The global Environment Working Group also monitors social trend including reputations of advanced companies on ESG as benchmark and criticisms for companies with ESG related misdoings for avoiding future possibilities of criticisms.
Acute physical	Relevant, always included	There is a risk of rubber supply shortage caused by drought or floods occurred in regions where para rubber tree grows. It can lead to lower profit because of higher rubber procurement cost. The global Environment Working Group is monitoring social trend including yearly climate change status in regions.
Chronic physical	Relevant, always included	There is a risk of rubber supply shortage as climate pattern change in regions where para rubber tree grows and rubber production efficiency worsen. It can lead to lower profit because of higher rubber procurement cost. The global Environment Working Group is monitoring social trend including publications about long-term estimations related to climate-change.
Upstream	Relevant, always included	There are risks of rubber supply shortage caused by (1)drought or floods occurred in regions where para rubber tree grows (it can lead to lower profit because of higher rubber procurement cost) and (2)climate pattern change in regions where para rubber tree grows and rubber production efficiency worsen (It can lead to lower profit because of higher rubber procurement cost). The global Environment Working Group is monitoring social trend including yearly climate change status in regions, publications about long-term estimations related to climate-change, movements about supplier activities for adaptation to climate risks etc.

	Relevance & inclusion	Please explain
Downstream	Relevant, always included	In Bridgestone's value chain and business, automobile market is one of the primary fields. Therefore, Bridgestone encourages providing products and services which can contribute to reducing CO2 emissions, such as fuel-efficient tires. However, change in market requirements possibly impacts our sales. For instance, expectations for fuel efficient tire and retread tire are increasing, however, there is a possibility of losing competitiveness and drop in market share in case of delay in developing and providing tires which can improve customer satisfactions related to CO2 reductions. The global Environment Working Group is monitoring social trend including market requirements from customers such as automakers.

C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

1. Bridgestone's approach to managing climate-related risks

For risk management, the Bridgestone Group broadly divides risks into two categories: business strategic risks, which are related to management decision-making, and operational risks, which include climate change risks and are related to daily operations. The former is handled through business operations, while the latter is handled by the Chief Risk Officer (CRO), who has overall responsibility for managing risks including climate change and reports to the CEO.

We promote comprehensive activities to appropriately manage risks common to the Group, with consideration for the scale and characteristics of each site and Group company. Through the dual promotion of Group global unified activities and autonomous risk management activities, we identify, prevent and mitigate risks, and formulate Crisis Management and Business Continuity Plans to enable appropriate support for the continuation or resumption of business.

<Process to mitigate, transfer, accept, control and/or prioritize climate-related risks>

We assess risks, utilizing a globally unified criteria which consists of viewpoints of their impact and possibility of occurrence then classified into "Corporate Risk" and "Asset Risk" (Detail of the assessment methodology is as written in 2.2b). As for the Corporate Risk, we discuss on and establish action plan of measures to manage the risks from various perspective such as mitigation, transfer, accept and/or control. And the progress is reported to the CRO once every half-year period. Then the CRO deliberates the report content and as necessary, gives instructions for improvements to responsible department.

On the other hand, as for the Asset Risk, corresponding facilities consider countermeasure and reduce impact of the risk. And they conduct self assessment of the progress once a year and perform corrective actions as necessary.

2. Management processes regarding climate-related opportunities

As the first step of our managing process of climate-related opportunities, the Environmental Working Group under the GCEC comprising members from each Strategic Business Unit monitors social trends and oversees company's activities on CO2 reduction, biodiversity, resource efficiency end so on.

Based on the discussion at the Environmental Working Group, the overall global decision-making regarding the environment, including climate change, is normally carried out by the GCEC. Members of the committee are composed of an executive officer in charge of CSR and representatives of regions and functions. As for important items, the GCEC reports them to the Global EXCO and ask them for decision on them. Then, based on the management plan finalized at Global EXCO, SBUs reflect it in each Five-Year Mid-term Management Plan, prioritizing such opportunities from effect and investment points of view.

3. Case Study

<Physical risk>

For Bridgestone, disruption of supplies of raw material including natural rubber is regarded as one of major risks. So far, its probability of occurrence is not very high. But on the other hand, as we use large quantities of natural rubber in tires and other rubber products, we estimate its potential financial impact is substantive. Therefore, we classify it into Corporate Risk. From climate change perspective, productivity of natural rubber which is main raw material in tires could be decreased by droughts in South East Asia as primary growing area of para rubber tree. Then, shortage and/or cost increase of natural rubber could adversely affect the Companies' operating results and financial position.

As part of countermeasures, we are promoting various research projects aimed at practical applications for guayule, which shows promise as a new supply source for natural rubber. Aiming for practical applications in the 2020s. we will continue to strengthen various factors going forward, including improving guayule productivity through sustainable methods, establishing production processes and improving logistics.

<Transition risk>

Our operations around the world are subject to diverse national laws and regulation including environmental protection. We consider such Legal, regulatory and litigation risk could have potential to be one of the major risks.

Labeling systems and regulations regarding tire performance such as fuel efficiency which can contribute CO2 reduction are one of such risks. This risk has potential to decrease sales if investment in new technology for lower rolling resistance which makes tires more fuel-efficient in align with other performances including price is unsuccessful. As tire business is one of our primary business, the potential financial impact is considered not small. And as this type of systems/regulations are expanding around the world, the probability of occurrence is relatively high. Therefore, we regard this risk as Corporate Risk and tackle with developing tires with low rolling resistance.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Increased pricing of GHG emissions

Type of financial impact driver

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

In October 2012, the Tax for Climate Change Mitigation was introduced in Japan. In response to such introduction, the Bridgestone Group is paying more taxes directly according to the use of fuel and indirectly according to the use of electricity. Specifically, by using CO2 emissions factor of each fossil fuel, the tax rate per unit quantity (kilo liter or tonne) is set so that each tax burden is equal to 289 yen per tonne of CO2 emissions. The tax rate was raised in three stages over three and a half years and reached 289 yen in

2016. In addition, there is a possibility of increasing payment since Paris Agreement was ratified and there are discussions about introducing carbon pricing in Japan.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

High

Potential financial impact

935000

Explanation of financial impact

Current carbon tax rate in Japan is 289 yen/tCO₂e, however, financial impact in case of increase in tax rate can be roughly calculated as following formula. Financial impact = increase in tax rate times CO₂ emission volume in Japan (about 935 thousand yen/1 yen increase in tax rate. This calculation includes impact of price increase of electricity)

Management method

In order to reduce CO₂ emissions, we are promoting conversion to energy that produces little CO₂ emissions and also reducing energy use itself. 1. Energy saving initiatives at production sites: We have been implementing CO₂ reduction measures such as upgrading equipment to high efficiency equipment, converting equipment to inverter which can flexibly respond to load fluctuation, installing steam turbine generators, converting to fuel emitting less CO₂, and installing LED lighting. 2. Energy saving initiatives at offices: We have reduced the number of units of equipment by promoting scrapping and integration through the visualization of the layout and utilization rate of office equipment such as printers and multifunction office equipment. We also have long succeeded in reducing power consumption by resetting illuminance by thorough measurement of lighting illuminance of business offices. We have introduced an “electric power visualization” system at the business office of Technical Center which is used to visualize the status of power consumption and verify the effects of reduction measures and to set reduction targets.

Cost of management

1421000000

Comment

Investments mainly for enhancing energy saving through improvements of equipment, including upgrading equipment to high efficiency equipment and converting them to inverter, at Bridgestone plants amounted to 1,421 million yen in 2017.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Supply chain

Risk type

Physical risk

Primary climate-related risk driver

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

Type of financial impact driver

Increased operating costs (e.g., inadequate water supply for hydroelectric plants or to cool nuclear and fossil fuel plants)

Company- specific description

Bridgestone's main business is tires whose raw materials consist of natural rubber. At present, natural rubber is almost entirely made from the sap of para rubber tree. 90% of growing area of para rubber tree is in Southeast Asia and owing to droughts in the tropical rainforests of Southeast Asia caused by El Nino, the deciduous period for para rubber tree becomes longer and the period during which sap (latex) can be obtained becomes shorter, thereby leading to a decrease in yield. As a result, the balance of supply and demand is expected to be upset and the price of natural rubber, which plays a vital role as a raw material of tires, is expected to surge. If the price of natural rubber rises and it becomes difficult to procure such rubber, the cost of tire production will increase. This in turn is expected to result in lower profit or a decrease in share due to higher tire prices.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-high

Potential financial impact

1880000

Explanation of financial impact

At this moment, we are unable to accurately estimate the financial implications. However, we estimate that once this scenario takes place, the procurement cost will increase drastically. For example, an increase of about 1.88 million yen worldwide for every yen rise per ton of natural and synthetic rubber, based on 2017 production levels.

Management method

In order to avoid the risk above, Bridgestone produces a portion of the raw materials at our own rubber tree farms, as well as establishes disease diagnostic technology and conducts research on genome decoding aimed at breed improvement. Through these efforts, we are augmenting output and preparing for the risk of being unable to procure. The Bridgestone Group owns natural rubber tree farms in Indonesia and Liberia.

Cost of management

99700000000

Comment

The entire research and development expenses of the Global Group, including measures like establishing disease diagnostic technology and conducting research on genome decoding aimed at breed improvement , totaled 99.7 billion yen per year in 2017.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Reputation: Increased stakeholder concern or negative stakeholder feedback

Type of financial impact driver

Reputation: Reduction in capital availability

Company- specific description

Disclosure of GHG related information is increasingly being required around the world. Meanwhile, foreign investors own about 27% of Bridgestone stocks. If Bridgestone stocks are deemed to be outside the scope of ESG investment by financial institutions due to our failure to disclose information or negative campaigns are conducted by NGOs, there is a risk that this would lead to a decline in the stock price.

Time horizon

Short-term

Likelihood

About as likely as not

Magnitude of impact

Medium-low

Potential financial impact

800000000

Explanation of financial impact

A one-yen decline in the stock price per share would result in total losses of corporate value approximately 800 million yen as of December 31, 2017. It brings more difficult access to capital.

Management method

In order to prevent decreasing in brand value, Bridgestone believes that it is important to accurately disclose information on supply chain GHG. When disclosing GHG information, we deem it crucial to 1) guarantee the reliability of information, 2) secure an information disclosure method, and 3) secure a means of access to information for stakeholders. Bridgestone also takes the following measures. 1) Guarantee of reliability of information: We obtained a third-party verification of our 2017 calculation results through an external organization and disclosed it. In addition, our environmental activities have won various awards. This helped earn the trust of stakeholders as evaluation through the view of a third party. 2) Method of information disclosure: Bridgestone thinks that it is possible to meet stakeholder's expectations by implementing the disclosure of information in accordance with CDP requirements. By disclosing information connected with the objective under long-term environmental vision, we have made the purpose of our

initiatives easily understandable. 3) Secure means of access to information for stakeholders: For all stakeholders, we use our website and Global Sustainability Report to make it possible for them to access information of our various activities.

Cost of management

29000000

Comment

Bridgestone spent approx. 29 million yen in 2017 in total for implementing measures written in the "Management method" cell such as obtaining third-party verification of our 2017 GHG calculation results and issuing Sustainable Report.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Technology: Unsuccessful investment in new technologies

Type of financial impact driver

Technology: Reduced demand for products and services

Company- specific description

Recently, various regulations have been introduced to curb climate change. With respect to tires also, maximum limits on rolling resistance and the labelling system have been introduced. Although tires do not emit GHG when they are used, passenger cars and trucks emit a large volume of GHG. Improving fuel consumption, etc. would be a countermeasure against such emissions. Although the fuel consumption of passenger cars and trucks is determined by engine performance and various resistance factors, among such factors, the impact of resistance by tire is said to be about 10-20% for passenger cars and about 20-30% for trucks, though this depends on driving conditions. Resistance by tire mentioned here is referred to as "rolling resistance" which is resistance arising when a tire rolls. In other words, the same vehicle will have better fuel consumption if the tire rolling resistance is low. As such, each country is adopting the following systems as a measure to lower rolling resistance. 1. Set a maximum value for rolling resistance and prohibit sale if this maximum value is exceeded. (Maximum limit) 2. Grade rolling resistance according to 5-7 levels, and carry out labelling. Europe (EU member states), South Korea, Brazil and the Middle East (GCC, Israel) have already introduced the maximum limit and labelling systems, and Japan has introduced the labelling system as a voluntary industry standard. In addition, Japan, Malaysia and other countries have already decided to introduce the maximum limit system, and North America, Thailand and countries in Asia and Oceania are considering the introduction of one of the systems. Bridgestone considers that these systems are a risk to decrease sales units if investment in new technology for better rolling resistance in align with other performances including price is unsuccessful. Therefore, we are developing products with better rolling resistance to prevent reduction of sales volume.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

High

Potential financial impact

30310000000

Explanation of financial impact

The global tire market is valued at approximately 151 billion US dollars in 2016 (Reference: Tire Business – Global Tire Company Rankings) and is expected to grow two to three-fold by 2050. By considering the maximum limit and labelling system of rolling resistance as a risk to bring financial impact. Tire sales in 2017 was about 3,031 billion yen. We estimate potential financial impact to be 30.31 billion yen per 1% decreasing of annual sales. The actual value depends on degree of sales decrease of tires not satisfying fuel efficiency level required by future system.

Management method

The most important factor to prevent this risk is the development of technology for reducing tire-rolling resistance. To this end, we are reducing rolling resistance by developing technology for tires in overall focusing on the molecular structure of raw materials, weight reduction, internal structure of tires, and tire groove configuration, among other things. As one achievement, we successfully developed the “Large and Narrow concept tire” employing “ologic” technology which represents a new category of tire that is completely different from previous tires, as a new tire environmental technology. Tires that employ this new technology are able to realize levels of fuel efficiency that greatly exceed those of the fuel-efficient tires Bridgestone has already put on the market, and as a result, this is expected to reduce CO2 and occurrence of this risk.

Cost of management

83200000000

Comment

Bridgestone invests in development aiming to reduce rolling resistance every year. Tire’s research and development expenses, including such investments, totaled 83.2 billion yen in 2017.

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Type of financial impact driver

Increased revenue through demand for lower emissions products and services

Company- specific description

Recently, various regulations have been introduced with the purpose of curbing climate change. With respect to tires also, maximum limits on rolling resistance and the labelling system have been introduced. Although tires do not emit GHG when they are used, passenger cars and trucks emit a large volume of GHG. Improving fuel consumption, etc. would be a countermeasure against such emissions. Although the fuel consumption of passenger cars and trucks is determined by engine performance and various resistance factors, among such factors, the impact of resistance by tire is said to be about 10-20% for passenger cars and about 20-30% for trucks, though this depends on driving conditions. The tire resistance mentioned here is referred to as "rolling resistance" which is resistance arising when a tire rolls. In other words, the same vehicle will have better fuel consumption if the tire rolling resistance is low. As such, each country is adopting the following systems as a measure to lower rolling resistance. 1. Set a maximum value for rolling resistance and prohibit sale if this maximum value is exceeded. (Maximum limit) 2. Grade rolling resistance according to 5-7 levels, and carry out labelling. For example, several regions and countries such as Europe (EU member states), South Korea, Brazil and the Middle East (GCC, Israel) have already introduced the maximum limit and labelling systems, and Japan has introduced only the labelling system as a voluntary industry standard. In addition, some of other countries also have already decided or are considering to introduce such systems. Bridgestone considers these systems as an opportunity to fairly disclose to consumers the maximum limit and grading of rolling resistance of our products. From this viewpoint, we are developing products with better rolling resistance and expanding sales volume.

Time horizon

Current

Likelihood

Very likely

Magnitude of impact

High

Potential financial impact

30310000000

Explanation of financial impact

The global tire market was valued at approximately 151 billion US dollars in 2016 (Reference: Tire Business – Global Tire Company Rankings) and is expected to grow two to three-fold by 2050. By considering the maximum limit and labelling system of rolling resistance as an opportunity and making use of such opportunity, there is huge financial potential. Sales of tires, including fuel-efficient tires, were about 3,031 billion yen in 2017. We estimate potential financial impact is 30.31 billion yen per 1% increasing of annual sales. Its actual value depends on degree of sales increase by such fuel-efficient tires.

Strategy to realize opportunity

The most important factor in taking advantage of the maximum limit and labelling system of rolling resistance as an opportunity is the development of technology for reducing tire-rolling resistance. To this end, we are reducing rolling resistance by developing technology for tires in overall focusing on the molecular structure of raw materials, weight reduction, internal structure of tires, and tire groove configuration, among other things. At the same time, Bridgestone is implementing the sales strategy of focusing on expanding sales of “ECOPIA” tires with substantially lower rolling resistance as a global brand. We successfully increased sales of “ECOPIA” brand products compared to sales at the time of launch of this brand, and will continue to position this brand as an important measure in the future. Also, we successfully developed the “Large and Narrow concept tire” employing “ologic” technology which represents a new category of tire that is completely different from previous tires, as a new tire environmental technology. Tires that employ this new technology are able to realize levels of fuel efficiency that greatly exceed those of the fuel-efficient tires Bridgestone has already put on the market, and as a result, this is expected to reduce CO2.

Cost to realize opportunity

83200000000

Comment

Bridgestone invests in development aiming to reduce rolling resistance every year. Tire’s research and development expenses, including such investments, totaled 83.2 billion yen in 2017.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Supply Chain

Opportunity type

Resilience

Primary climate-related opportunity driver

Resource substitutes/diversification

Type of financial impact driver

Increased reliability of supply chain and ability to operate under various conditions

Company- specific description

Currently, natural rubber, the main raw material of tires, is almost entirely made from the sap of para rubber tree. 90% of growing area of para rubber tree is in Southeast Asia and its price often fluctuates due to reason such as demand change, climate change and speculation etc. Therefore, finding substitution of the material source will be one key factor to enhance competitiveness and resilience of Bridgestone's business. The Bridgestone Group proactively conducts research and production of natural rubber resources consisting of Guayule cultivated in arid climates and Russian Dandelion cultivated in temperate climates as substitutes for para rubber tree. By doing so, we can use this opportunity to differentiate ourselves in terms of diversity of raw material source and cost competitiveness and supply of tires.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-high

Potential financial impact

207000000000

Explanation of financial impact

Financial impact to tire sales in case of change in Bridgestone's share can be roughly calculated as following formula. Financial impact = Current sales divided current share multiplied percentage of change in share (about 207 billion yen per 1 % change in share).

*The calculation is based on approx. 3,021 billion yen as Bridgestone's sales in tire business and 14.6% as Bridgestone's share in the tire industry in 2016

Strategy to realize opportunity

As a means of gaining opportunities, we have been promoting research and development on alternative resources in other climatic zones aimed at easing the overconcentration of natural rubber producing areas in Southeast Asia. 1. Guayule: The Bridgestone Group conducts research and development of guayule as a new natural rubber source replacing para rubber tree in order to alleviate the overconcentration of natural rubber production in certain regions and stabilize supply. As guayule grows in arid regions, unlike para rubber tree, and the rubber component contained in its tissue has similar properties to the natural rubber harvested from the para rubber tree, it is expected to be a new natural rubber source. We commenced experimental production of natural rubber harvested from guayule in 2015 and are conducting studies for its practical application in the 2020s. 2. Russian Dandelion: Russian Dandelion, a plant native to Kazakhstan and Uzbekistan, is a material for natural rubber and is cultivated in temperate zones which are completely different from the climate conditions for para rubber tree. Going forward, the Bridgestone Group will actively conduct research and development of Russian Dandelion.

Cost to realize opportunity

99700000000

Comment

The entire research and development expenses on Group/Global basis, including development of alternative resources such as Guayule and Russian Dandelion, totaled 99.7 billion yen per year in 2017.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Shift in consumer preferences

Type of financial impact driver

Increased revenue through demand for lower emissions products and services

Company- specific description

As a consumption trend, demand for products with a low environmental impact is expected to increase in the future, with retread tires expected to increase. Retread tires refer to tires that are reused after removing used tire treads and applying freshly vulcanized new treads. Since this process prolongs the life of tires, it leads to the reduction of used tires and the reduction of CO2 emissions during tire production. In addition, it results in the saving of tire expenses because it is less expensive than purchasing new tires. In this connection, we provide a service known as ECO Value Pack. ECO Value Pack bundles new tires, retread tires and tire maintenance service into a single package for transport operators and other customers. This service contributes to customers' environmental management, improvement of vehicle fuel efficiency, reduction of tire expenses, and enhancement of efficiency of customers' tire related operations.

Time horizon

Current

Likelihood

Very likely

Magnitude of impact

Medium

Potential financial impact

7800000000

Explanation of financial impact

Regarding retread tires, we promote technological development (ensure durability, increase the number of times retreaded, etc.) to advance resource saving, in addition to aiming at a higher domestic retread tire sales ratio than the 2014 result in 2020. Annual sales of Bridgestone Bandag Retread Manufacturing, a group company engaged in the manufacture of retread tires in Japan, were approximately 7.8 billion yen (in 2017).

Strategy to realize opportunity

ECO Value Pack is our proprietary service that proposes the optimal combination of maintenance and tire to solve issues that customers are facing. The combination of “new tires, retread tires, and tire maintenance service” according to the actual status of usage by customers contributes to “safe operation, environmental friendliness, cost reduction, and enhancement of operational efficiency” for customers.

Cost to realize opportunity

83200000000

Comment

Bridgestone makes investments in technological development (ensure durability, increase the number of times retreaded, etc.) to advance resource saving. Tire’s research and development expenses, including such investments, totaled 83.2 billion yen in 2017.

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

	Impact	Description
Products and services	Impacted	Tire industry has maximum limits on rolling resistance and the labelling system have been introduced. For Bridgestone, failing to respond to these systems could be a risk of sales decline of ECO products, however, it also could be an opportunity to increase our sales of such products by improving rolling resistance of a tire. The potential of financial impact to net sales is estimated 30.31 billion yen per 1% of our sales is increased by taking the opportunity or decreased by occurrence of the risk. Since this risk impact is big, Bridgestone provides products and services which can reduce customers' CO2 emissions such as fuel-efficient tires, in order to take opportunities of product efficiency regulations and standards, and changing consumer behavior toward low rolling resistance tires.
Supply chain and/or value chain	Impacted	There is a risk of rubber supply shortage as climate pattern change in regions where para rubber tree grows and rubber production efficiency worsen. It can lead to lower profit because of higher rubber procurement cost. The actual impact is estimated 1.88 million yen worldwide for every yen rise per tonne of natural and synthetic rubber, based on 2017 production level. Since this risk impact is big, Bridgestone has Global Sustainable Procurement Policy, which include commitment driving actions to realize long-term environmental benefits, to help identify and evaluate qualified suppliers, promote best practices on our value chain, and serve as a communication and improvement tool on enhancing CSR perspective on the supply chain among the industry.
Adaptation and mitigation activities	Impacted	There are discussions about introducing carbon pricing in many countries, and since Bridgestone has facilities in over 20 countries, there is a possibility of increasing operational cost. In case of Japan, the actual impact is estimated 935000 yen per 1 yen increase in tax rate. Since this risk impact is not small, Bridgestone encourages energy efficient operations such as fuel conversions, LED introduction, etc. to reduce CO2 emissions.
Investment in R&D	Impacted	Bridgestone encourages providing products and services which can contribute to reducing CO2 emissions, such as fuel-efficient tires, by introducing new technologies. There is a possibility of sales decrease in case of becoming less competitive because of delay in technology development. Since this risk impact is big, Bridgestone invests in R&D for eco-products/services, alternative materials in case of material shortage caused from climate-change. The entire research and development expense of the Global Group totaled 99.7 billion yen per year in 2017. Among that expense, tire’s research and development expenses totaled 83.2 billion yen in 2017.

	Impact	Description
Operations	Impacted	There is a risk of rubber supply shortage as climate pattern change in regions where para rubber tree grows and rubber production efficiency worsen. It can lead to lower profit because of higher rubber procurement cost. Since this risk impact is significant, Bridgestone has been promoting research and development on alternative resources in other climatic zones aimed at easing the overconcentration of natural rubber-producing areas in Southeast Asia. The entire research and development expenses on Global Group basis, including development of alternative resources such as Guayule and Russian Dandelion, totaled 99.7 billion yen per year in 2017.
Other, please specify	Please select	

C2.6

(C2.6) Describe where and how the identified risks and opportunities have factored into your financial planning process.

	Relevance	Description
Revenues	Impacted	In case climate change becomes worse and/or related regulation(s) becomes strict, sales of vehicles and demand for tires will be affected This is one major risk for Bridgestone's revenue. It is also expected as opportunity that revenue from eco-products/services (i.e. our ECOPIA brand tires) is increased according to market change to low-carbon. The potential of financial impact is estimated 30.31 billion yen per 1% of our sales is increased by taking the opportunity or decreased by occurrence of the risk.
Operating costs	Impacted	In case of rubber supply shortage as climate pattern change in regions where para rubber tree grows or getting rubber production efficiency worse, rubber procurement cost becomes high. The actual impact is estimated 1.88 million yen worldwide for every yen rise per tonne of natural and synthetic rubber, based on 2017 production level. Since this risk impact is significant, Bridgestone has a Global Sustainable Procurement Policy, which include commitment driving actions to realize long-term environmental benefits, to help identify and evaluate qualified suppliers, promote best practices on our value chain, and serve as a communication and improvement tool on enhancing CSR perspective on the supply chain among the industry.
Capital expenditures / capital allocation	Impacted	The entire research and development expense of the Global Group including costs for developing eco-related technology (i.e. developing tires with low rolling resistance), machines/equipment (i.e. tire building machine with low energy consumption) etc. totaled 99.7 billion yen per year in 2017. Among that expense, tire's research and development expenses totaled 83.2 billion yen in 2017. Expenses and investments mainly for introducing equipment for energy saving, including upgrading them, at Bridgestone plants amounted to 1,421 million yen in 2017.
Acquisitions and divestments	Impacted	In the process of considering acquisitions, various aspects are incorporated into evaluation. CSR related factors including environmental viewpoint is one of such aspects. In 2017, the process was applied to Bridgestone's acquisition cases such as that of Gaco Western in US, Ayme in France etc.
Access to capital	Impacted	Good result of external evaluation against Bridgestone from ESG perspective makes Bridgestone easier or better access to capital by increasing investors' and lenders' confidence that the company's climate-related risks are appropriately assessed and managed. As of 2017, Bridgestone obtained relatively good score on some of representative index such as CDP, DJSI and these results brought us more opportunities to access to capital. A one-yen increase in the stock price per share would result in total increase of corporate value approximately 800 million yen as of December 31, 2017. It brings easier access to capital such as issuance of new shares.

	Relevance	Description
Assets	Impacted	Introducing machines/equipment to produce eco-products or to make resource consumption lower brought increasing of assets. Investments mainly for such equipment, including upgrading equipment, at Bridgestone plants amounted to 1,421million yen in 2017.
Liabilities	Not yet impacted	Bridgestone has an option to increase corporate liabilities for introducing machines/equipment to produce eco-products or reducing resource consumption in future. Additionally, in case carbon tax is newly introduced or tightened, financial impact will be realized. In that sense, it could be “potential liabilities”. For example, if Japan carbon tax rate increase, financial impact will be approx. 935 thousand yen/1 yen increase in the tax rate.
Other	Please select	

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?

No, but we anticipate doing so in the next two years

C3.1c

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

i) How the strategy has been influenced all global decision making regarding environment, including climate change, is carried out by the Global CSR Enhancement Committee (GCEC). Members of the committee are composed of an executive officer in charge of CSR and representatives of regions and functions. Important decisions made by GCEC are reported to Global Executive Committee (Global EXCO), Bridgestone’s body of global business execution, and based on the management plan finalized at Global EXCO, Strategic Business Units (SBUs) reflect it in each Five-Year Mid-term Management Plan. From viewpoint of our

countermeasure against climate change, Bridgestone established the “Environmental Mission Statement” to contribute in aspects of circular economy, biodiversity and low carbon society (including long-term target to reduce over 50% of our CO2 emission by 2050 and beyond), as a part of “the Bridgestone Essence framework” that is our corporate philosophy. From the viewpoint of contribution through solving climate-related issues is always incorporated into all our activities including planning and addressing of strategy.

ii) Explanation of whether business strategy links to an emissions reductions target or energy reduction target

Bridgestone business strategy links to Environmental long-term vision and mid-term target including emissions reductions target. Specifically, the long-term target is to reduce over 50% of our CO2 emission by 2050 and beyond, and the mid-term target is to reduce our CO2 emissions per sales from operations and products' after-use by 35 percent vs 2005 by 2020. Global Environmental Working Group summarizes progress of CO2 emissions reduction target and next strategies to achieve the target and reports to Global CSR Enhancement Committee (GCEC). GCEC then report them to G-EXCO, and G-EXCO finalizes a management plan taking into account the report.

iii) The most substantial business decisions

Bridgestone decided to reorganize our R&D and manufacturing base located in Kodaira City, Tokyo to accelerate technology and business model innovation for the future. We expect to invest about 30 billion yen for this project, and the construction began in 2017. By expanding R&D facilities and strengthening our R&D structure which supports products and services on a global basis, we aim to create value through continuous innovations. Going forward, we will promote R&D that contributes to mitigating climate change, such as development of fuel-efficient tires and energy-saving technologies. Furthermore, we are carrying out capital investment in Hikone Plant. As the flagship plant of the Group, Hikone Plant aims to achieve by far the best competitiveness. In order to reduce CO2 emissions by further enhancing quality and production efficiency, we are redesigning the plant's production lines, including a shift toward IT and automation, by introducing cutting-edge technologies and equipment. We plan to invest roughly 15 billion yen in the plant. The project at the Hikone Plant began in 2016 and is scheduled to conclude by 2020.

iv) Aspects of climate change influenced the strategy (e.g. need for adaptation, regulatory changes, or opportunities to develop green business);

Need for adaptation influences Bridgestone strategy such as developing alternative material in case of material shortage caused by climate change. Opportunities to develop green business also influences strategies such as development of tires that contribute to reduction of CO2 emissions from driving an automobile (through reduced rolling and air resistance). In 2017, we succeeded developing and started to provide new ECOPIA tires

which can contribute to reducing CO2 emissions from driving with other high performance such as wet and life.

v) The most important components of the short-term strategy Bridgestone defines the short term to be affected by climate change as the period from the present up to 2020.

- Achievement of CO2 emission reduction targets throughout the whole Group, setting 2020 as the target year, with 2005 as the baseline. We back casted and drew up these targets from long-term environmental vision, which are ideal conditions in 2050.

- Achievement in reduction of GHG emissions mainly by the improvement in production efficiency and reduction of raw material losses at plants with an eye to regulatory compliance and acquisition of emission rights

- Product development complying with product regulations and grading of each country

- Re-examination of product structure and line-up due to shifting consumer tendencies associated with climate change.

- Needs of consumers, local residents and others in regard to climate change initiatives. In particular, acceleration of development and expansion of sales of fuel-efficient tires.

vi) The most important components of the long-term strategy

Bridgestone defines the long term to be affected by climate change as the period from the present up to 2050.

- Strengthening initiatives toward establishing a more sustainable society according to the Bridgestone Group's Environmental Mission Statement.

- As initiatives for realizing a low-carbon society, globally-agreed long-term target that contributes to reducing GHG emissions of the whole world by at least 50% in the year 2050 and beyond.

- Re-examination of production sites controlled by the changes in weather conditions and local regulations

- Development of lightweight products that consider changes in supplies and reserves of raw material resources

- Development of fuel-efficient tires for which materials are controlled at nano level

vii) How this is gaining the company strategic advantage over competitors.

Our strategic advantages over competitors are as follows.

-Research and development capabilities for raw materials such as development of biomass-derived synthetic rubber and solutions for controlling diseases and pests of rubber trees

-Strategic planning from a long-term view up to 2050 based on long-term environmental vision

-Planning and implementation of efficient and effective CO2 emission reduction measures by having own sites in the entire supply chain from in-house production sites for raw materials to production sites and sales within the Group

viii) How the Paris Agreement has influenced the business strategy

We are aware of Paris Agreement aiming to reach net zero CO2 emissions, considering necessity of revision of strategies toward long-term environmental vision. In addition, it is necessary to monitor and respond to social trend since there is a possibility of establishment of measures such as carbon tax, to achieve each country's reduction target based on Paris Agreement.

C3.1g

(C3.1g) Why does your organization not use climate-related scenario analysis to inform your business strategy?

We recognize and understand the need of TCFD scenario analysis. We are now considering our post-2030 Environmental target and planning to establish it based on such scenario analysis, clarifying impact of 2-degree scenario to our company, magnitude of related things, direction that Bridgestone should take and so on.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Both absolute and intensity targets

C4.1 a

(C4.1 a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Scope

Scope 1 +2 (market-based)

% emissions in Scope

100

% reduction from base year

50

Base year

2005

Start year

2010

Base year emissions covered by target (metric tons CO2e)

4570763

Target year

2050

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

% achieved (emissions)

13.7

Target status

Underway

Please explain

Target of Bridgestone Long-term Vision is to contribute to globally-agreed target (over 50% reduction of CO2 emissions).The globally-agreed target currently refers to agreement of G8 in Toyako summit in 2008, to reduce at least 50% global GHG emissions.

Target reference number

Abs 2

Scope

Other, please specify (CO2 emission excess our contribution)

The second absolute target covers the CO2 emission amount by operations and products ' after-use excess our contribution from avoided emissions when our customers use the tires by improving fuel efficiency of our tires.

% emissions in Scope

100

% reduction from base year

100

Base year

2005

Start year

2010

Base year emissions covered by target (metric tons CO2e)

15733000

Target year

2020

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

% achieved (emissions)

86

Target status

Underway

Please explain

The Bridgestone Group is working to achieve its mid-term targets to reduce the volume of CO2 emissions over the entire lifecycle of a tire (15,733kt-CO2 in 2005). Considering the value when CO2 emissions from operations and products' after-use are offset by contribution of CO2 reduction at usage stage, the reduction in 2017 was 86% (compared to 2005). We are continuing activities with a dual approach aimed at achieving that contribution to CO2 reduction during use exceeds CO2 emissions from our operations and products' after-use by 2020.

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Scope

Other, please specify (Scope 1+2+3)

The target covers Scope 1+2(Market-based method + location-based method)+3 (Purchased goods & services, Upstream transportation & distribution,

Downstream transportation and distribution, End-of-life treatment of sold products, Upstream leased assets)

% emissions in Scope

100

% reduction from baseline year

35

Metric

Metric tons CO2e per unit revenue

Base year

2005

Start year

2010

Normalized baseline year emissions covered by target (metric tons CO2e)

585

Target year

2020

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

% achieved (emissions)

100

Target status

Underway

Please explain

Focusing on the lifecycle of the Group's products, we are working to reduce sales intensity of CO2 emitted in the manufacturing process from raw material procurement to production, logistics, and products' after-use. CO2 intensity of the base year is 585 tCO2/hundred million yen. Individual targets/measures are considered by each business division for achieving our overall objective, and progress is being made toward the objective. The results thereof are compiled at the CSR, Environment and Quality Management Planning Division and the status of objective achievement is reviewed at Global EXCO.

% change anticipated in absolute Scope 1+2 emissions

-12

% change anticipated in absolute Scope 3 emissions

-12

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO₂e savings.

	Number of projects	Total estimated annual CO ₂ e savings in metric tonnes CO ₂ e (only for rows marked *)
Under investigation	102	
To be implemented*	242	14420
Implementation commenced*	168	10797
Implemented*	119	1096
Not to be implemented	0	

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Activity type

Energy efficiency: Building fabric

Description of activity

Other, please specify (Insulation and maintainance)

Improving energy efficiency at tire plants by insulating buildings and equipment and by maintenance of them, etc.

Estimated annual CO₂e savings (metric tonnes CO₂e)

4575

Scope

Scope 1

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

202000000

Investment required (unit currency – as specified in CC0.4)

1009000000

Payback period

4 - 10 years

Estimated lifetime of the initiative

6-10 years

Comment

Activity type

Energy efficiency: Building services

Description of activity

Other, please specify (HVAC, lighting etc.)

Improving energy efficiency at tire plants and offices by improving HVAC, lighting such as installing LED, etc.

Estimated annual CO2e savings (metric tonnes CO2e)

2717

Scope

Scope 1

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

155000000

Investment required (unit currency – as specified in CC0.4)

776000000

Payback period

4 - 10 years

Estimated lifetime of the initiative

6-10 years

Comment

Activity type

Energy efficiency: Processes

Description of activity

Other, please specify (Switching fuel, optimizing process, etc.)

Improving energy efficiency at tire plants by replacing equipment with efficient equipment, switching fuel, optimizing process, etc.

Estimated annual CO2e savings (metric tonnes CO2e)

25687

Scope

Scope 1

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

1911000000

Investment required (unit currency – as specified in CC0.4)

9557000000

Payback period

4 - 10 years

Estimated lifetime of the initiative

6-10 years

Comment

Activity type

Low-carbon energy purchase

Description of activity

Natural Gas

Estimated annual CO2e savings (metric tonnes CO2e)

7183

Scope

Scope 1

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

44000000

Investment required (unit currency – as specified in CC0.4)

220000000

Payback period

4 - 10 years

Estimated lifetime of the initiative

6-10 years

Comment

Activity type

Process emissions reductions

Description of activity

Changes in operations

Estimated annual CO2e savings (metric tonnes CO2e)

228

Scope

Scope 1

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

29480000

Investment required (unit currency – as specified in CC0.4)

147400000

Payback period

4 - 10 years

Estimated lifetime of the initiative

6-10 years

Comment

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Other	Relevant divisions report the emission costs and reduction benefits of CO2-related measures in the budgetary discussions, and investment decisions on capital expenditure are made for overall optimization. Management examines the business plans in the yearly mid-term plan, but carefully reviews investment projects based on Investment Profit Criteria taking into account the CO2 emission costs and reduction benefits as the criteria at that time. Based on the EUA price, CO2 emissions are converted into monetary value and incorporated into the Investment Profit Criteria using the Discounted Cash Flow method and used as one of the indexes for investment decisions. Both aspects of cost increase and decrease resulting from CO2 emission increase/decrease are considered for decision making.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Company-wide

Description of product/Group of products

Fuel-efficient tires: Tires that have reduced tire rolling resistance which influences vehicle fuel efficiency. A wide-ranging lineup is available, from passenger car tires to tires for trucks/buses and industrial vehicles, and the design facilitates rolling in order to enhance fuel efficiency. Specifically, through the use of NanoPro-Tech which exercises control over the fine structure of materials, we are striving to reduce rolling resistance by reducing energy loss and controlling heat generation of tread rubber.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify (LCA method of the Japan)

% revenue from low carbon product(s) in the reporting year

72

Comment

CO2 reduction using fuel-efficient tires during the product use stage. Reasons for the possibility of reduction: Improvement of tire rolling efficiency can contribute to fuel efficiency improvement/CO2reduction when customers use one's vehicles. Since the tire fuel efficiency or its standards differ by country, we approximate CO2 emissions. When we calculate based on Tyre LCCO2 Calculation Guidelines published by JATMA, due to reduction in tire rolling resistance, it contributed about 11,700,000 tons of CO2 reduction in 2017 compared with the products in 2005.

Level of aggregation

Group of products

Description of product/Group of products

Commercial roofing and building envelope solutions such as energy-saving polyiso insulations, roofing membranes, vegetative roofing solutions, airtight building envelope systems, etc. which qualify for LEED credits and contribute to healthy, high-performance construction.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify (LEED)

Leadership in Energy and Environmental Design (LEED)

% revenue from low carbon product(s) in the reporting year

Comment

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1 2005

Base year end

December 31 2005

Base year emissions (metric tons CO2e)

2303629

Comment

Scope 2 (location-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 2 (market-based)

Base year start

January 1 2005

Base year end

December 31 2005

Base year emissions (metric tons CO2e)

2267134

Comment

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?**Row 1****Gross global Scope 1 emissions (metric tons CO2e)**

1921690

End-year of reporting period

<Not Applicable>

Comment**Row 2****Gross global Scope 1 emissions (metric tons CO2e)**

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>

Row 3

Gross global Scope 1 emissions (metric tons CO2e)

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>

Row 4

Gross global Scope 1 emissions (metric tons CO2e)

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Row 1

Scope 2, location-based

2349337

Scope 2, market-based (if applicable)

2335966

End-year of reporting period

<Not Applicable>

Comment

Row 2

Scope 2, location-based

<Not Applicable>

Scope 2, market-based (if applicable)

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>

Row 3

Scope 2, location-based

<Not Applicable>

Scope 2, market-based (if applicable)

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>

Row 4

Scope 2, location-based

<Not Applicable>

Scope 2, market-based (if applicable)

<Not Applicable>

End-year of reporting period

<Not Applicable>

Comment

<Not Applicable>

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source

GHGs except CO2

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why the source is excluded

At production sites in Japan and the Americas, GHGs except CO2 are collected but are excluded because emissions are minimal relative to CO2.

Source

Production sites with number of workers below 50 people and is not the subject of accreditation of ISO14001

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why the source is excluded

The reasons why production sites, which are sites with number of workers below 50 people and are not the subject of accreditation of ISO14001, are excluded is because their influence on the total is very limited.

Source

Office/storages etc., nonproduction sites (supplementary facilities of plants are excluded)

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why the source is excluded

Office energy is collected at major sites but is excluded because emissions are minimal.

Source

Company owned car

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why the source is excluded

Refilling company owned cars outside the premises is excluded because their influence on the total is very limited. (Refilling fuel within the premises is included in Scopes)

C6.5

(C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

7765918

Emissions calculation methodology

Calculated by multiplying the purchased amount of each raw material with CO2 emission factors for each raw material determined by Japan Rubber Manufacturers Association calculation methods.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

749172

Emissions calculation methodology

Calculated by multiplying the capital expenditures material with CO2 emission factors determined by Japanese Ministry of the Environment

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation**Fuel-and-energy-related activities (not included in Scope 1 or 2)****Evaluation status**

Relevant, calculated

Metric tonnes CO2e

684875

Emissions calculation methodology

Calculated by multiplying the energy consumption with CO2 emission factors determined by DEFRA

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation**Upstream transportation and distribution****Evaluation status**

Relevant, calculated

Metric tonnes CO2e

434274

Emissions calculation methodology

[Ground transportation] Calculated by multiplying purchased amount of each raw material with CO2 emission factors for each raw material determined by Japan Rubber Manufacturers Association calculation methods. [Marine transportation] The result for 2008 is calculated based on the volume and distance of marine transportation with respect to the CO2 emission factors of the GHG protocol for shipment. It is calculated as a ratio of the purchased raw materials for 2016 and 2008.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

160223

Emissions calculation methodology

Calculated by multiplying the amount of waste generated with CO2 emission factors determined by Japanese Ministry of the Environment

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

18547

Emissions calculation methodology

Calculated by multiplying the number of employees with CO2 emission factors determined by Japanese Ministry of the Environment

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

65742

Emissions calculation methodology

Calculated by multiplying the number of employees with CO2 emission factors determined by Japanese Ministry of the Environment

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology**

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Explanation

Included in scope1 and scope2

Downstream transportation and distribution**Evaluation status**

Relevant, calculated

Metric tonnes CO2e

361940

Emissions calculation methodology

CO2 per unit sales is calculated from CO2 emitted from a part of one's own store and multiply it by total sales for proportional allotment

Percentage of emissions calculated using data obtained from suppliers or value chain partners

3

Explanation**Processing of sold products****Evaluation status**

Relevant, calculated

Metric tonnes CO2e

3278

Emissions calculation methodology

Calculate the power consumed during tire installation by multiplying installation power per tire by number of tires sold.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation**Use of sold products****Evaluation status**

Relevant, calculated

Metric tonnes CO2e

116179369

Emissions calculation methodology

Calculated from our Tyre sales unit and CO2 emission per 1 tire when it used based on "Tyre LCCO2 Calculation Guidelines Ver. 2.0" by The Japan Automobile Tyre Manufacturers Association, Inc. April 2012

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation**End of life treatment of sold products****Evaluation status**

Relevant, calculated

Metric tonnes CO2e

2107586

Emissions calculation methodology

Calculated by multiplying the purchased quantity of each raw material with CO2 emission factors determined by Japan Rubber Manufacturers Association calculation methods.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation**Downstream leased assets****Evaluation status**

Not relevant, explanation provided

Metric tonnes CO2e**Emissions calculation methodology****Percentage of emissions calculated using data obtained from suppliers or value chain partners****Explanation**

Bridgestone had no leased assets in 2017.

Franchises**Evaluation status**

Relevant, calculated

Metric tonnes CO2e

353492

Emissions calculation methodology

Calculate by multiplying CO2 emission per typical shop by the number of franchise shops

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation

Investments

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Explanation

Investments are not main business of Bridgestone.

Other (upstream)

Evaluation status

Metric tonnes CO2e

Emissions calculation methodology

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Explanation

Other (downstream)

Evaluation status

Metric tonnes CO2e

Emissions calculation methodology

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Explanation

C6.7

(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

Yes

C6.7a

(C6.7a) Provide the emissions from biologically sequestered carbon relevant to your organization in metric tons CO₂.

16152

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO₂e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.00000117

Metric numerator (Gross global combined Scope 1 and 2 emissions)

4257657

Metric denominator

unit total revenue

Metric denominator: Unit total

3643427965000

Scope 2 figure used

Market-based

% change from previous year

8.8

Direction of change

Decreased

Reason for change

Total CO₂ emissions was decreased approximately 8.8% in 2017 comparing that of 2016 mainly for reduction in tire weight and energy reduction at production sites, in addition to increasing of sales price and change of exchange rate.

Intensity figure

0.84

Metric numerator (Gross global combined Scope 1 and 2 emissions)

4257657

Metric denominator

Other, please specify (metric tonne of raw material)

Metric denominator: Unit total

5039000

Scope 2 figure used

Market-based

% change from previous year

4.5

Direction of change

Decreased

Reason for change

Result of emission reduction activities

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization have greenhouse gas emissions other than carbon dioxide?

No

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
United States of America	404651.33
Canada	25162.08
Mexico	132018.26
Costa Rica	14823.1
Argentina	21423.62
Brazil	69021.13
France	0
Belgium	4541.85
Spain	45948.43
Poland	16236.14
Italy	24074.49
Hungary	11497.4
United Kingdom of Great Britain and Northern Ireland	384.62
Turkey	23227.68
South Africa	57473.14

Country/Region	Scope 1 emissions (metric tons CO2e)
Liberia	9531.8
Thailand	241032.68
Indonesia	173325.14
Taiwan (Province of China)	8941.46
India	21332.81
Australia	78.54
Malaysia	59.39
Philippines	51.6
Viet Nam	5767.68
China	78895.23
Japan	532190.54

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.
By business division

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Tire	1745430
Others	176260

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
United States of America	636969.16	671741.89	1470720.76	0
Canada	18237.7	18237.7	144171.57	0
Mexico	62901.93	62901.93	137671.1	0

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Costa Rica	385.92	385.92	58472	0
Argentina	18462.35	18462.35	48054	0
Brazil	40113.09	40113.09	256149.99	0
France	20794.02	20794.02	136221.07	0
Belgium	3122.27	3122.27	18442.22	0
Spain	45020.12	45020.12	182859.96	0
Poland	168152.07	168152.07	304133.42	0
Italy	2047.29	2047.29	6200	0
Hungary	18131.86	18131.86	68139.28	0
United Kingdom of Great Britain and Northern Ireland	261.76	261.76	941.92	0
Turkey	91045.57	91045.57	249542.79	0
South Africa	64170.69	64170.69	64799	0
Liberia	0	0	0	0
Thailand	208273.01	195202.17	463111.9	0
Indonesia	79898.08	79898.08	109060.98	0
Taiwan (Province of China)	30579.63	30579.63	67822.3	0
India	94605.1	94605.1	122656.68	0
Australia	5563.53	5563.53	7453.83	0
Malaysia	752	752	1094.6	0
Philippines	2799.38	2799.38	4557.02	0
Viet Nam	15719.05	15719.05	32761.67	0
China	283369.07	283369.07	478700.78	0
Japan	437962.61	402889.96	814814.16	0

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.
By business division

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Tires	2092614	2072063
Others	256723	263903

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption		<Not Applicable>		
Other emissions reduction activities	1096	Decreased	0.03	We reduced 1,096 tons as a result of energy-saving activities in 2017. Since Scope 1 and 2 emissions were 4,275,577 tons the previous year, that represents a 0.03% reduction from 2017.
Divestment		<Not Applicable>		
Acquisitions		<Not Applicable>		
Mergers		<Not Applicable>		
Change in output		<Not Applicable>		
Change in methodology	177438	Decreased	4.15	Electricity emission factors was updated to the latest figures. The values on the left was difference between Scope1 + 2(Market-based) emission in 2017 with the latest electricity emission factors and that with the factors of previous year.
Change in boundary		<Not Applicable>		
Change in physical operating conditions		<Not Applicable>		

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Unidentified		<Not Applicable>		
Other	160614	Increased	3.76	Due to changes in the composition of energy sources, change in production volume, etc.

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	7627	7657575	7665202
Consumption of purchased or acquired electricity	<Not Applicable>	0	4801714	4801714
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	0	446839	446839
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	41000	<Not Applicable>	41000
Total energy consumption	<Not Applicable>	48627	12906128	12954755

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

18259

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

18259

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Kerosene

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

5859

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

5859

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

123347

MWh fuel consumed for the self-generation of electricity

61673

MWh fuel consumed for self-generation of heat

49339

MWh fuel consumed for self-generation of steam

12335

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Fuel Oil Number 4

We put information about Heavy Oil A as Fuel Oil No.4

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

56062

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

56062

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Fuel Oil Number 6

We put information about Heavy Oil B/C as Fuel Oil No.6

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

259576

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

259576

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

142409

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

142409

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Liquefied Natural Gas (LNG)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

615310

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

74056

MWh fuel consumed for self-generation of steam

296225

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

245029

Fuels (excluding feedstocks)

Town Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

1006137

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

63624

MWh fuel consumed for self-generation of steam

254495

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

688018

Fuels (excluding feedstocks)

Natural Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

4823050

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

877530

MWh fuel consumed for self-generation of steam

3510122

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

435398

Fuels (excluding feedstocks)

Coal

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

194576

MWh fuel consumed for the self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

194576

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

0

Fuels (excluding feedstocks)

Other, please specify (Carbon fuel oil)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

420618

MWh fuel consumed for the self-generation of electricity

119724

MWh fuel consumed for self-generation of heat

300894

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

0

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Acetylene

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Agricultural Waste

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Alternative Kiln Fuel (Wastes)

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Animal Fat

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Animal/Bone Meal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Anthracite Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Asphalt

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Aviation Gasoline

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Bagasse**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Bamboo**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Basic Oxygen Furnace Gas (LD Gas)**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biodiesel**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biodiesel Tallow**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biodiesel Waste Cooking Oil**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Bioethanol**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biogas**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biogasoline**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biomass Municipal Waste**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Biomethane**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Bitumen**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Bituminous Coal**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Black Liquor**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Blast Furnace Gas**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Brown Coal Briquettes (BKB)**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Burning Oil**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Butane**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Butylene**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Charcoal**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Coal**Emission factor**

2.1

Unit

metric tons CO₂e per metric ton

Emission factor source

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition):Anthracite, Brown coal briquettes, Sub bituminous coal, Other bituminous coal

Comment**Coal Tar****Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Coke**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Coke Oven Gas**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Coking Coal**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Compressed Natural Gas (CNG)**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Condensate**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Crude Oil**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Crude Oil Extra Heavy**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Crude Oil Heavy**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Crude Oil Light**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Diesel**Emission factor**

2.67

Unit

kg CO2e per liter

Emission factor source

Facilities in Japan: Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment) Others:The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

Comment**Distillate Oil****Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Dried Sewage Sludge**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Ethane**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Ethylene**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Fuel Gas**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Fuel Oil Number 1**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Fuel Oil Number 2**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Fuel Oil Number 4**Emission factor**

2.71

Unit

kg CO2e per liter

Emission factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superceded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

We put information about Heavy Oil A as Fuel Oil No.4

Fuel Oil Number 5**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Fuel Oil Number 6**Emission factor**

3

Unit

kg CO2e per liter

Emission factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superceded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment

We put information about Heavy Oil B/C as Fuel Oil No.6

Gas Coke**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Gas Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Gas Works Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

GCI Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

General Municipal Waste

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Grass

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Hardwood

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Heavy Gas Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Hydrogen

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Industrial Wastes

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Isobutane

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Isobutylene

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Jet Gasoline

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Jet Kerosene

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Kerosene

Emission factor

2.49

Unit

kg CO2 per liter

Emission factor source

Facilities in Japan: Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment) Others:The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

Comment

Landfill Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Light Distillate

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Lignite Coal**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Liquefied Natural Gas (LNG)**Emission factor**

2.75

Unit

metric tons CO₂e per metric ton

Emission factor source

Facilities in Japan: Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superceded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment) Others:The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

Comment**Liquefied Petroleum Gas (LPG)****Emission factor**

3

Unit

metric tons CO₂e per metric ton

Emission factor source

Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superceded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment)

Comment**Liquid Biofuel****Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Lubricants

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Marine Fuel Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Marine Gas Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Metallurgical Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Methane

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Motor Gasoline

Emission factor

2.27

Unit

kg CO2e per liter

Emission factor source

Facilities in Japan: Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment) Others:The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

Comment

Including Biogasoline

Naphtha

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Natural Gas

Emission factor

1.89

Unit

metric tons CO2e per m3

Emission factor source

Facilities in Japan: Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment) Others:The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

Comment**Natural Gas Liquids (NGL)****Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Natural Gasoline**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Non-Biomass Municipal Waste**Emission factor**

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Non-Biomass Waste

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Oil Sands

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Oil Shale

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Orimulsion

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Other Petroleum Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Paraffin Waxes

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Patent Fuel

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

PCI Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Peat

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Pentanes Plus

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Petrochemical Feedstocks

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Petrol

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Petroleum Coke

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Petroleum Products

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Pitch

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Plastics

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Primary Solid Biomass

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Propane Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Propane Liquid

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Propylene

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Refinery Feedstocks

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Refinery Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Refinery Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Residual Fuel Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Road Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

SBP

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Shale Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Sludge Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Softwood

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Solid Biomass Waste

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Special Naphtha

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Still Gas

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Straw

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Subbituminous Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Sulphite Lyes

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Tar

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Tar Sands

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Thermal Coal

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Thermal Coal Commercial

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Thermal Coal Domestic

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Thermal Coal Industrial

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Tires

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Town Gas

Emission factor

2.23

Unit

metric tons CO₂e per m³

Emission factor source

Facilities in Japan: Japan Ministry of the Environment, Law Concerning the Promotion of the Measures to Cope with Global Warming, Superseded by Revision of the Act on Promotion of Global Warming Countermeasures (2005 Amendment) Others: The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

Comment

Unfinished Oils

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Vegetable Oil

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Waste Oils

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Waste Paper and Card

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Waste Plastics

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Waste Tires

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

White Spirit

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Wood

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Wood Chips

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Wood Logs

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Wood Pellets

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Wood Waste

Emission factor

<Not Applicable>

Unit

<Not Applicable>

Emission factor source

<Not Applicable>

Comment

<Not Applicable>

Other

Emission factor

3.31

Unit

metric tons CO₂e per metric ton

Emission factor source

Measured value of carbon content ratio of the fuel

Comment

Information of "carbon fuel oil" is shown in this row

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	700752	674384	642	642
Heat	1233639	1233639	0	0
Steam	4273333	4273333	40448	40448
Cooling	0	0	0	0

C8.2f

(C8.2f) Provide details on the electricity, heat, steam and/or cooling amounts that were accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.

Basis for applying a low-carbon emission factor

Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company

Low-carbon technology type

Solar PV

Biomass (including biogas)

MWh consumed associated with low-carbon electricity, heat, steam or cooling

41000

Emission factor (in units of metric tons CO2e per MWh)

0

Comment

We utilized steam generated with biomass boiler and electricity generated with solar power.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 and/or Scope 2 emissions and attach the relevant statements.

Scope

Scope 1

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

[GHGVerificationReport_Bridgestone2018_Eng_180518.pdf](#)

Page/ section reference

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Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

Scope

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

[GHGVerificationReport_Bridgestone2018_Eng_180518.pdf](#)

Page/ section reference

Page 1/1

Relevant standard

ISO14064-3

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope

Scope 3- all relevant categories

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Attach the statement

[GHGVerificationReport_Bridgestone2018_Eng_180518.pdf](#)

Page/section reference

Relevant standard

ISO14064-3

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C6. Emissions data	Other, please specify (Energy consumption)	ISAE3000	Energy consumption, which is used to calculate Scope 1 and 2, is verified. Sustainability_VerificationReport_Bridgestone2018_Eng_180518.pdf

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

EU ETS

C11.1b

(C11.1b) Complete the following table for each of the emissions trading systems in which you participate.

Alberta SGER

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO₂e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Australia ERF Safeguard Mechanism

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO₂e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

BC GGIRCA**% of Scope 1 emissions covered by the ETS**

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Beijing pilot ETS**% of Scope 1 emissions covered by the ETS**

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

California CaT

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO₂e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

China national ETS

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO₂e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Chongqing pilot ETS

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

EU ETS

% of Scope 1 emissions covered by the ETS

5.3

Period start date

January 1 2017

Period end date

December 31 2017

Allowances allocated

70562

Allowances purchased

11633

Verified emissions in metric tons CO2e

101902

Details of ownership

Facilities we own and operate

Comment

Fujian pilot ETS

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Guangdong pilot ETS**% of Scope 1 emissions covered by the ETS**

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Hubei pilot ETS**% of Scope 1 emissions covered by the ETS**

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Kazakhstan ETS

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Korea ETS

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Massachusetts state ETS

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

New Zealand ETS

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Ontario CaT

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Québec CaT

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

RGGI

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Saitama ETS

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Shanghai pilot ETS

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Shenzhen pilot ETS**% of Scope 1 emissions covered by the ETS**

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Switzerland ETS**% of Scope 1 emissions covered by the ETS**

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Tianjin pilot ETS

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Tokyo CaT

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Washington CAR**% of Scope 1 emissions covered by the ETS**

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Other ETS, please specify**% of Scope 1 emissions covered by the ETS**

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Other ETS, please specify

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Other ETS, please specify

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Other ETS, please specify

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Other ETS, please specify

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

Other ETS, please specify

% of Scope 1 emissions covered by the ETS

<Not Applicable>

Period start date

<Not Applicable>

Period end date

<Not Applicable>

Allowances allocated

<Not Applicable>

Allowances purchased

<Not Applicable>

Verified emissions in metric tons CO2e

<Not Applicable>

Details of ownership

<Not Applicable>

Comment

<Not Applicable>

C11.1c

(C11.1c) Complete the following table for each of the tax systems in which you participate.

Alberta carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

BC carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Chile carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Colombia carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Denmark carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Estonia carbon tax**Period start date**

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Finland carbon tax**Period start date**

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

France carbon tax**Period start date**

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Iceland carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Ireland carbon tax**Period start date**

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Japan carbon tax**Period start date**

January 1 2017

Period end date

December 31 2017

% of emissions covered by tax

27.69

Total cost of tax paid

153803066

Comment

% of emission covered by tax was calculated by Scope1 emission in Japan divided by global Scope1 emission. And total cost of tax paid was calculated by Scope1 emission in Japan multiplied Japan Carbon tax rate(289yen/tCO₂e) *In addition, the carbon tax is indirectly affect electricity price in the Scope 2.

Latvia carbon tax**Period start date**

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Liechtenstein carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Mexico carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Norway carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Poland carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Portugal carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Slovenia carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

South Africa carbon tax**Period start date**

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Sweden carbon tax**Period start date**

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Switzerland carbon tax**Period start date**

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

UK carbon price floor

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Ukraine carbon tax

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Other carbon tax, please specify

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Other carbon tax, please specify

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Other carbon tax, please specify

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Other carbon tax, please specify

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Other carbon tax, please specify

Period start date

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

Other carbon tax, please specify**Period start date**

<Not Applicable>

Period end date

<Not Applicable>

% of emissions covered by tax

<Not Applicable>

Total cost of tax paid

<Not Applicable>

Comment

<Not Applicable>

C11.1d

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

As for our strategy for reducing CO2 emissions, we incorporate measures for CO2 reduction in advance into our Mid-Term Plan and address the measures timely according to the plan. Representative measures are as followings.

- Energy saving initiatives at production sites
- Energy saving initiatives at business offices
- Enlightenment activities to raise employees' environmental awareness

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Drive energy efficiency

Drive low-carbon investment

GHG Scope

Scope 1

Scope 2

Application

Applied to decisions of investment for equipment

Actual price(s) used (Currency /metric ton)

Variance of price(s) used

Type of internal carbon price

Shadow price

Impact & implication

Internal guidelines: Our Investment Profit Criteria stipulate that carbon emission impacts (increase or reduction) of investments are to be integrated as cost when making profitability judgments for strategic investment projects. The cost of emission impacts is to be calculated as the price of an emissions credit unit.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, our customers

Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.**Type of engagement**

Compliance & onboarding

Details of engagement

Code of conduct featuring climate change KPIs

% of suppliers by number

100

% total procurement spend (direct and indirect)

100

% Scope 3 emissions as reported in C6.5

3

Rationale for the coverage of your engagement

Coverage: Bridgestone promotes development and issuance of the Global Sustainable Procurement Policy which is applicable to all purchased materials and services, as well as all suppliers globally. Rationale for the coverage: The journey towards “100% Sustainable Materials,” Bridgestone’s goal for 2050 and beyond as our long-term environmental vision including climate change viewpoint, will not be simple, nor can Bridgestone achieve it alone. This policy is to help identify and evaluate qualified suppliers, promote best practices, and serve as a communication and improvement tool for the industry. Bridgestone expects all of its Suppliers to recognize the importance of Sustainable Procurement, and work with the Company to implement appropriate practices to create value for all Stakeholders. Note: During the development of the policy, Bridgestone gained insights from external stakeholders, including international consultants, non-governmental organizations (NGOs), materials suppliers, natural rubber farmers, and key customers to ensure the policy reflects industry standards and best practices. In addition, the policy is supported by an effective implementation and communication plan. Available in 12 languages, the policy will be implemented, governed and enforced regionally. As an immediate first step, Bridgestone will prioritize working closely with its employees, suppliers and customers and other industry experts to implement the policy.

Impact of engagement, including measures of success

The four major areas are impacted throughout Bridgestone’s supply chain: Transparency, Compliance, QCD & Innovation, Sustainable Procurement Practices incorporating environmentally responsible procurement including measures for climate change, the use of energy, reduction of GHG emission as well as the use of energy. Bridgestone will work with suppliers and partners to ensure that they have received the policy and understand it. Following acknowledgment of the policy, suppliers will then receive a self assessment questionnaire.

Comment

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Collaboration & innovation

Details of engagement

Run a campaign to encourage innovation to reduce climate change impacts

Size of engagement

100

% Scope 3 emissions as reported in C6.5

13

Please explain the rationale for selecting this group of customers and scope of engagement

i) In the development of new vehicle models by automakers, which are our business partners, the development and delivery of fuel-efficient tires that contribute to the reduction of fuel consumption in cooperation with automakers leads to the reduction of GHG emissions. In addition, we cooperate in calculating the emissions of automakers and contribute to reductions in the life cycle by cooperating in the GHG emission survey of automakers through the CDP supply chain program. Because we promote such activities with all automakers, 100% is input into "Size of engagement" ii) By improving the rolling resistance of tires used in automobiles, we contribute to automakers' efforts to lower fuel consumption during the use of their products.

Impact of engagement, including measures of success

Improvement of fuel efficiency of tires brings CO2 reduction from vehicles. The direct impact of the engagement is calculated by the result of tire units sold to the automakers multiplied by the average of CO2 emission per tire. And the technology which is developed by the engagement can be applied tires which are sold directly to end-users for their replacement needs. From this perspective, the engagement has further potential to contribute CO2 reduction. We intend to reduce CO2 emission during the use of our tires so our contribution from avoided emissions when our customers use the tires by improving fuel efficiency of our tires is the measure of success. In 2017, we supplied fuel efficient tires such as ECOPIA to low carbon emission vehicles newly developed by automakers as tires equipped with new vehicle models. By supplying fuel efficient tire, we contributed to superior fuel efficiency of vehicles.

C12.1c

(C12.1c) Give details of your climate-related engagement strategy with other partners in the value chain.

We support introduction of ECO labeling system as whole tire industry to encourage tire dealers to sell fuel efficient tires, making fuel efficiency of products visible for customers. In case that we calculate under the condition of sold number of replacement tires listed in catalog for passenger cars in Japan, 57% of those sold tires are conformable to the environmental product declaration in accordance with external standard by JATMA(Japan Automobile Tyre Manufacturers Association). From climate-change perspective, coexistence of low rolling resistance which contributes low CO2 emission and other performances like WET performance which supports safety is key challenge for our tire development. Therefore, the number of our ECO products which achieves high quality in such areas in the same time is one of our measure of success. As our achievement in 2017 from this viewpoint, we launched ECOPIA NH100 as the latest model of fuel efficient product which features its high wet performance and wear life as well as low rolling resistance.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Trade associations

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

The Japan Rubber Manufacturers Association (JRMA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

After the commitment period of the Kyoto Protocol (since 2013), JRMA has been working consistently to achieve the goal of reducing CO2 in 2020 which has been set as a trade association's target in line with the national policy calling for the ongoing reduction of

CO2. Every year, it gives a follow-up report on the reduction status to the government. In 2015, JRMA set the target for 2030 also. Based on the targets of industry groups including JRMA, Japan's reduction targets submitted to COP21 were drawn up. JRMA steadily promoted activities to reduce the emission in 2017 and reported actual CO2 reduction results to the Ministry of Economy, Trade and Industry in Japan.

How have you, or are you attempting to, influence the position?

At the Environmental Committee, Bridgestone leads industry activities and summarizes the opinions as the chairperson

Trade association

The Japan Automobile Tyre Manufacturers Association, Inc. (JATMA)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

JATMA is one of the major tire industry associations in the world, and has established the Tire Labelling System in 2010, and has been contributing to increase the ratio of "Fuel Efficient Tires" in the market. (In the lifecycle of tire, CO2 emission in usage stage consists of more than 80%) In 2015, JATMA compiled and announced the benefits of CO2 emission reduction through reduced rolling resistance of passenger car tires from 2006 to 2012. In 2017, JATMA compiled the data in Y2016 of CO2 emission reduction through reduced rolling resistance of passenger car tires. The result was disclosed in Jan. 2018. Compared to 2006, CO2 emission per tire has been reduced by 13.9% in 2016

How have you, or are you attempting to, influence the position?

Our employees have participated in various committees and presented our opinions. At the Environmental Committee, Bridgestone leads industry activities and summarizes the opinions as the chairperson.

Trade association

World Business Council for Sustainable Development (WBCSD)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Since 2006, the Tire Industry Project (TIP) under the umbrella of the World Business Council for Sustainable Development has served as a voluntary joint-initiative undertaken by 11 global leading tire manufacturers, under the leadership of the CEOs, with an aim to identify and address the potential human health and environmental impacts associated with tire development and use. TIP is a proactive organization that allows the industry's leading companies to leverage their collective action in advancing sustainability throughout the industry. In 2017, TIP established Tire PCR as the industry rules for the estimation regarding life cycle impact of tire product with three major program operators. TIP also summarized incorporation of Energy consumption, CO2 emission and Water intake by member companies as KPI to publish.

How have you, or are you attempting to, influence the position?

As one of co-chair companies of the Tire Industry Project, Bridgestone is engaged in the visualization of the overall impact of climate change through discussions with other companies.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

In order to ensure consistency, the Environmental External Relations Department, which belongs to Bridgestone's headquarters and is in charge of communication and negotiation with external companies and organizations, uniformly handles cooperation with industry groups. Important discussions with industry groups are reported to Global Environment Working Group (WG) and Global CSR Enhancement Committee (GCEC), reviewed to ensure consistency and representatives of Bridgestone's feedback to industry groups.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In voluntary sustainability report

Status

Complete

Attach the document

[Sustainability Report2017.pdf](#)

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Other metrics

Publication

In mainstream reports

Status

Complete

Attach the document

[Asset Securities report.pdf](#)

Content elements

Governance

Strategy

Risks & opportunities

Other metrics

C14. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Vice President and Officer CSR, Environment and Quality Management Planning	Environment/Sustainability manager