

Environmental Activities

"Brother Group's environmental activity report"



The Brother Group helps society achieve sustainable development, by positively and continuously considering the environmental impact of all aspects of our business operations.

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Scope of report: Brother Industries, Ltd. and its global group companies (including those in Japan)
 Covered period: April 1, 2017 to March 31, 2018
 Guideline used as a reference: GRI's "Sustainability Reporting Standards"

Message from the Management (Environment)

Toward achieving a sustainable society



The global community has been steadily shifting toward a carbon-free society. Efforts are being made to achieve a sustainable society by minimizing the impact on the global environment while maintaining economic growth. To solve global issues including climate change, international frameworks such as the Sustainable Development Goals (SDGs) and the Paris Agreement (an international agreement for mitigating climate change) have been established. Recent extreme weather attributed to climate change reminds me of the importance of taking action against global warming across the Brother Group to meet the social demand and customers' needs.

Promising active and continuous efforts to accelerate environmental activities

In the Brother Group Global Charter that provides the foundation for all of the Brother Group's activities, the Brother Group promises to play its part to help society achieve sustainable development by actively and continuously considering the environmental impact of all aspects of its operations. Under the "Brother Earth" slogan, the Brother Group has been accelerating environmental activities with stakeholders based on a unified message of "Working with you for a better environment."



Working with you for a better environment

Brother Group Environmental Vision 2050 formulated

Environmental, social, and economic systems have been undergoing sweeping changes. The social environment has also been changing significantly. Against this backdrop, the Brother Group Environmental Vision 2050 was formulated in March 2018 to keep pace with the global trend toward sustainability and to create a sustainable society in line with the Brother Group Environmental Policy. Based on this environmental vision, the Brother Group will strengthen its activities related to CO₂ emissions reduction, resource recycling, and biodiversity conservation, and will undertake new initiatives such as resource recycling in the value chain by improving the system and continuously promoting activities.

Message from the Management (Environment)

Gaining public trust

I believe that the sustainable growth of a company can be ensured by delivering both social value and economic value at the same time. For example, the Brother Group considers that customers' issues can be solved by meeting the requirements and standards set by environmental labels in respective countries. To this end, the Brother Group has been working hard to develop environmentally friendly products. The mid-term targets set in 2009 to reduce CO₂ emissions by FY2020 were attained by manufacturing facilities outside Japan in FY2013 and eight business sites in Japan in FY2017. These efforts have now been expanded to the entire value chain.

A company can amplify the efforts made by individuals around the world. Each employee of the Brother Group recognizes that social demand reflects customers' needs, and that the products and services offered by the company, which act as 'amplifiers,' help to reduce global CO₂ emissions. I will work on corporate management to enable the Brother Group to solve social issues by creating environmentally friendly products and thereby gain public trust.

FY2018 marks the final fiscal year of the Mid-Term Business Strategy "CS B2018." It also marks the 110th anniversary of our founding. To achieve the new environmental vision which started in this fiscal year, our employees will make utmost effort to contribute to customers' happiness.

Ichiro Sasaki
Representative Director & President
Brother Industries, Ltd.
October 2018

Message from the Management (Environment)

Efforts to achieve a circular economy in Europe

Recently, Europe has been working to shift to a circular economy, with both companies and administrative organs implementing measures to do so. The Brother facilities in Europe started to collect and recycle laser products and ink products in 2004. To date, more than 14 million toner cartridges have been recycled, preventing 12,500 tons of raw materials from being discarded as landfill.

Regarding Brother products for Europe that conform to the International ENERGY STAR Program, the TEC value (standard power consumption) has been reduced by about 30% for color printers and by about 10% for black-and-white printers. Acquisition of the Blue Angel label demonstrates to customers that Brother products are designed with health, climate, water, and other resources in mind and that these products have a small environmental impact. Meanwhile, acquisition of the Nordic Swan label demonstrates to customers that the products are designed to minimize the environmental impact throughout the product life cycle and that measures are implemented to reduce the impact.

Thus, Brother International Europe Ltd. helps the Brother Group ensure compliance with the environmental laws and regulations in Europe and assists activities to reduce the environmental impact in order to meet the social demand. Meanwhile, the Brother facilities in Europe have demonstrated their commitment to reducing the environmental impact by taking actions, and are constantly working to improve the environmental performance based on ISO 14001.



Isao Noji

**Group Executive Officer
Brother Industries, Ltd.**

**Chairman & Managing Director of Brother International Europe Ltd.
October 2018**

Environmental Vision 2050

Brother Group Environmental Vision 2050

Establishing the Brother Group Environmental Vision 2050



On March 19, 2018, the Brother Group established the Brother Group Environmental Vision 2050. This environmental vision recognizes environmental issues in society such as climate change, resource depletion, environmental pollution, and destruction of the ecosystem as business risks for the Brother Group and clearly states the Brother Group's continuous commitment to solving these issues over the long term. The environmental vision also requires that the Brother Group makes every effort to solve social issues and disclose information in good faith. This offers an ideal opportunity not only to reduce risks in business operations but also to become a company that gains public trust and that is chosen by customers and investors.

Impressed by the president's commitment to corporate management, I will actively take on challenges to achieve the environmental vision so that the Brother Group can create common value with society and continuously offer such value both in existing and new businesses.

Hiroyuki Wakahara

Managing Executive Officer

**Responsible for: Human Resources Dept., Law, Environment & General Affairs Dept.,
and CSR & Corporate Communication Dept.**

Brother Industries, Ltd.

September 2018

Brother Group Environmental Vision 2050

In this Environmental Vision, the Brother Group outlines its plan to address the escalation of environmental problems, including climate change, depletion of resources, pollution caused by waste, and disruption of ecosystem (loss of biodiversity), on a long-term basis and in a continuous way, perceiving these problems as serious challenges as well as our business risks.

Environmental Vision 2050

Brother Group Environmental Vision 2050

Brother Group Environmental Vision 2050

01 The vision indicates that the Brother Group will contribute to creating a carbon-free society that the Paris Agreement aims to achieve (i.e., substantially eliminating greenhouse gas emissions).

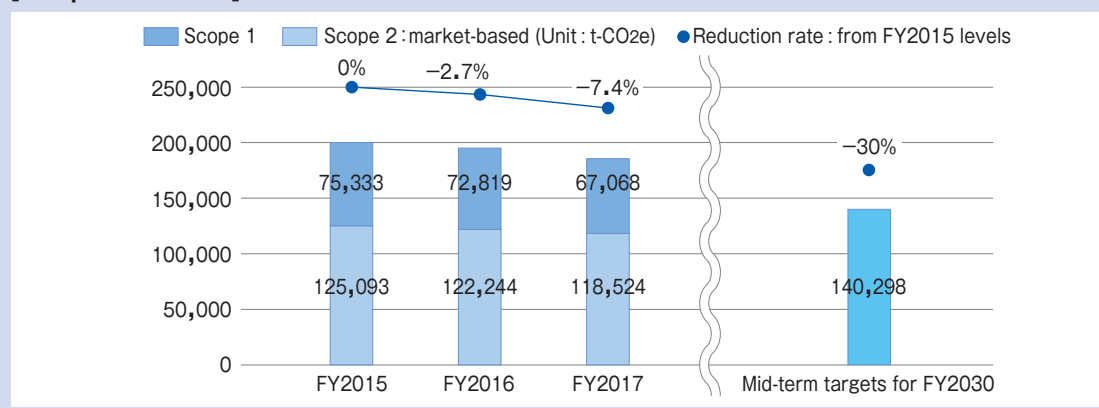
Reduction of CO₂ emissions

GOAL

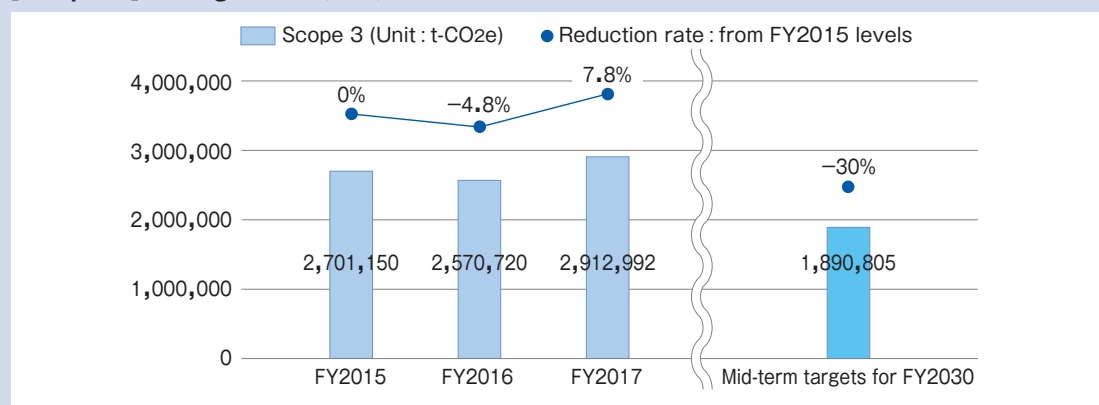
By 2050, the Brother Group will actively reduce CO₂ emissions from the entire value chain in all business operations and contribute to creating a carbon-free society that the global community aims to achieve.

Mid-term target for FY2030*

[Scopes 1 and 2] Achieve 30% reduction from the FY2015 level



[Scope 3] Categories 1, 11, and 12 Achieve 30% reduction from the FY2015 level



To achieve the ambitious target of a 30% reduction from the FY2015 levels (the mid-term target for FY2030), the procurement, development, manufacture, logistics, sales, and service divisions will work closely with each other to address the challenge.

*: The mid-term target for FY2030 has been recognized as a target based on scientific evidence by Science Based Targets (SBT), an international initiative established to help achieve greenhouse gas emission reduction targets.

LINK Video contents of [brotherearth.com](https://www.brotherearth.com)

- ▶ Eco Factory <https://www.brotherearth.com/en/tech/ecofactory.html>
- ▶ Fuel Cell <https://www.brotherearth.com/en/tech/fuel-cell.html>
- ▶ Power Regeneration <https://www.brotherearth.com/en/tech/power-supply-regenerative.html>
- ▶ Brother Became the First Company in the Chubu Region to Have CO₂ Emissions Reduction Targets Approved by the "Science Based Targets Initiative" <https://global.brother/en/news/2018/sbt>
- ▶ Low Energy Standby <https://www.brotherearth.com/en/tech/standby.html>
- ▶ Direct Drive <https://www.brotherearth.com/en/tech/direct-drive.html>
- ▶ Low-Noise Belt Drive https://www.brotherearth.com/en/tech/hsm_belt-driving.html

Environmental Vision 2050

Brother Group Environmental Vision 2050

Brother Group Environmental Vision 2050

02 The vision aims to ensure sustainable use of natural resources in business operations and minimize the environmental impact due to wastes.

Resource recycling

GOAL

Toward 2050, the Brother Group will maximize resource recycling to ensure the sustainable use of natural resources and minimize the environmental impact due to wastes.

Mid-term target for FY2030

Mechanisms for recycling resources have been established throughout the value chain. Efforts have been made to reduce the amount of new natural resources that are used in main products.

The group's manufacturing facilities continuously endeavor to ensure efficient use of water resources and proper treatment of wastewater.

The mid-term target aims to reduce* the consumption of resources for main products, achieve efficient use of water resources, and ensure proper treatment of wastewater.



*: Regarding the reduction of consumption of resources for products, the reduction target values will be set by FY2020 while monitoring the development of global environmental regulations.

LINK Video contents of brotherearth.com

▶ Toner Cartridges Recycle <https://www.brotherearth.com/en/tech/toner-recycle.html>

▶ Package Design Optimization <https://www.brotherearth.com/en/tech/package-desing-optimization.html>

Environmental Vision 2050

Brother Group Environmental Vision 2050

Brother Group Environmental Vision 2050

03 The vision aims to minimize the environmental impact of business operations and promote activities to restore and conserve the ecosystem beyond the impact.

Biodiversity conservation

GOAL

By 2050, the Brother Group will minimize the environmental impact of business operations on the ecosystem and promote activities to restore and conserve the ecosystem beyond the impact.

Mid-term target for FY2030

The Brother Group will assess the environmental impact of its business operations on the ecosystem and the effectiveness of restoration and conservation activities, and work to avoid and reduce the environmental impact on the ecosystem.

The manufacturing and sales facilities of the entire group will work on ecosystem restoration and conservation activities on a voluntary basis depending on the situation in each region.

Based on the mid-term target, the Brother Group will continue activities to reduce environmental impact on the ecosystem, quantitatively evaluate respective activities, and properly avoid and reduce environmental impact on the ecosystem.

LINK Video contents of brotherearth.com

- ▶ Japan - Brother's Forest Gujo, Project for restoring ecosystem and interacting with the locals
<https://www.brotherearth.com/en/activity/gujo.html>
- ▶ Thailand - Mangrove Reforestation Project
<https://www.brotherearth.com/en/activity/thailand.html>
- ▶ Australia - Project Manta
<https://www.brotherearth.com/en/activity/australia.html>
- ▶ China - Project for Combating Desertification in Inner Mongolia
https://www.brotherearth.com/en/activity/inner_mongolia.html
- ▶ China - A project to improve local environmental awareness in Zhuhai city
<https://www.brotherearth.com/en/activity/zhuhai.html>
- ▶ The Americas - Environment and Education
<https://www.brotherearth.com/en/activity/usa.html>
- ▶ Slovakia - Tatras mountains the reforestation project
<https://www.brotherearth.com/en/activity/slovakia.html>

Environmental Vision 2050 FY2017 Highlights

"Brother Earth" - Working with you for a better environment

Under the "Brother Earth" logo and slogan (formulated in 2010) which symbolize our environmental activities and promise to help society achieve sustainable development, by positively and continuously considering the environmental impact of all aspects of our business operations, each Brother Group employee is further committed to participating in various activities based on the unified message of "Working with you for a better environment" in cooperation with Brother's customers and other stakeholders.



Brother Group Environmental Vision 2050

In March 2018, the Brother Group formulated the Brother Group Environmental Vision 2050 as a new long-term target of the Brother Group to contribute to resolving global environmental issues under the slogan "Brother Earth," and established a mid-term target for FY2030 as a milestone. The goals are set for CO₂ emissions reduction, resource recycling, and biodiversity conservation. The mid-term target for FY2030 for CO₂ emissions reduction has been recognized as a target based on scientific evidence by Science Based Targets (SBT), an international initiative established to help achieve greenhouse gas emission reduction targets.

See ▶ 4p Environmental Vision 2050

▶ Brother Became the First Company in the Chubu Region to Have CO₂ Emissions Reduction Targets Approved by the "Science Based Targets Initiative" <https://global.brother/en/news/2018/sbt>

*: Click the link above to read a press release.

Brother Group Environmental Action Plan 2018 (2016-2018) and main achievements in FY2017

1. Create eco-conscious products

To further enhance commitment to developing eco-conscious products, the Brother Group has been working on top-class eco-conscious designs in respective product categories by actively acquiring environmental labels in respective countries and meeting new standards, etc. Based on top-class eco-conscious designs, the Brother Group has been working to reduce the carbon footprints of products in order to reduce the environmental impact of products through their entire life cycle.

For the product portfolio in the communications and printing equipment field

1. To attain the highest environmental performance

Ensured compliance with Blue Angel*1 for all new models released, and started registration for EPEAT*2 Silver



2. To reduce the carbon footprint of products

Ensured compliance with the International ENERGY STAR Program for all new models released, and continued information disclosure based on EcoLeaf*3



*1: A Type I eco-label in Germany which is considered to be the most rigorous in the world

*2: An environmental rating in the U.S. based on the full product lifecycle

*3: An eco-label to indicate the environmental impact of products with quantifiable data using life cycle assessment (LCA)

Environmental Vision 2050 FY2017 Highlights

Brother Group Environmental Action Plan 2018 (2016-2018) and main achievements in FY2017

2. Cut CO₂ emissions from the group as a three-year target toward achieving the mid-term targets by FY2020 (April 1, 2020-March 31, 2021)

Since FY2013 (April 1, 2013-March 31, 2014), the scope of activities to cut CO₂ emissions has been expanded on a group basis. Furthermore, the Brother Group has taken on a challenge to calculate and reduce CO₂ emissions from the entire product supply chain, in addition to CO₂ emissions from its operations. To verify the calculation results, the Brother Group is subject to verification of compliance with the international standards (ISO14064-1 requirements) established by a third party organization, in an effort to acquire an assurance statement for the accuracy of data.

For the entire Brother Group Compared with the target of 3% reduction from FY2015 levels by FY2018 in Scopes 1 and 2

Reduced CO₂ emissions by 14.1% from FY2015 levels*

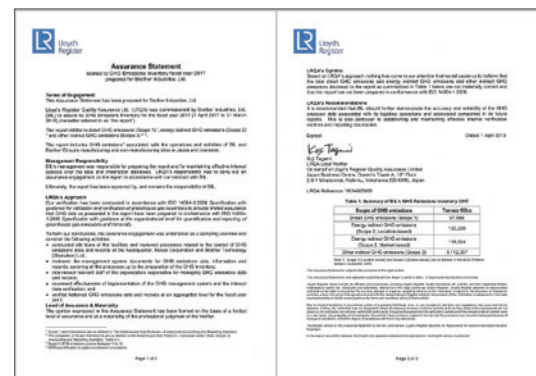
*: Target and achievement per unit of sales

At eight business sites in Japan

Compared with the target of 28% reduction from
FY1990 levels by FY2018

Reduced CO₂ emissions by 30.7% from FY1990 levels*

*: Target and achievement in absolute values



Statement for verification by a third party organization

The Brother Group obtained an LRQA assurance statement for calculation and disclosure of GHG emissions.

[PDF](#) View the PDF [PDF/571 KB]

http://download.brother.com/pub/com/en/eco/pdf/2018/lrqa_assurance.pdf

3. Maintain regulatory compliance for all product categories

In addition to complying with laws and regulations in respective countries and regions, including the REACH Regulation and RoHS Directive, the Brother Group operates an environmental information system (an IT system for investigating and managing certain chemical substances contained in purchased parts) and audits suppliers from which parts and materials are purchased. Thus, Brother has a group-wide chemical substances assurance system.

In promoting activities to reduce the environmental impact in upstream operations

Equipment for measuring phthalate esters introduced at respective manufacturing facilities

Sampling measurement has started

Environmental Vision 2050 FY2017 Highlights

Brother Group Environmental Action Plan 2018 (2016-2018) and main achievements in FY2017

4. Support activities for continuous improvement under our philosophy of "Brother Earth"

The Brother Group helps raise awareness to consider its environmental impact under the "Brother Earth" slogan. Brother's special website on the environment (brotherearth.com) presents "Eco Technology" and "Eco-conscious Products" that explain employees' commitment to eco-conscious product development, as well as the Brother Group's environmental conservation activities, etc. The Brother Group actively works on environmental conservation and other activities to contribute to communities in collaboration and cooperation with many stakeholders through interactive communication including "Click for the Earth" in the special website and events with environmental themes.

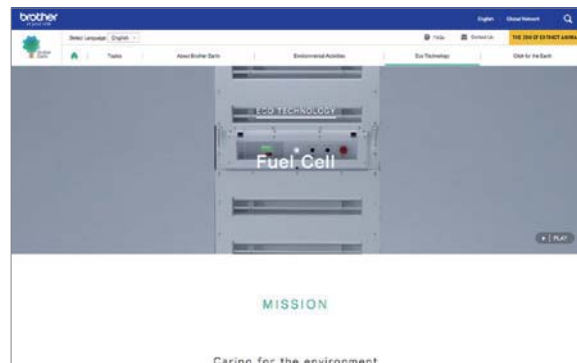
On Brother's special website on the environment (brotherearth.com)

Introduced the Brother Group's environmental activities and environmental conservation activities in collaboration with stakeholders



Direct Drive

<https://www.brotherearth.com/en/tech/direct-drive.html>



Fuel Cell

<https://www.brotherearth.com/en/tech/fuel-cell.html>

In environmental activities

Won the Good Performance Prize in the Environmental Report Section of the 21st Environmental Communication Awards

Environmental Vision 2050 FY2017 Highlights

Brother Group Environmental Action Plan 2018 (2016-2018) and main achievements in FY2017

5. Support biodiversity conservation in total Brother group under the COP10 Aichi Biodiversity Targets

As a global company headquartered in the venue of COP10, the Brother Group considers the Aichi Biodiversity Targets (by 2020) as high-priority targets. Respective facilities have been working on biodiversity conservation activities with regional characteristics taken into consideration. The Brother Group endeavors to provide employees with education about biodiversity conservation to help prevent destruction of habitats and recover ecosystem services that are essential for the survival of humankind. Activities will be further promoted to exterminate and prevent the invasion of invasive alien species and conserve the habitats of rare species, etc.

To meet the Aichi Biodiversity Targets

Continuously promoted biodiversity efforts which are closely related to the electrical and electronic industries (e.g., promote dissemination and raise awareness, conserve protected areas) and are expected to make significant contributions through our commitment



The Americas - Environment and Education
<https://www.brotherearth.com/en/activity/usa.html>

See ► 17p Mid-term Environmental Action Plan (Targets and Achievements)

Corporate Environmental Strategy and Management

Brother Group's Environmental Strategy

Environmental policy

The Brother Group's mission is to place our customers first everywhere, every time, and provide them with superior value, by quickly creating and delivering high-quality products and services. To fulfill the mission, it is essential to help society achieve sustainable development, by positively and continuously considering the environmental impact of all aspects of our business operations. This is the basic principle of the Brother Group Environmental Policy, and is set out in the Brother Group Global Charter, originally published in 1999, that provides the foundation for all Brother Group activities in the global marketplace. The Charter has been translated into 27 languages and been shared with all our employees in order to create a system that is appropriate for a global company transcending differences in culture and customs.

Brother Group Environmental Vision 2050

In March 2018, the Brother Group formulated the Brother Group Environmental Vision 2050 as a new long-term target of the Brother Group to contribute to resolving global environmental issues under the slogan "Brother Earth," and established a mid-term target for FY2030 as a milestone. The goals are set for CO₂ emissions reduction, resource recycling, and biodiversity conservation. The mid-term target for FY2030 for CO₂ emissions reduction has been recognized as a target based on scientific evidence by Science Based Targets (SBT), an international initiative established to help achieve greenhouse gas emission reduction targets.

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▶ Brother Became the First Company in the Chubu Region to Have CO₂ Emissions Reduction Targets Approved by the "Science Based Targets Initiative"

<https://global.brother/en/news/2018/sbt>

*: Click the link above to read a press release.

Brother Group's environmental policy

Basic philosophy

The Brother Group helps society achieve sustainable development, by positively and continuously considering the environmental impact of all aspects of our business operations.

Basic environmental policy

Concern for the environment shall be the cornerstone of all operations. Safety and environmental impact shall be prime considerations at every stage of a product's life cycle, from design, development, manufacturing, customer usage, and disposal, to reuse and recycling.

Corporate Environmental Strategy and Management

Brother Group's Environmental Strategy

Brother Group Environmental Vision 2050

Action Guidelines and specific environmental activities

Action guidelines	Specific environmental activities
1. We will set environmental targets in all areas (manufacturing, production, and service) and continuously improve their environmental aspects.	Both manufacturing and sales facilities work to acquire ISO 14001 certification, and strive to reduce environmental impact by conserving energy and reducing CO2 emissions.
2. We will not limit our activities to the observation of laws and regulations in all countries where we conduct business, but will also act with a strong moral responsibility to prevent pollution and reduce environmental impact.	A rigorous management framework ensures compliance with environmental laws and regulations in respective countries, prevents oversight and omissions, and enables a quick response.
3. We will always consider waste reduction by more efficient use of resources and recycling of products, and will also avoid creating contamination by hazardous substances when designing and developing both technologies and products.	In developing products, eco-consciousness is considered in various aspects (e.g. energy conservation performance, use of hazardous chemical substances, and ease of recycling).
4. While respecting voluntary activities by each company of the Brother Group, we will also exercise our environmental duties as a united group.	Activities are promoted based on the Brother Group Mid-term Environmental Action Plan, which is the plan for the entire group.
5. We will enhance the environmental understanding and awareness of all employees through activities such as environmental education and PR.	Various educational opportunities are offered to enhance eco-consciousness (including training programs for new employees, technical training programs for engineers, and e-learning programs for all employees).
6. We will actively disclose our environmental efforts to our customers, local communities, and other interested parties to further foster understanding.	Proactive efforts are made to publicize Brother's activities, such as touring facilities with environmental features, participating in exhibitions, offering lessons at elementary schools and other educational institutions, and planting seedlings.
7. We will endeavor to reduce our impact on the ecosystem and to conserve biodiversity in all our operations.	Biodiversity conservation activities include the procurement of biodiversity-conscious raw materials and the use of FSC-certified paper. Projects for the restoration/conservation of forests or other natural habitats are promoted.

Regarding biodiversity conservation, the Brother Group established a biodiversity conservation policy based on the Brother Group Environmental Policy in FY2012 (April 1, 2012-March 31, 2013), and the scope has been expanded to cover activities in all business operations.

Corporate Environmental Strategy and Management

Brother Group's Environmental Strategy

Environmental Action Plan

The Brother Group started to formulate its Mid-term Environmental Action Plan in 1993. The Brother Group Environmental Action Plan 2018 (2016-2018), which is the eighth plan, has five basic policies as the environmental targets of the Mid-term Business Strategy "CS B2018," which was formulated as a roadmap to achieve the mid-to long-term corporate vision, Global Vision 21.

In 2009, the Brother Group set the mid-term targets by FY2020 to reduce emissions of CO₂, which is considered to be the major contributor to climate change, and has implemented energy conservation measures on an ongoing basis.

Regarding biodiversity conservation, the Brother Group incorporated it into the action guidelines of the Brother Group Environmental Policy in FY2011 (April 1, 2011-March 31, 2012), and established the Brother Group's biodiversity conservation policy in 2012. The Brother Group remains committed to the Aichi Biodiversity Targets to help attain the vision by 2050.

Brother Group Environmental Action Plan 2018 (2016-2018) Basic policy

Create eco-conscious products

To further enhance commitment to developing eco-conscious products, the Brother Group has been working on top-class eco-conscious designs in respective product categories by actively acquiring environmental labels in respective countries and meeting new standards, etc. Based on top-class eco-conscious designs, the Brother Group has been working to reduce the carbon footprints of products in order to reduce the environmental impact of products through their entire life cycle.

Cut CO₂ emissions from the group as a three-year target toward achieving the mid-term targets by FY2020 (April 1, 2020-March 31, 2021)

Since FY2013 (April 1, 2013-March 31, 2014), the scope of activities to cut CO₂ emissions has been expanded on a group basis. Furthermore, the Brother Group has taken on a challenge to calculate and reduce CO₂ emissions from the entire product supply chain, in addition to CO₂ emissions from its operations. To verify the calculation results, the Brother Group is subject to verification of compliance with the international standards (ISO14064-1 requirements) established by a third party organization, in an effort to acquire an assurance statement for the accuracy of data.

Maintain regulatory compliance for all product categories

In addition to complying with laws and regulations in respective countries and regions, including the REACH Regulation and RoHS Directive, the Brother Group operates an environmental information system (an IT system for investigating and managing certain chemical substances contained in purchased parts) and audits suppliers from which parts and materials are purchased. Thus, Brother has a group-wide chemical substances assurance system.

Corporate Environmental Strategy and Management

Brother Group's Environmental Strategy

Environmental Action Plan

Brother Group Environmental Action Plan 2018 (2016-2018) Basic policy

Support activities for continuous improvement under our philosophy of "Brother Earth"

The Brother Group helps raise awareness to consider its environmental impact under the "Brother Earth" slogan. Brother's special website on the environment (brotherearth.com), presents "Eco Technology" and "Eco-conscious Products" that explain employees' commitment to eco-conscious product development, as well as the Brother Group's environmental conservation activities, etc. The Brother Group actively works on environmental conservation and other activities to contribute to communities in collaboration and cooperation with many stakeholders through interactive communication including "Click for the Earth" in the special website and events with environmental themes.

Support biodiversity conservation in total Brother Group under the COP10 Aichi Biodiversity Targets

As a global company headquartered in the venue of COP10, the Brother Group considers the Aichi Biodiversity Targets (by 2020) as high-priority targets. Respective facilities have been working on biodiversity conservation activities with regional characteristics taken into consideration. The Brother Group endeavors to provide employees with education about biodiversity conservation to help prevent destruction of habitats and recover ecosystem services that are essential for the survival of humankind. Activities will be further promoted to exterminate and prevent the invasion of invasive alien species and conserve the habitats of rare species, etc.

See ▶ 17p Mid-term Environmental Action Plan (Targets and Achievements)

Corporate Environmental Strategy and Management

Brother Group's Environmental Strategy

Brother Earth environmental slogan

To boost our environmental activities, the Brother Group created the "Brother Earth" logo and slogan in 2010 to symbolize our efforts. Under Brother Earth, each Brother Group employee has been further committed to various activities based on a unified message of "Working with you for a better environment."

In 2012, the Brother Group Principles of Social Responsibility were established to define the responsibilities that group companies are expected to assume and the fundamental concept of action for environmental conservation.



Working with you for a better environment



*: This video is from YouTube.

To appeal to society at large, Brother Earth, Brother's special website on the environment, was launched to simply present Brother's wish and the activities it does to protect the earth.

"5R" concept – the key to reducing environmental impact

From 1999, the Brother Group has been conducting environmental activities based on the "5Rs," which adds "Refuse" and "Reform" to the "Reduce," "Reuse" and "Recycle" 3Rs as the basis for establishing a sound material-cycle society. "Reform" in particular is an original idea from Brother for creating value by introducing novel approaches and ideas for changing the state of a waste material.

"5R" Concept



Refuse

Avoid purchase of environmentally burdensome materials whenever possible

Reduce

Reduce waste material

Reuse

Reuse waste material without processing

Reform

Reuse materials in a different form

Recycle

Reuse materials as resources

Corporate Environmental Strategy and Management

Mid-term Environmental Action Plan (Targets and Achievements)

Brother Group Environmental Action Plan 2018 (2016-2018)

The Brother Group aims to improve the value of the Brother brand which is trusted by customers and to build a strong sense of pride among employees of the group. To this end, the Brother Group will continuously strengthen the foundation established through the previous Environmental Action Plan and implement and fulfill the Brother Group Environmental Action Plan 2018 (2016-2018).

Basic policy

1. Create eco-conscious products
2. Cut CO₂ emissions from the group as a three-year target toward achieving the mid-term targets by FY2020 (April 1, 2020-March 31, 2021)
3. Maintain regulatory compliance for all product categories
4. Support activities for continuous improvement under our philosophy of "Brother Earth"
5. Support biodiversity conservation in total Brother group under the COP10 Aichi Biodiversity Targets

Mid-term targets by FY2020 to reduce the CO₂ emissions

As a global company developing its business in different countries and regions across the world, the Brother Group recognizes its commitment to prevent global warming as a top priority to be addressed. In June 2009, CO₂ reduction targets to be achieved by FY2020 were added to the Brother Group Environmental Action Plan, and active efforts have been made to achieve those targets.

Mid-term targets by FY2020

- (1) Cut total CO₂ emissions by 30% from FY1990 levels at eight business sites*¹ in Japan by FY2020 (absolute value)
- (2) Cut CO₂ emissions by 20% (per unit of sales) from FY2006 levels at manufacturing facilities outside Japan (except the USA)*² by FY2020

*1: The eight business sites in Japan are the head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, and Logistics Center.

*2: USA (a manufacturing facility outside Japan) constitutes part of a sales facility. Thus, the CO₂ emissions are included in the results of the sales facility.

Corporate Environmental Strategy and Management

Mid-term Environmental Action Plan (Targets and Achievements)

Environmental targets based on the basic policy (2016-2018) and achievements in FY2017

1. Creation of eco-conscious products

- 1-1. Continue research and development of products that achieve the best environmental performance in each applicable market
- 1-2. Reduce the carbon footprint of products
- 1-3. Promote the use of recycled materials in products

*: The numbers in "Environmental targets" in the chart below correspond to the numbers in the text above.

Environmental targets*	Achievements in FY2017	Self-evaluation
1-1	All new models of products in the communication and printing equipment field released in FY2017 complied with the updated Blue Angel requirements of Germany; conventional models that are continuously sold also complied with these requirements Started registration of main products for EPEAT Silver (Electronic Product Environmental Assessment Tool in the U.S.)	Significantly achieved
1-2	All models of products in the communication and printing equipment field released in FY2017 complied with the International ENERGY STAR Program and also complied with the energy conservation items of the tightened Blue Angel requirements mentioned above to encourage energy-efficient products Disclosed information in accordance with the EcoLeaf and CFP standards in Japan to visualize the overall environmental impact of products	Achieved
1-3	Expanded the use of post-consumer material, and increased the consumption of such material by 66% (in total amount) from the FY2016 levels in FY2017 for the product models in the communication and printing equipment field	Achieved

29p Environmental Considerations within Product Life Cycles

36p Environmental Labels Acquired

Corporate Environmental Strategy and Management

Mid-term Environmental Action Plan (Targets and Achievements)

Environmental targets based on the basic policy (2016-2018) and achievements in FY2017

2. Reduction of environmental impacts of business sites

- 2-1. Reduce CO₂ emissions of Scopes 1 and 2 of the entire Brother Group by 3% from FY2015 levels by FY2018 (per unit of sales)
- 2-2. 2-2 Calculate CO₂ emissions of Scope 3 of the entire Brother Group (in addition to Scopes 1 and 2), identifying effective measures to reduce CO₂ emissions throughout the supply chain, and continuously working on reduction
- 2-3. Reduce CO₂ emissions of business sites in Japan by 28% from FY1990 levels by FY2018 (absolute value)
- 2-4. Reduce water consumption of manufacturing facilities by 30% from FY2010 levels by FY2018 (per unit of sales)
- 2-5. Manage continuous improvement through monitoring and administration of the environmental management system with focus on the utilization of clean energy to achieve CO₂ emissions reduction targets
- 2-6. Continue to maintain (and obtain for new locations) the ISO 14001 certification for each Brother Group location

*: The numbers in "Environmental targets" in the chart below correspond to the numbers in the text above.

Environmental targets*	Achievements in FY2017	Self-evaluation
2-1	Achieved a 9.5% reduction from FY2016 (14.1% reduction from FY2015)	Significantly achieved
2-2	Continued to calculate Scope 3 of the Brother Group in FY2017 Formulated mid-term targets to achieve a 30% reduction (absolute value/target: Categories 1, 11, 12) from FY2015 by FY2030 in order to reduce Scope 3	Achieved
2-3	Achieved a 30.7% reduction from FY1990 *Carbon credits were partly used.	Achieved
2-4	(Achieved a 24.1% reduction from FY2010)	Targets and achievements that are not evaluated in a single year
2-5	Introduced an additional integrated monitoring system for the building air-conditioning equipment at the Kariya Manufacturing Facility (eight in total) Identified the measures that might be used for active utilization of clean energy and conducted a self-evaluation	Achieved
2-6	The percentage of ISO 14001-certified facilities accounted for 86% of the entire Brother Group (as of April 1, 2018) The certified facilities completed the transition to the latest ISO 14001-2015	Targets and achievements that are not evaluated in a single year

[See](#) 49p CO₂ Emission Reduction Activities [See](#) 62p Activities to Reduce Water Consumption [See](#) 73p Material Balance

▶ List of ISO 14001-certified Facilities and History of Auditing for ISO 14064
<https://global.brother/en/eco/facility/iso-14001>

Corporate Environmental Strategy and Management

Mid-term Environmental Action Plan (Targets and Achievements)

Environmental targets based on the basic policy (2016-2018) and achievements in FY2017

3. Regulatory compliance for all product categories

- 3-1. Maintain regulatory compliance
- 3-2. Contribute to society/community through participation and contribution to environmental CSR activities
- 3-3. Develop and implement a green procurement program for the Brother Group manufacturing locations
- 3-4. Encourage the reduction of our environmental impact in the upstream processes by working with our suppliers

*: The numbers in "Environmental targets" in the chart below correspond to the numbers in the text above.

Environmental targets*	Achievements in FY2017	Self-evaluation
3-1	Ensured compliance with regulations regarding chemical substances contained in products, laws and regulations on recycling of waste electrical and electronic equipment/packaging materials, and energy-saving regulations on products	Achieved
3-2	Actively participated in and contributed to public relations activities regarding environmental laws, regulations and standards	Achieved
3-3, 3-4	Added phthalate esters (which will be banned under the EU RoHS Directive in July 2019) to the list of prohibited substances in the Green Procurement Standards, introduced equipment for measuring phthalate esters at respective manufacturing facilities, and started sampling measurement Conducted an on-site audit at more than 250 suppliers in and outside Japan regarding the system for managing chemical substances contained in products	Significantly achieved

See ▶ 43p Compliance with Environmental Laws and Regulations on Products

See ▶ 46p Green Procurement

Corporate Environmental Strategy and Management

Mid-term Environmental Action Plan (Targets and Achievements)

Environmental targets based on the basic policy (2016-2018) and achievements in FY2017

4. Communication and marketing of the Brother Group environmental activities

- 4-1. Strengthen and expand the reach of our environmental website (brotherearth.com) to all stakeholders
- 4-2. Strengthen reporting of our Environmental Activities under our brother.com website
- 4-3. Promote effective environmental in-house branding activities
- 4-4. Promote awareness of the logo and slogan "Brother Earth"

*: The numbers in "Environmental targets" in the chart below correspond to the numbers in the text above.

Environmental targets*	Achievements in FY2017	Self-evaluation
4-1	Posted three environment-related videos on the website: "Direct Drive," "Fuel Cell," and "Project to Conserve the Environment of the American Continent" Broadcast the total lunar eclipse by live streaming on January 31, and started to post Endangered Species on Brother's Daily Calendar on the website on January 1	Significantly achieved
4-2	Endeavored to improve the quality of information disclosure, and won the Good Performance Prize in the Environmental Report Section of the 21st Environmental Communication Awards (fourth time in a row)	Significantly achieved
4-3	Continued to promote the Brother eco point program within the Brother Group Continuously implemented measures to improve the environmental awareness of employees through the internal commendation program and information dissemination via the intranet	Achieved
4-4	Continuously publicized environmental messages through environmental events (e.g., exhibitions and environmental learning programs) and websites (e.g., social media)	Achieved

See ▶ 81p Environmental Communication Activities

See ▶ 26p Environmental Commendation and Awards

▶ Environmental Activities - Editing Policy
<https://global.brother/en/eco/news/eco-profile-20181130>

See ▶ 83p Brother Eco Point Program

▶ Special website on the environment (brotherearth.com)
<https://www.brotherearth.com/en/>

Corporate Environmental Strategy and Management

Mid-term Environmental Action Plan (Targets and Achievements)

Environmental targets based on the basic policy (2016-2018) and achievements in FY2017

5. Support for biodiversity conservation

- 5-1. Select priority themes by taking into account the characteristics of respective facilities and their regions and work on activities to contribute to biodiversity conservation based on the Aichi Biodiversity Targets (by 2020) adopted at COP10(high-priority targets) across the Brother Group

*: The numbers in "Environmental targets" in the chart below correspond to the numbers in the text above.

Environmental targets*	Achievements in FY2017	Self-evaluation
5-1	Continuously promoted efforts to attain eight of the Aichi Biodiversity Targets (Target 1: Awareness increased, Target 4: Sustainable consumption and production, Target 5: Habitat loss halved or reduced, Target 8: Pollution reduced, Target 9: Invasive alien species prevented and controlled, Target 11: Protected areas increased and improved, Target 14: Ecosystems and essential services safeguarded, Target 19: Knowledge improved, shared and applied) which are closely related to the electrical and electronic industries and are expected to make significant contributions through our commitment	Achieved

See ▶ 85p Biodiversity

Corporate Environmental Strategy and Management

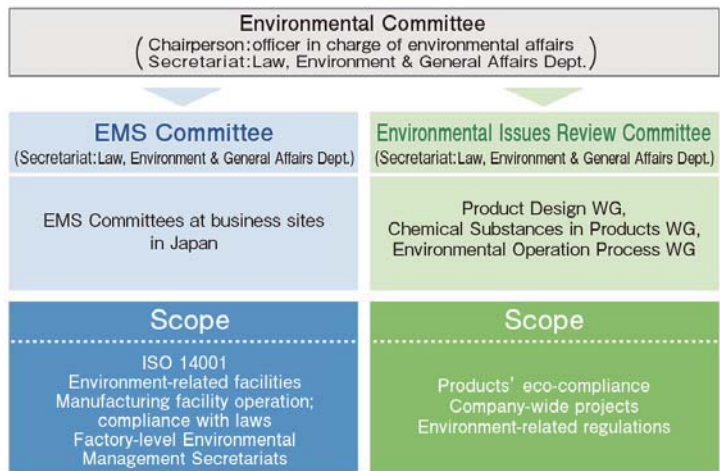
Internal Environmental Management Structure

Environmental management framework

Globally managing environmental issues throughout the group, led by the Environmental Committee

The Brother Group promotes global environmental management according to the Brother Group Environmental Policy. Specifically, the officer in charge of environmental affairs instructs respective departments at head office as well as divisions and function centers through the Environmental Committee (the supreme committee responsible for promoting environmental management) to determine policies and implement measures.

Brother Group environmental management framework



Environmental Committee

The Environmental Committee is the decision-making body responsible for environmental risks such as climate change and environmental issues of the Brother Group. It is chaired by the officer in charge of environmental affairs and other executive officers responsible for function centers, new business, IT, and general affairs. Committee meetings are held twice a year, and extraordinary meetings are held as necessary. The Environmental Committee is one of the special risk committees which are subsidiary organs of the Risk Management Committee chaired by the representative director and president.

▶ Brother Industries, Ltd. Governance Structure
https://global.brother/en/corporate/governance/structure#org_chart

EMS (environmental management system) Committee (secretariat: Law, Environment & General Affairs Dept.)

This committee has control over the EMS subcommittees set up in head office and manufacturing facilities in Japan. The committee monitors ISO 14001 operations at these facilities and compliance with laws and regulations in Japan, while constantly following up improvement activities.

Respective business sites and major group companies

These entities have dedicated staff responsible for environmental management activities. The staff identify and report (i) progress in fulfilling specific policies and targets set by the Environmental Committee and (ii) compliance with rules for environmental management.

Corporate Environmental Strategy and Management

Internal Environmental Management Structure

Environmental management framework

Environmental Issues Review Committee (secretariat: Law, Environment & General Affairs Dept.)

This committee draws up and reviews specific policies and measures relating to products' eco-compliance, companywide projects, and environment-related regulations.

Working Groups (WGs)

The following working groups in Japan serve as task forces responsible for their respective themes.

- Product Design WG: Reviews and determines various standards for eco-friendly product design.
- Chemical Substances in Products WG: Ensures compliance with regulations on chemical substances contained in products, primarily the RoHS Directive.
- Environmental Operation Process WG: Addresses the establishment of environmental eco-compliance operation and environmental information systems for the entire group.

Environmental communication promotion framework

The Brother Group established "working on activities to enhance the environmental brand image under the environmental slogan 'Brother Earth'" as the basic policy for environmental communication in the Brother Group Environmental Action Plan 2018 (2016-2018). The CSR & Corporate Communication Dept. takes the initiative to promote environmental activities at facilities around the world.

Environmental management system

Practicing the PDCA (Plan - Do - Check - Act) cycle in line with ISO 14001

Under our mid-term management plan, the Brother Group creates the Brother Group Environmental Action Plan every three to five years, based on which Brother Industries, Ltd. (BIL) and manufacturing and sales facilities in respective countries set annual plans and carry out environmental activities as part of their business operations. The progress and performance (results) of plans are checked based on reports and internal audits from each facility, and the findings are then reflected when planning for the following year.

In operating the environmental management system for environmental protection activities, compliance with laws, regulations, and standards is ensured, and the ISO 14001-based PDCA (Plan - Do - Check - Act) cycle is practiced.

ISO 14001 certification has been obtained by all group manufacturing facilities*, with Brother Industries (U.K.) Ltd. being the first to be certified in 1996. Brother U.K. Ltd., a sales facility in U.K., obtained certification in 2005, followed by other many sales facilities.

*: When a new business site is established, activities are implemented in compliance with ISO 14001 upon commencement of operations, and ISO 14001 certification is immediately obtained.

▶ List of ISO 14001-certified Facilities and History of Auditing for ISO 14064
<https://global.brother/en/eco/facility/iso-14001>

Corporate Environmental Strategy and Management

Internal Environmental Management Structure

Environmental management system

Internal audit and external review

The Brother Group annually conducts internal audits to confirm that manufacturing facilities in and outside Japan effectively follow the environmental management system in conformance with ISO 14001. The Brother Group is also subject to external review for ISO 14001 (environmental management system) certification.

For facilities in Japan, internal audits are conducted by the Law, Environment & General Affairs Dept. of BIL. For overseas facilities, internal audits are conducted by departments in charge of environmental affairs at the respective facilities to check compliance with relevant laws and regulations, the progress of annual plans, the effectiveness of the environmental management system, and consistency with ISO standards. Corrective measures are implemented immediately when any nonconformance is found, and the effectiveness of such corrective measures is checked by follow-up audits.

Audit results in Japan, together with the status of legal compliance and performance (results), are presented to the Environmental Committee.

In the annual internal audit and external review, it was confirmed that the PDCA cycle is properly practiced. As in previous years, there were no serious accidents or environmental penalties in FY2017 (April 1, 2017-March 31, 2018).

Environmental training for employees

The Brother Group's ISO 14001-certified facilities offer environmental training programs for all employees as well as job specific training related to specific tasks and functions.

Essential environmental training is provided every year to raise eco-awareness and facilitate operations. Examples include environmental training programs for all new recruits joining Brother; e-learning-based training programs for all employees; training programs for production and procurement staff at manufacturing facilities in and outside of Japan, for example, the management of chemical substances contained in products, process control guidance and auditing at suppliers.

Corporate Environmental Strategy and Management

Environmental Commendation and Awards

External environmental commendation system in FY2017

Won the Good Performance Prize in the Environmental Report Section of the 21st Environmental Communication Awards

In February 2018, Brother Industries, Ltd. (BIL) won the Good Performance Prize* in the Environmental Report Section of the 21st Environmental Communication Awards organized by the Japanese Ministry of the Environment and the Global Environmental Forum.

The aim of the Environmental Communication Awards is to encourage business operators, etc. to work on green management and environmental communication through commendations and improve the quality of environmental information disclosure.

BIL won the award for its "Environmental Activities" webpage that delivers annual reports about the Brother Group's environmental activities; and for "brotherearth.com", Brother's special website on the environment, which uses responsive web design to disseminate information about both up-to-date and unique activities.

This is the fourth consecutive year that BIL has won the award. The following comment was given during the evaluation:

"The website clearly explains the Brother Group's commitment to environmental management based on numerical data and text, with the product life cycle and overall value chain taken into account. The website is highly evaluated because it comprehensibly presents the Brother Group's well-established policy, plan, and activities to reduce CO₂ emissions from products and business operations and to ensure biodiversity conservation. Given its global operations, BIL should clarify its commitment to the Paris Agreement and SDGs, which are two major challenges to humankind, and the relevance of its efforts. In this context, it is desirable to use backcasting based on longer-term targets and conduct materiality analysis for BIL in more detail."

*: The Good Performance Prize is awarded to reports that set an example in information disclosure (e.g. those prepared by companies that actively work on environmentally conscious management or those that disclose information in an easy-to-understand manner).



Good Performance Prize certificate

Corporate Environmental Strategy and Management

Environmental Commendation and Awards

External environmental commendation system in FY2017

Taiwan Brother Industries, Ltd.

On October 20, 2017, Taiwan Brother Industries, Ltd. (Taiwan Brother) won the Gold Prize in the manufacturing sector of the companies that participated in the 2017 national power-saving campaign (power-saving competition for small and medium-sized enterprises).

This prize is awarded by the Taiwan Power Company operated by the Ministry of Economic Affairs, R.O.C. to encourage voluntary activities by companies and social organizations and raise public awareness about energy conservation to reduce CO₂ emissions in Taiwan.

This is the second time for Taiwan Brother to win the Gold Prize after winning the first one in 2016. The prize recognized the daily activities by the division in charge of the environment and all employees to promote energy conservation and the effectiveness of such activities.



Brother International Corporation (U.S.A.)

Brother International Corporation (U.S.A.) (BIC (USA)) has been participating in the New Jersey Smart Workplaces program since 2013.

The program encourages employees to use means of transportation whose CO₂ emissions are low (such as bicycles and public transport) or conference calls in order to reduce the CO₂ emissions attributed to commuting.

BIC (USA) was recognized as the silver level in 2013 and as the platinum level from 2014 to 2017.

Internal environmental commendation system in FY2017

"5R Award"

The Brother Group has a system to commend group companies for their environmental activities in the previous year (the "5R Award") to motivate and improve the level of environmental activities of the entire group.

In FY2017 (April 1, 2017-March 31, 2018), 17 applications were received in total for different categories. The winners were four business sites and one department which achieved significant results tackling problems that all corporations have to face based on the environmental action plan.

In November 2017, personnel from the award-winning entries gave presentations about their activities and received commendations from the BIL president at presentation meetings*, which were attended by employees from group companies in and outside Japan (including Asia, Europe and the Americas).

Corporate Environmental Strategy and Management

Environmental Commendation and Awards

Internal environmental commendation system in FY2017

Business sites/departments that won a "5R Award" in FY2017

Award title	Business sites/departments
CO ₂ Emission Reduction 5R Award	Zhuhai Brother Industries, Co., Ltd.
Product 5R Award	IDS Development Dept. of Brother Industries, Ltd. * Reduction in space and low power consumption designs for products
Environmental Contribution 5R Award	South and North America (12 manufacturing and sales facilities)
Judge Selection 5R Award (CO ₂ Emission Reduction)	Brother International Corporation de Argentina S.R.L.
Judge Selection 5R Award (Environmental Contributions)	Taiwan Brother Industries, Ltd.

*: The meetings are of the largest scale in the Brother Group, in which best practices and skills are selected from various fields, sites and companies in and outside Japan and excellent persons/cases are praised.

President's Award

In 1998, the Brother Group started the President's Award, a commendation system for all group companies. The award is intended to boost employees' motivation and challenging spirit by recognizing their efforts and accomplishments made throughout the year. The evaluation indices include reduction in CO₂ emissions.

Commendation under the Brother eco point program

In April 2008, the Brother Group launched the "Brother eco point program" in Japan to help raise the environmental awareness of employees, and extended the program to facilities outside Japan from FY2009 (April 1, 2009-March 31, 2010).

Facilities in Japan and the U.S. as well as Brother Industries (U.K.) Ltd., etc. created their own commendation systems to encourage such activities. As of March 31, 2018, the Brother eco point program is in place in more than 40 countries and regions, involving 29,993 employees.

▶ Timeline for Environmental Milestone Achievement
<https://global.brother/en/eco/management/history>

Creating Eco-conscious Products

Environmental Considerations within Product Life Cycles

Setting ever higher targets for reducing environmental impact at each stage

The Brother Group is committed to reducing environmental impact at all stages of the life cycle of its products. This is the guiding principle of the group's manufacturing activities.



Since each of the stages are closely interlinked in terms of environmental impact, continuous efforts are required to make incremental improvements and to achieve technological innovation. The Brother Group aims to make such efforts throughout its operations in order to continuously deliver eco-conscious products to customers.

The Brother Group Environmental Action Plan 2018 (2016-2018) set ever-higher targets for each of these stages to accelerate efforts. Specific activities included enhancing eco-conscious design processes and green procurement, continuous reduction in environmental impact at manufacturing facilities (such as CO₂ emissions and water consumption), reduction in CO₂ emissions in logistics (for example, by optimizing packaging), further improvements in energy-saving performance during product use, and enhancement in the reusability, recyclability, and collection system for either products or consumables.

Creating Eco-conscious Products

Environmental Considerations within Product Life Cycles

1. Development and design

Basic policy

Brother products are developed and designed to:

- comply with laws and regulations of the various countries and regions where sold;
- be compact and lightweight to conserve resources;
- achieve the top levels of energy conservation performance in the industry;
- manage hazardous chemical substances, as defined in the Brother Green Procurement Standards;
- be easily recycled at the end of life; and
- meet emission standards.

It is essential to apply at the design stage, environmental considerations for the entire life cycle of a product. For certain key criteria in the product environmental assessments, target values are set at the initial stage of development and design. Improvements must be achieved when compared with previously released products.



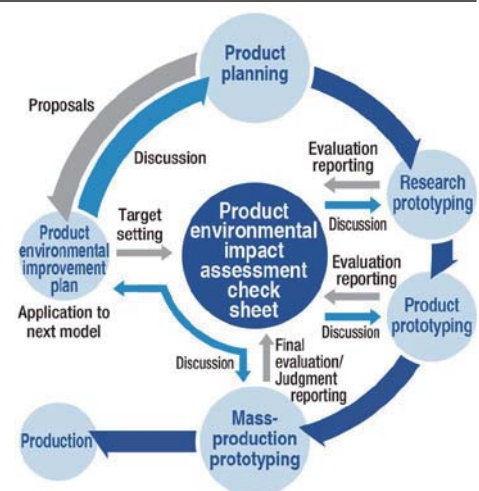
▶ [Brother's activities]
Air Flow Simulation Technology
<https://www.brotherearth.com/en/tech/air-flow.html>

Measures

Brother Industries, Ltd. (BIL) conducts product environmental assessments at key stages of development and ensures eco-conscious design by addressing the product life cycle from material procurement, production, products use and through to the collection and recycling at the end of life. Also, BIL actively acquires environmental labels in respective countries. For customers in Europe and the U.S. in particular, BIL discloses product information in accordance with The Eco Declaration (ECMA-370).

Product environmental impact assessments and Life Cycle Assessment (LCA)

BIL conducts product environmental impact assessments in order to evaluate the impact that products have on the environment. There are 51 assessment items. For key criteria, improvement must be achieved at the product development stage.



Product environmental impact assessment flow

Creating Eco-conscious Products

Environmental Considerations within Product Life Cycles

1. Development and design

Key Criteria for environmental impact assessment

- Size and weight
- Parts reuse/recyclability, disassembly/dismantling, avoidance of difficult-to-disassemble structures, integration of resin materials
- Hazards during production or use
- Size, weight and recyclability of packaging materials
- Material labeling, compliance with related laws and environmental labels

We conduct an LCA that quantitatively provides numerical data for the "degree of impact on the environment" at each stage of its life cycle. Environmental load characteristics and improvement points are identified and the improvement effect is confirmed for each product. Evaluation results are released on the BIL website showing the products which have acquired various environmental labels and on the website managed and operated by the Japan Environmental Management Association for Industry under the name of the EcoLeaf environmental label. BIL also discloses its carbon footprint.

From January 25, 2007, the LCA information has been shared internally on the intranet of BIL. March 2018 saw detailed LCA information published in-house for 111 products (15 products were newly released in FY2017 [April 1, 2017-March 31, 2018]). These are used by the responsible departments and business partners to encourage the development of eco-conscious products. The Brother Group will continue to reduce the environmental impact of products by using LCA techniques. carbon footprint.

▶ [Brother's activities] Air Flow Simulation Technology
<https://www.brotherearth.com/en/tech/air-flow.html>

2. Procurement

Basic policy

We check parts and materials that are used to make products, to ensure:

- they do not contain hazardous materials, and
- they are made via an eco-friendly process.

In this way, we give priority to purchasing parts and materials.

Measures

Brother works with suppliers and uses the IT-based Brother Green Procurement Management System to manage data on chemicals and promote the use of alternative parts/substances. This is regularly updated in response to the candidate list substances of very high concern defined within the REACH Regulation.

See ▶ 43p Compliance with Environmental Laws and Regulations on Products

Creating Eco-conscious Products

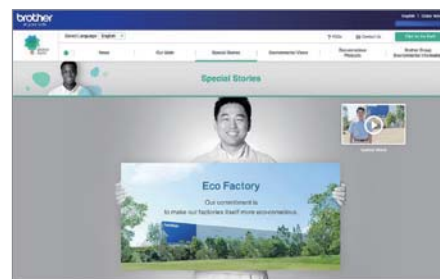
Environmental Considerations within Product Life Cycles

3. Production

Basic policy

All manufacturing facilities of the Brother Group have ISO 14001 environmental management systems. Products are manufactured within that global system with due consideration being given to:

- ensuring efficient use of materials, energy, and water resources, etc.;
- reducing pollutants released into the atmosphere and wastewater;
- preventing the generation of waste; and
- recycling waste generated.



▶ [Brother's activities] Eco Factory
<https://www.brotherearth.com/en/tech/ecofactory.html>

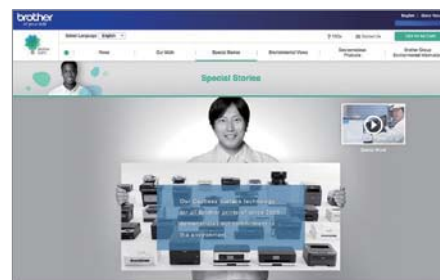
Measures

- Electrical power consumption and CO₂ emissions are reduced by ensuring all manufacturing facilities efficiently run equipment.
- The factories are also focusing on reducing the volumes of process waste and any waste generated is treated within the scope of zero landfill.

- ▶ See 24p Environmental Management System
- ▶ See 49p CO₂ Emission Reduction Activities
- ▶ See 58p Zero Waste Emission Activities
- ▶ See 62p Activities to Reduce Water Consumption
- ▶ See 64p Preventing Pollution

▶ [Brother's activities] Eco Factory
<https://www.brotherearth.com/en/tech/ecofactory.html>

▶ [Brother's activities] Coatless Surface
<https://www.brotherearth.com/en/tech/coatless.html>



▶ [Brother's activities] Coatless Surface
<https://www.brotherearth.com/en/tech/coatless.html>

Creating Eco-conscious Products

Environmental Considerations within Product Life Cycles

4. Packaging and logistics

Basic Policy

Brother is committed to:

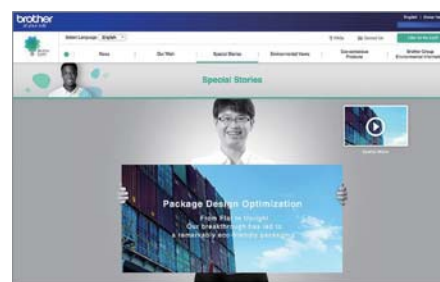
- reducing product packaging and waste where possible; and
- reducing CO₂ emissions in distribution and transport.

Measures

- We are applying simpler and smaller packaging.
- We are combining product categories when arranging shipments to maximize loads.
- We continue to review distribution routes.

参照 ▶ 49p CO₂ Emission Reduction Activities

▶ [Brother's activities] Package Design Optimization
<https://www.brotherearth.com/en/tech/package-desing-optimization.html>



▶ [Brother's activities]
 Package Design Optimization
<https://www.brotherearth.com/en/tech/package-desing-optimization.html>

5. Use

Basic policy

Consideration for our customers' use of our products:

- they do not consume excessive energy; and
- our products can be used safely, conveniently and comfortably.

We also endeavor to disclose overall environmental information about products.



Environmental labels and energy-saving standard compliance marks awarded to environmentally friendly products

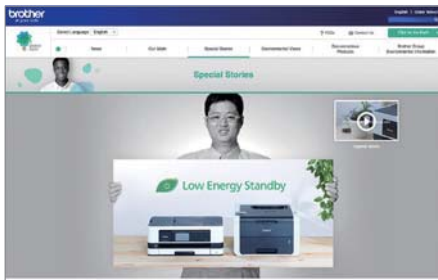
Creating Eco-conscious Products

Environmental Considerations within Product Life Cycles

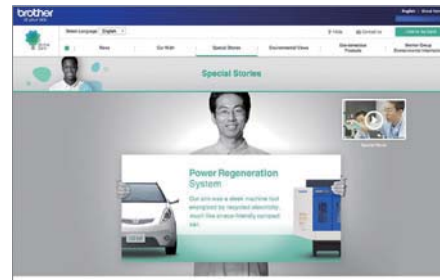
5. Use

Measures

We are strengthening development of eco-friendly products focusing on energy conservation.



▶ [Brother's activities] Low Energy Standby
<https://www.brotherearth.com/en/tech/standby.html>



▶ [Brother's activities] Power Regeneration System
<https://www.brotherearth.com/en/tech/power-supply-regenerative.html>



▶ [Brother's activities] Low-Noise Belt Drive
https://www.brotherearth.com/en/tech/hsm_belt-driving.html

See ▶ 36p Environmental Labels Acquired

▶ [Brother's activities] Low Energy Standby
<https://www.brotherearth.com/en/tech/standby.html>

▶ [Brother's activities] Power Regeneration
<https://www.brotherearth.com/en/tech/power-supply-regenerative.html>

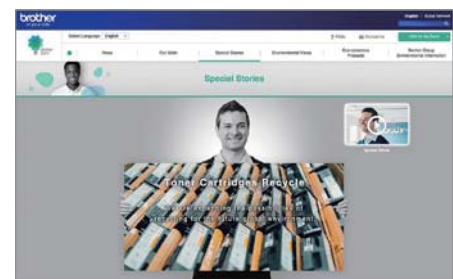
▶ [Brother's activities] Low-Noise Belt Drive
https://www.brotherearth.com/en/tech/hsm_belt-driving.html

6. Collection and recycling

Basic policy

As considerations for the end of life of a product, we make efforts to:

- collect and recycle products and consumables at end of life; and
- design products so that they can be easily recycled.



▶ [Brother's activities] Toner Cartridges Recycle
<https://www.brotherearth.com/en/tech/toner-recycle.html>

Creating Eco-conscious Products

Environmental Considerations within Product Life Cycles

6. Collection and recycling

Measures

- Ink cartridges consumed in Japan: The "Ink Cartridge Return Project" is under way in collaboration with printing product manufacturers.
- Toner cartridges, drum units, and label writer tape cassettes consumed in Japan: Brother's own collection and recycling system is in place.
- Toner and ink cartridges consumed outside Japan: Collection and recycling systems have been introduced in more than 40 countries and regions.
- In Europe, products are collected and recycled in accordance with the WEEE Directive. In Australia and New Zealand, products are collected and recycled on a voluntary basis. Regarding corporate customers in Japan, used Brother products (fax machines, printers, and All-in-Ones) are collected and recycled in collaboration with business partners.

[Brother's activities] Conducting eco activities through the Bellmark campaign (Japan)

Brother Sales, Ltd. joined the Bellmark campaign in April 2011 in order to (i) actively participate in social contribution activities via support for education and (ii) improve the collection rate of used cartridges and promote recycling.



Examples of products in the Bellmark campaign



参照 ▶ 41p Collection and Recycling

▶ [Brother's activities] Toner Cartridges Recycle <https://www.brotherearth.com/en/tech/toner-recycle.html>

Creating Eco-conscious Products

Environmental Labels Acquired

Actively acquiring environmental labels from around the world

A yardstick for use when selecting products, and helping reduce their overall environmental impact of society

Environmental labels indicate that the selected product shows consideration for the environment, and provide customers helpful information when selecting eco-conscious products. Environmental labels come in three types (Type I, II and III) standardized by the International Organization for Standardization (ISO) or a compliance label that indicates that the product complies with specific performance criteria.

There are various environmental labels in the countries and regions around the world in which the Brother Group operates. The respective labels (which are based on different eco-conscious requirements and standards) are considered to meet stakeholders' environmental requirements and the Brother Group actively acquires the labels in the countries and regions where its products are sold.

Under this policy, targets were set in the Brother Group Environmental Action Plan 2018 (2016-2018) to acquire specific environmental labels including Blue Angel, Eco Mark, Nordic Swan, EPEAT, and China's Ten Circle Mark, and significant efforts were made to fulfill the targets.

Below are the main environmental labels acquired by Brother products.

Type I labels

Awarded based on specific criteria judged by third party organizations



www.blauer-engel.de/uz205

The Blue Angel (Germany)

This eco-label is issued by the Federal Environmental Agency, the German Institute for Quality Assurance and Labeling, etc. In July 2008, the MFC-6490CW and DCP-6690CW were the first inkjet All-in-Ones in the world to be certified in the ink-jet category at that time.

In January 2017, the standard was revised and upgraded. Brother worked to comply with the new standard for both new and current products. Brother acquired the label for 32 new product models and 77 current product models in FY2017 (April 1, 2017-March 31, 2018).

PDF ▶ List of products that acquired Blue Angel [PDF/0.3MB]
http://download.brother.com/pub/com/en/eco/pdf/blue_angel.pdf

▶ The Blue Angel
<https://www.blauer-engel.de/de/produktwelt/elektrogeraete/drucker-und-multifunktionsgeraete>



Nordic Swan (five Scandinavian countries)

This eco-label is administered primarily by the Nordic Ecolabelling Board, and is used in five Scandinavian countries (Norway, Sweden, Denmark, Finland, and Iceland). Twelve Brother models, mainly black-and-white laser printers and All-in-Ones, were first awarded the label in 2009. In FY2017, Brother acquired the label for 15 product models.

PDF ▶ List of products that acquired Nordic Swan [PDF/0.2MB]
http://download.brother.com/pub/com/en/eco/pdf/nordic_swan.pdf

Creating Eco-conscious Products

Environmental Labels Acquired

Actively acquiring environmental labels from around the world

Type I labels



China Environmental Labeling plan (China)

This government-run eco-label (the Ten Circle Mark) is issued by the China Environmental United Certification Center under the jurisdiction of the State Environmental Protection Administration. Brother acquired the label for color laser printers/All-in-Ones and black-and-white laser printers/All-in-Ones. In FY2017, Brother acquired the label for three product models.

PDF ▶ List of products that acquired Ten Circle Mark [PDF/0.2MB]
http://download.brother.com/pub/com/en/eco/pdf/china_environmental.pdf



Eco Mark (Japan)

This eco-label is issued by the Japan Environment Association. It is awarded to products that minimize environmental load and aid environmental protection across their entire life cycle (from production to disposal). In FY2017, Brother acquired the label for 14 product models and 18 consumables.

List of products that acquired Eco Mark

- PDF** ▶ Printers [PDF/0.2MB]
http://download.brother.com/pub/com/en/eco/pdf/eco_mark_printers.pdf
- PDF** ▶ Stationery/office supplies (tape cassettes) [PDF/0.2MB]
http://download.brother.com/pub/com/en/eco/pdf/eco_mark_cassettes.pdf
- PDF** ▶ Toner Cartridges [PDF/0.2MB]
http://download.brother.com/pub/com/en/eco/pdf/eco_mark_toner_cartridges.pdf
- PDF** ▶ Ink Cartridges [PDF/0.2MB]
http://download.brother.com/pub/com/en/eco/pdf/eco_mark_ink_cartridges.pdf



Environmental Choice (New Zealand)

This eco-label was introduced by the national government of New Zealand, and is issued by New Zealand Ecolabelling Trust. Brother acquired the label for color laser printers/All-in-Ones, etc. In FY2017, Brother acquired the label for four models.

Copying machines, printers, fax machines and multifunctional devices. Licence No. 2410083

PDF ▶ List of products that acquired Environmental Choice [PDF/0.2MB]
http://download.brother.com/pub/com/en/eco/pdf/environmental_choice.pdf



Green Mark (Taiwan)

This eco-label was introduced in Taiwan by the Environmental Protection Administration, and is issued by the Environment and Development Foundation. Brother acquired the label for color laser printers/All-in-Ones, black-and-white laser printers/All-in-Ones, and consumables.

PDF ▶ List of products that acquired Green Mark [PDF/0.2MB]
http://download.brother.com/pub/com/en/eco/pdf/green_mark.pdf

Creating Eco-conscious Products

Environmental Labels Acquired

Actively acquiring environmental labels from around the world

Type I labels



Korea Eco-label (South Korea)

This eco-label is issued by the Korea Environment Industry & Technology Institute that was established in accordance with the Development of and Support for Environmental Technology Act. Brother acquired the label for black-and-white laser printers/All-in-Ones, etc. In FY2017, Brother acquired the label for three product models.

PDF ▶ List of products that acquired Korea Eco-label [PDF/0.2MB]
http://download.brother.com/pub/com/en/eco/pdf/korea_eco_label.pdf

Type II labels

Self-declared labels by businesses



Brother Green Label (Japan)

In October 2001, Brother Industries, Ltd. (BIL) established voluntary environmental standards for products and created the Brother Green Label to recognize products that satisfied related certification standards. Five products were certified in FY2017.

Type III labels

Awarded to products whose environmental load is shown quantitatively by LCA (Life Cycle Assessment)



EcoLeaf (Japan)

This eco-label is awarded to products that disclose quantifiable information about their environmental characteristics. It is managed and issued by the Japan Environmental Management Association for Industry. BIL has received "System Certification"* in the Printer and Facsimile Business (registered name) and is working on acquiring the EcoLeaf label for main products. Brother's 24 product models were certified in FY2017.

*: Approval system for product environmental data collection systems. The Japan Environmental Management Association for Industry verifies and certifies that businesses that make EcoLeaf labels have the system needed to make them, and that the system is functioning properly and effectively.



Carbon Footprint (Japan)

Carbon Footprint* is a mechanism to visualize the emissions of greenhouse gases (in CO₂ equivalent) from procurement of raw materials to disposal and recycling of products. It is issued by the Japan Environmental Management Association for Industry. In May 2014, FAX-2840, MFC-8520DN, and MFC-8950DW became the first desktop black-and-white laser All-in-Ones, and HL-5440D, HL-5450DN, and HL-6180DW became the first desktop black-and-white laser printers, to acquire the label. In FY2017, Brother acquired the label for nine laser product models.

*: Short for "Carbon Footprint of Products." The environmental impact is calculated quantitatively by using the LCA technique. Businesses and consumers share awareness about actions to reduce CO₂ emissions. Consumers are motivated to pursue a low-carbon lifestyle by utilizing the visualized information.

Creating Eco-conscious Products

Environmental Labels Acquired

Actively acquiring environmental labels from around the world

Conformance label



International ENERGY STAR Program (the U.S.A., Japan, Canada, and Taiwan)

This is an international energy saving program for office equipment. Its logo is awarded to products that meet the energy-saving standards.

List of products that qualify the standards of International ENERGY STAR program

PDF ▶ U.S.A. [PDF/0.3MB] http://download.brother.com/pub/com/en/eco/pdf/energy_star.pdf

PDF ▶ EU [PDF/0.3MB] http://download.brother.com/pub/com/en/eco/pdf/energy_star_eu.pdf



Energy Conservation Certification (Energy saving label) (China)

This eco-label is from China. It recognizes products for their energy-saving performance.

Environmental assessment system



EPEAT (in the U.S.A.)

EPEAT is an environmental rating for electronic products that is managed and administered by the Green Electronics Council (a non-profit organization). The environmental criteria underlying the EPEAT system are based on the full product lifecycle, from design and production to energy use and recycling. EPEAT criteria consist of required and optional ones; products are ranked Gold, Silver, or Bronze depending on the level of conformity with the optional criteria. In December 2017, nine models including MFC-L2750DWXL became the first laser products to be registered as Silver products. In FY2017, 20 models including these nine models were registered.

*: Judgments are based on laws and regulations, etc. in respective countries and regions. Thus, the same product may have different ranks

PDF ▶ List of EPEAT-compliant products [PDF/0.3MB]
<http://download.brother.com/pub/com/en/eco/pdf/epeat.pdf>

Green purchasing laws



Products complying with the Law on Promoting Green Purchasing (Japan)

In April 2001, the Law on Promoting Green Purchasing came into effect. This law requires that national governmental organizations purchase green products and that regional governmental organizations and private business and individuals try to do the same. By affixing our own eco-label to Brother products that meet the standard, BIL is promoting environmental activities to customers.

Creating Eco-conscious Products

Environmental Labels Acquired

Actively acquiring environmental labels from around the world

RoHS Directive



※欧州RoHS指令に対応しています。

Compliance with the RoHS Directive

The EU (European Union) enforced the RoHS (Restriction on the use of certain Hazardous Substances in electrical and electronic equipment) Directive in July 2006. All Brother products, excluding machine tools, for all markets in the world are compliant with the RoHS Directive. Products only for the Japanese market are labeled with our own eco-label to show they are compliant with the RoHS Directive.

Creating Eco-conscious Products

Collection and Recycling

Efforts to Improve Recycling

With the "end of life" of products in mind, the Brother Group has been working to (i) increase reusability and recyclability of products and consumables and (ii) build recycling systems in accordance with laws and regulations in respective countries.

Brother Group's collection and recycling efforts

Brother International Europe Ltd.

In Europe, the portal site for recycling consumables and products provides information about how to return used toner cartridges, drum units, ink cartridges and products, and ask for collection boxes, etc. which are available in total 28 countries.

Regarding collection and recycling of products, Brother utilizes collection and recycling channels in place in respective countries in compliance with the Waste Electrical and Electronic Equipment (WEEE) Directive. More than 14 million toner cartridges were recycled from 2004 to June 30, 2018.

▶ Portal site for recycling (Europe)
<https://www.brother.eu/recycle>

Brother Industries (U.K.) Ltd., Brother Industries (Slovakia) s.r.o.

Brother Industries (U.K.) Ltd.'s Recycling Technology Centre is the Brother Group's core facility that recycles toner cartridges and designs and develops recyclable toner cartridges in collaboration with facilities in the U.S. and Japan. A project is underway to build a system for automating the recycling process. With support from the Recycling Technology Centre, Brother Industries (Slovakia) s.r.o. (BISK) recycles Brother's toner cartridges that are sold primarily in Europe. BISK's accomplishments and development expertise are shared in Japan, the U.S., and other countries to help raise the technological standards of the Brother Group.

▶ Toner Cartridges Recycle
<https://www.brotherearth.com/en/tech/toner-recycle.html>



Expanding the possibilities of recycling for the future of the global environment

Brother International Corporation (U.S.A.)

In the U.S., the project is undertaken by collection and recycling contractors. The system is administered in accordance with state and federal laws.

The website of Brother International Corporation (U.S.A.) (BIC (USA)) explains how to return used toner cartridges, drum units, ink cartridges, and tape cassettes.

Used toner cartridges are collected in Canada via local sales facilities.

Creating Eco-conscious Products

Collection and Recycling

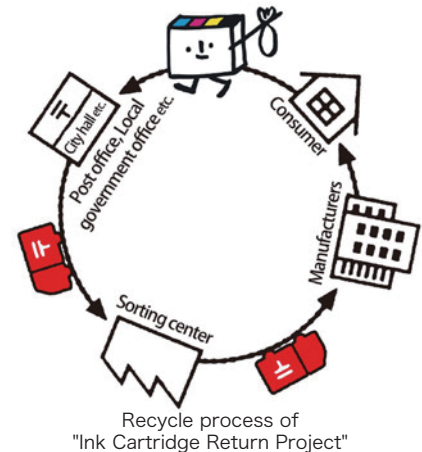
Efforts to Improve Recycling

Brother Group's collection and recycling efforts

Brother Sales, Ltd.

In Japan, printing product manufacturers and sellers have collection boxes at retail outlets to collect used ink cartridges. In order to further improve the collection rate in January 2007, the Brother Group along with other printing product manufacturers and sellers launched an "Ink Cartridge Return Project" with post offices. Collection began at 3,638 posts offices across the country in April 2008.*1 The project has been a success as ink cartridges can be recycled by depositing them in the collection boxes at post offices*2 regardless of the manufacturer.

In collaboration with business partners, Brother Sales, Ltd. collects Brother products (fax machines, printers, and All-in-Ones for businesses), and Brother Industries, Ltd. recycles them.



*1: Since November 2008, Brother Sales, Ltd. has been collecting ink cartridges as a certified, wide-area waste disposal agent, as defined in the revised Waste Management and Public Cleansing Act, under the guidance of the Ministry of the Environment, Government of Japan.

*2: Not all post offices participate in this project.

Mie Brother Precision Industries, Ltd.

Mie Brother Precision Industries, Ltd. started to work on refurbishing toner cartridges for monochrome laser printers in FY2009 (April 1, 2009-March 31, 2010) based on recycling expertise gained in Europe.

Collected used toner cartridges undergo sorting, disassembly, cleaning, and parts replacement for reuse. To further reduce environmental impact, the company shares information with recycling facilities in Europe and the Americas and is continually improving the methods of refurbishing toner cartridges. Collected used color toner cartridges are delivered to Brother Industries (U.K.) Ltd. for recycling.



Monochrome toner cartridges

Brother International (Aust.) Pty. Ltd.

Brother International (Aust.) Pty. Ltd. is participating in the Cartridges 4 Planet Ark (C4PA) program to recycle printer toner cartridges. In FY2017, 3.6 million cartridges were collected and recycled in this program.

The company also participates in the TechCollect program for recycling printers as a member of ANZRP (Australia and New Zealand Recycling Platform).

Brother International (NZ) Ltd.

Brother International (NZ) Ltd. is working with an experienced recycling contractor to collect and recycle used consumables (e.g. ink and toner cartridges, drum units) and printers. In FY2017, 102,175 consumables and printers weighing 29,578 kg in total were collected.

Complying with Laws, Regulations and Social Trends

Compliance with Environmental Laws and Regulations on Products

Complying with environmental laws and regulations in various countries with full collaboration of the supply chain

In recent years, various laws and regulations have been introduced at both the national and regional levels. Legal and regulatory restrictions have been rising year after year regarding chemical substances and product areas covered. Legislation covers such areas as reducing power consumption during product use, as well as environmental and health impacts.

As a global company with operations in more than 40 countries and regions, the Brother Group believes that compliance with laws and regulations is the foundation of environmental risk management and product competitiveness. The Brother Group has developed activities in line with the Brother Group Environmental Action Plan 2018 (2016-2018), in order to ensure compliance with laws and regulations in all the countries and regions in which the Brother Group operates and to quickly prevent pollution and reduce environmental impacts with high ethical standards. In FY2017 (April 1, 2017-March 31, 2018), to fulfill the environmental targets of globally complying with regulations on chemical substances and energy-saving regulations on products, the Brother Group remained committed from the previous fiscal year to continuously strengthening its framework for responding to the development of laws and regulations in respective countries and regions and offering eco-conscious products before new regulations come into force. Ensuring compliance with laws and regulations across the group has made it possible to quickly cope with needs for products and enhance sales and services.

To deliver environmentally conscious products, environmentally conscious parts and materials must be used. When procuring parts and materials, suppliers are asked to deliver parts and materials in accordance with the Brother Group Green Procurement Standards. Also, the Brother Group conducts audits on suppliers at least every three years to check their management systems and operations. Suppliers are required to make necessary improvements and guarantee that the goods that they supply meet the standards.

See ▶ 46p Green procurement

Compliance with the RoHS Directive in different countries and regions

The RoHS Directive is an EU law that took effect in July 2006, banning the use of hazardous substances in electrical and electronic equipment. In response to this directive, the Brother Group worked with suppliers to build Brother's unique environmental information system, which is used to investigate, avoid, and manage chemical substances contained in products. In line with the subsequent revision, the Brother Group established a system to create technical documents and Declarations of Conformity (DoC) in 2012. Preparations have been made to cope with additional substances that will be restricted in 2019.

Meanwhile, since 2007, many countries and regions including China and South Korea have introduced laws and regulations that reflect the regulations of the RoHS Directive on hazardous substances contained in electrical and electronic equipment. Many more countries and regions are likely to follow suit. The Brother Group will properly ensure compliance with the laws and regulations in these countries and regions.

Complying with Laws, Regulations and Social Trends

Compliance with Environmental Laws and Regulations on Products

Complying with environmental laws and regulations in various countries with full collaboration of the supply chain

Compliance with the REACH Regulation (EU)

REACH is the EU Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals. It came into force in June 2007 for chemical substances that are manufactured or imported. The Brother Group completed pre-registration of applicable chemical substances by FY2008 (April 1, 2008-March 31, 2009) and completed the registration of these substances by the deadline in June 2018.

In EU countries, there are various obligations related to the SVHC (Substances of Very High Concern) content in products. The Brother Group improved the environmental information system to facilitate the investigation of SVHC content. In FY2009 (April 1, 2009-March 31, 2010), the Brother Group set up a system for collecting data from suppliers to improve disclosure of information on SVHC content. In FY2010 (April 1, 2010-March 31, 2011), the Brother Group developed a system for calculating the SVHC content in products and reporting it to the appropriate agency as necessary. Meanwhile, safety data sheets (SDSs) have been translated into EU languages and have been published on the website. In FY2012 (April 1, 2012-March 31, 2013), the SDSs were revised to comply with the revised REACH Regulation.

▶ Safety Data Sheets (SDS)

<http://sds.brother.co.jp/sdsapp/index.html>

Compliance with energy-saving regulations in respective countries and regions

The Ecodesign (ErP) Directive (formerly, the EuP Directive, which came into effect in 2005, and was revised in 2009) was set up as a framework that requires the eco-conscious design of energy-related products sold in the EU, to help prevent global warming. The Brother Group uses the data in the environmental information system to calculate life-cycle assessment (LCA) results for the entire product life cycle and facilitate eco-conscious design, thereby ensuring quick compliance with the directive. Energy-saving technologies for applicable products were developed, and relevant procedures for product environmental impact assessments were updated for "imaging equipment (Lot 4)," "standby and off-mode losses (Lot 6)," "external power supply (Lot 7)," and "networked standby losses of energy using products" (Lot 26) (these are categories into which Brother's products fall) to put in place a framework for compliance. A system is in place to ensure compliance.

Countries and regions outside the EU have increasingly introduced laws and regulations requiring eco-conscious design and set energy conservation standards in respective product areas. The Brother Group has taken quick action to meet these laws and regulations.

Complying with Laws, Regulations and Social Trends

Compliance with Environmental Laws and Regulations on Products

Complying with environmental laws and regulations in various countries with full collaboration of the supply chain

Compliance with the WEEE Directive, etc.

The WEEE Directive is an EU law that requires the collection and 3Rs (Reduce, Reuse and Recycle) of used electrical and electronic equipment. Member countries, distributors, producers, and other entities are required to fulfill the requirements in the design, sorting, collection, and recycling phases. The Brother Group complies with the WEEE Directive using collection and recycling routes in place in respective member countries. The Brother Group also works on collection and recycling on a voluntary basis in Australia and New Zealand.

In FY2009, the Brother Group ensured compliance with the Enforcement Ordinance of the Act on the Promotion of Saving and Recycling of Resources in South Korea. A collection and recycling system for Brother's products was developed in Japan in collaboration with partners, and commenced in FY2012. In the US, a collection and recycling system is operated by contractors in accordance with state and federal laws.

In recent years, WEEE-based bills have been drafted and legislated in other countries and regions, primarily in Southeast Asia. The Brother Group obtains the latest information through sales companies in respective countries and regions, manufacturers' associations, information services, etc., and establishes a collection and recycling system in line with the requirements to ensure legal compliance.

Disclosure of product information in accordance with The Eco Declaration (ECMA-370)

The Brother Group discloses the environmental characteristics (including legal requirements) of printers, All-in-Ones, label printers, scanners, etc. in accordance with The Eco Declaration (ECMA-370) which is a standardized format and system for disclosing environmental characteristics of ICT and CE products including printers and All-in-Ones in Europe.

▶ The Eco Declaration
<https://global.brother/en/eco/product/declaration/>

Efforts to prevent illegal logging (EU and Australia)

The EU Timber Regulation and Australia's Illegal Logging Prohibition Act prohibit placing timber products (including paper products) derived from illegally harvested timber on the market. The regulations also require investigations and assessments of suppliers to prevent mixing of illegally harvested timber. The Brother Group collected information from suppliers about inkjet and thermal paper as well as paper packaging materials including product package boxes, and confirmed the legality of timber used as a raw material.

Complying with Laws, Regulations and Social Trends

Green Procurement

Green procurement policy

Procuring environmentally friendly parts and materials from suppliers who promote environmental conservation activities

At the Brother Group which operates its business globally, safety and environmental impacts are prime considerations at every stage of a product's life cycle, from design, development, manufacturing, customer usage, and disposal, to reuse and recycling, as set out in its basic environmental policy of the Brother Group Environmental Policy. Under the "Brother Group Global Charter", the Brother Group began implementing green procurement activities from February 2001 in which we prioritize procuring environmentally friendly parts and materials for all products that we sell.

In April 2002, the Brother Group issued the Brother Group Green Procurement Standards (Ver. 1.0) which includes the Brother Group Environmental Policy and specific requests to suppliers, and describes the flow of operations for the control of certain chemical substances contained in products to promote the manufacture of environmentally conscious products with suppliers. The Brother Group conducts audits on suppliers at least every three years to check their management systems and operations comply with laws and regulations, and to verify that the goods that they supply meet the standards.

Policy of green procurement activities

- 1) Buy goods (parts, materials, sub-materials, and products) from suppliers who promote environmental conservation activities
- 2) Buy goods that do not contain hazardous chemical substances specified by the Brother Group

Scope

The Green Procurement Standards apply to the following goods that the Brother Group handles:

- Parts, materials and sub-materials used for products designed, manufactured, and sold by the Brother Group;
- Parts, materials and sub-materials used for products designed and manufactured by the Brother Group for a third party;
- Products designed and manufactured by a third party for the Brother Group and sold under the Brother Group's trade mark;
- Products for sale that incorporate product(s) purchased from another company (or companies);
- Products purchased from another company to be sold "in their original state";
- Promotional goods.

Complying with Laws, Regulations and Social Trends

Green Procurement

Brother Group Green Procurement Standards

Quick compliance with environmental laws and regulations in various countries

The Brother Group has updated the Brother Group Green Procurement Standards as necessary to comply with various countries' environmental laws and regulations, which are constantly being extended in scope. The standards are released in Japanese, English, Chinese (simplified and traditional), and Vietnamese. Based on the Brother Group Green Procurement Standards, the Brother Group restricts the inclusion of certain chemical substances in all goods which are supplied to the Brother Group: Chemical substances/substance groups the use of which is restricted globally in accordance with laws and regulations, etc. are specified as "RoHS" and "Prohibited substances excluding RoHS," and are designated as "prohibited chemical substances (Level A)," and their content in goods is managed. Meanwhile, controlled chemical substances specified in chemSHERPA, the system endorsed by the Ministry of Economy, Trade and Industry of Japan, are designated as "controlled chemical substances (Level B)," and their content in goods is managed.

To help build society for sustainable development, the Brother Group encourages the suppliers to actively work on the conservation of biological diversity and formulate plans to reduce greenhouse gas emissions.

Brother Group Green Procurement Standards

PDF ▶ Green Procurement Standards Japanese (version 9.1) [PDF/435KB]
http://download.brother.com/pub/jp/eco/pdf/gpsj_ver9_1.pdf

PDF ▶ Green Procurement Standards English (version 9.1) [PDF/609KB]
http://download.brother.com/pub/com/en/eco/pdf/gpse_ver9_1.pdf

PDF ▶ Green Procurement Standards Chinese-simp (version 9.1) [PDF/724KB]
http://download.brother.com/pub/com/cn/eco/pdf/gpsc_ver9_1.pdf

PDF ▶ Green Procurement Standards Chinese-trad (version 9.1) [PDF/1MB]
http://download.brother.com/pub/com/cn/eco/pdf/gpstc_ver9_1.pdf

PDF ▶ Green Procurement Standards Vietnamese (version 9.1) [PDF/518KB]
http://download.brother.com/pub/com/vn/eco/pdf/gpsv_ver9_1.pdf

See ▶ 43p Compliance with the RoHS Directive in different countries and regions

See ▶ 44p Compliance with the REACH Regulation (EU)

▶ Promoting CSR Procurement
<https://global.brother/en/csr/stakeholder/partner/csr>

Complying with Laws, Regulations and Social Trends

Green Procurement

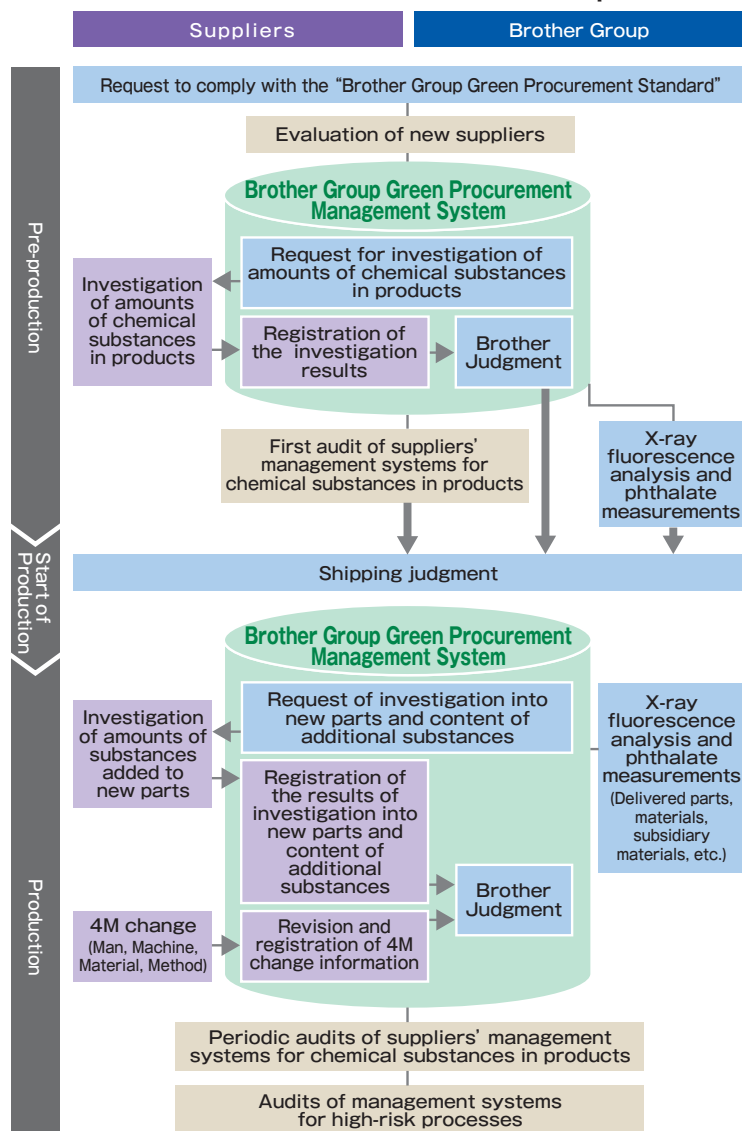
Brother Group Green Procurement Management System

The Brother Group strictly controls chemical substances in products through a green procurement management system

The Brother Group introduced the Green Procurement System in 2004, and requests all suppliers to cooperate in investigations into the content of chemical substances in products.

The Brother Group also supported the concept of chemSHERPA, a scheme for sharing information about chemical substances contained in products recommended by the Japanese Ministry of Economy, Trade and Industry. In March 2018, the system was updated to handle data in chemSHERPA format.

Flow of operations for the control of chemical substances in products at the Brother Group



Since FY2011 (April 1, 2011-March 31, 2012), the Brother Group has been promoting CSR procurement in regard to human rights, labor, health and safety, fair trade and ethics, quality and safety, information security, contribution to society, etc.

Reducing Environmental Impact CO2 Emission Reduction Activities

Brother Group Environmental Vision 2050 formulated

Reduction of CO2 emissions

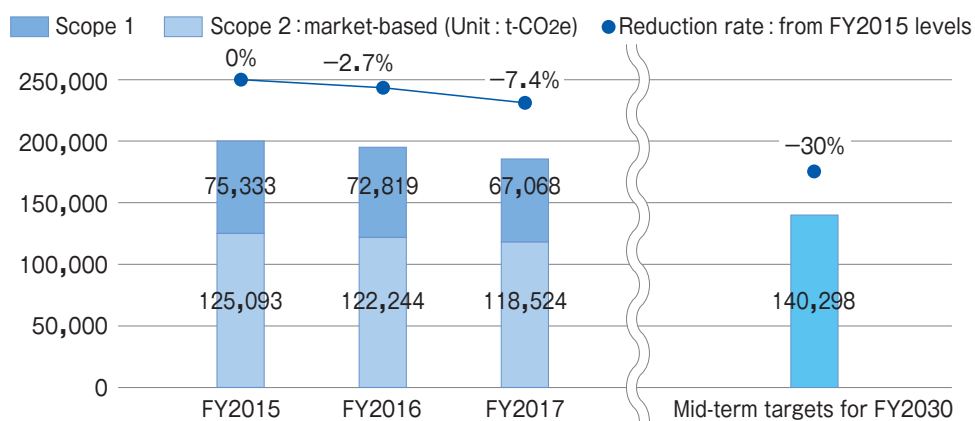
The Brother Group is committed to reducing CO2 emissions of the entire value chain in all its business operations by 2050 and contributing to creating a carbon-free society, which is a mission for the global community.

In March 2018, the Brother Group formulated the Brother Group Environmental Vision 2050 as a new long-term target of the Brother Group to contribute to resolving global environmental issues under the slogan "Brother Earth," and established a mid-term target for FY2030 as a milestone.

The mid-term target for FY2030 has been recognized as a target based on scientific evidence by Science Based Targets (SBT), an international initiative established to help achieve greenhouse gas emission reduction targets.

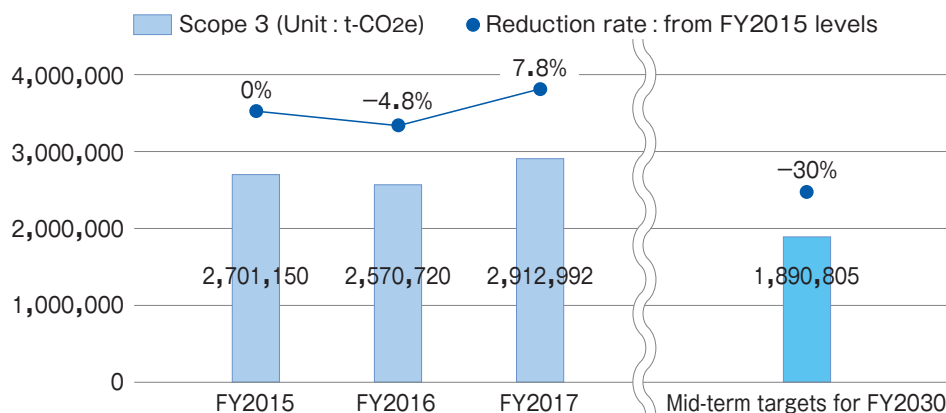
Brother Group Environmental Vision 2050: mid-term target for FY2030

Achieve 30% reduction in Scopes 1 and 2 from FY2015



Brother Group Environmental Vision 2050: mid-term target for FY2030

Achieve 30% reduction in Scope 3 (Categories 1, 11, and 12) from FY2015



*: An excerpt from the Brother Group Environmental Vision 2050

See 5p Environmental Vision 2050

▶ Brother Became the First Company in the Chubu Region to Have CO2 Emissions Reduction Targets Approved by the "Science Based Targets Initiative"
<https://global.brother/en/news/2018/sbt>

*: Click the link above to read a press release.

Reducing Environmental Impact

CO₂ Emission Reduction Activities

Mid-term targets by FY2020 formulated in 2009

As a global company developing its business in different countries and regions across the world, the Brother Group recognizes its commitment to prevent global warming as a top priority to be addressed. In June 2009, CO₂ reduction targets to be achieved by FY2020 were added to the Brother Group Environmental Action Plan, and active efforts have been made to achieve those targets.

The Brother Group's CO₂ emissions from energy use in Japan come mainly from electricity used by offices, while the group's CO₂ emissions overseas are attributed mainly to the use of electricity and fuel at factories and offices. The Brother Group establishes targets for each fiscal year as milestones to reduce CO₂ emissions, and has been continuously implementing energy conservation measures to increase the efficiency of air conditioning and lighting, and ensure the efficient operation of production equipment at factories.

Mid-term targets by FY2020 (April 1, 2020-March 31, 2021)

1. Cut total CO₂ emissions by 30% from FY1990 levels at eight business sites in Japan*¹ by FY2020 (absolute value)
2. Cut CO₂ emissions by 20% (per unit of sales) from FY2006 levels at manufacturing facilities outside Japan (except the USA)*² by FY2020

*1: The eight business sites in Japan are the head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, and Logistics Center.

*2: USA (a manufacturing facility outside Japan) constitutes part of a sales facility. Thus, the CO₂ emissions are included in the results of the sales facility.

Brother Group Environmental Action Plan 2018 (2016-2018) and achievements in FY2017

Entire Brother Group

The mid-term targets by FY2020 for manufacturing facilities outside Japan (except the USA) were attained. Thus, target facilities and new reduction targets (covering more gases than before) have been specified in the Brother Group Environmental Action Plan 2018 (2016-2018). The target has been expanded from manufacturing facilities to all the facilities of the group, and the target gases subject to reduction have been increased from CO₂ from energy use to seven greenhouse gases including CO₂. The reduction target is 1% per annum per unit of sales in CO₂ emissions (Scopes 1 and 2), with greenhouse gas emissions other than CO₂ being converted to CO₂ equivalent.

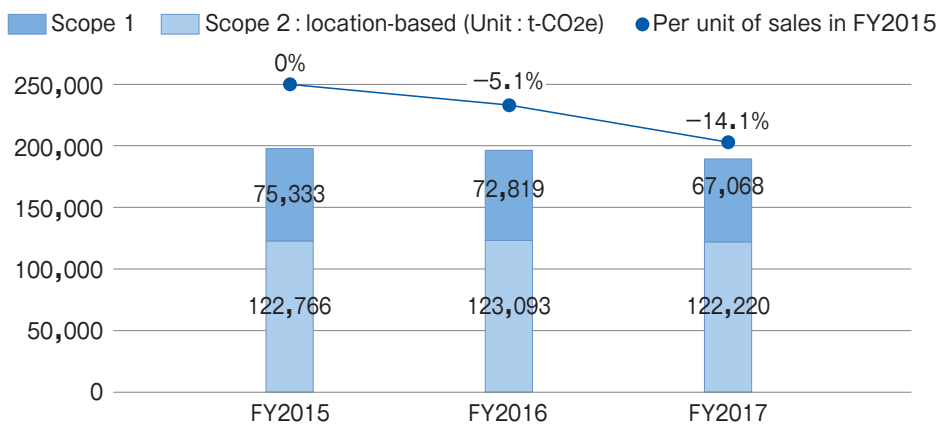
In FY2017 (April 1, 2017-March 31, 2018), the conventional energy conservation activities were continuously deployed globally to reduce the CO₂ emissions from energy use. Meanwhile, the lubricants used mainly at manufacturing facilities outside Japan have been replaced in stages with those that do not emit greenhouse gases. These two measures achieved a reduction of 9.5% per annum, and 14.1% per unit of sales from FY2015 (April 1, 2015-March 31, 2016), achieving the target value.

Reducing Environmental Impact CO2 Emission Reduction Activities

Brother Group Environmental Action Plan 2018 (2016-2018) and achievements in FY2017

Brother Group's CO2 emissions in Scopes 1 and 2

3% reduction from FY2015 levels by FY2018 (per unit of sales)



Eight business sites in Japan

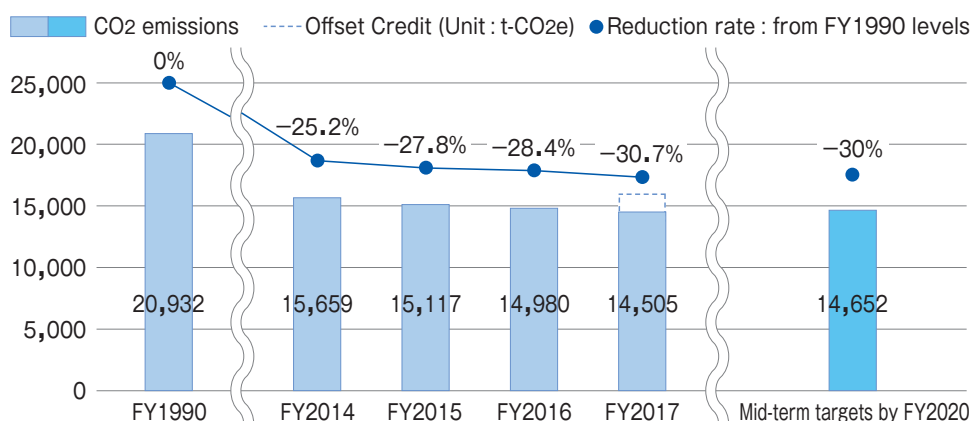
In FY2017, the new building at the Kariya Manufacturing Facility went into full operation, and so the consumption of electricity and city gas increased. Thus, carbon credits for 1,500 metric tons*1 were used. As a result, emissions were reduced by 30.7% (absolute value)*2 from FY1990 (November 21, 1989-November 20, 1990) levels. Thus, the Brother Group successfully achieved the target value for FY2017 and mid-term targets by FY2020. The Brother Group will continue to implement measures to reduce CO2 emissions and attain the target.

*1: Offset Credits (J-VER) were used for 18 metric tons, and J-Credits were used for 1,482 metric tons.

*2: Regarding CO2 emissions, the emissions coefficient as defined in the Act on Promotion of Global Warming Countermeasures (Japanese Ministry of the Environment) is used to calculate the emissions.

CO2 emissions from eight business sites in Japan

30% reduction from FY1990 levels by FY2020 (absolute value)



Reducing Environmental Impact

CO2 Emission Reduction Activities

Brother Group Environmental Action Plan 2018 (2016-2018) and achievements in FY2017

Manufacturing facilities outside Japan (except the USA)

The mid-term targets by FY2020 were attained in FY2013 (April 1, 2013-March 31, 2014). Thus, the targets for the entire group have been applied.

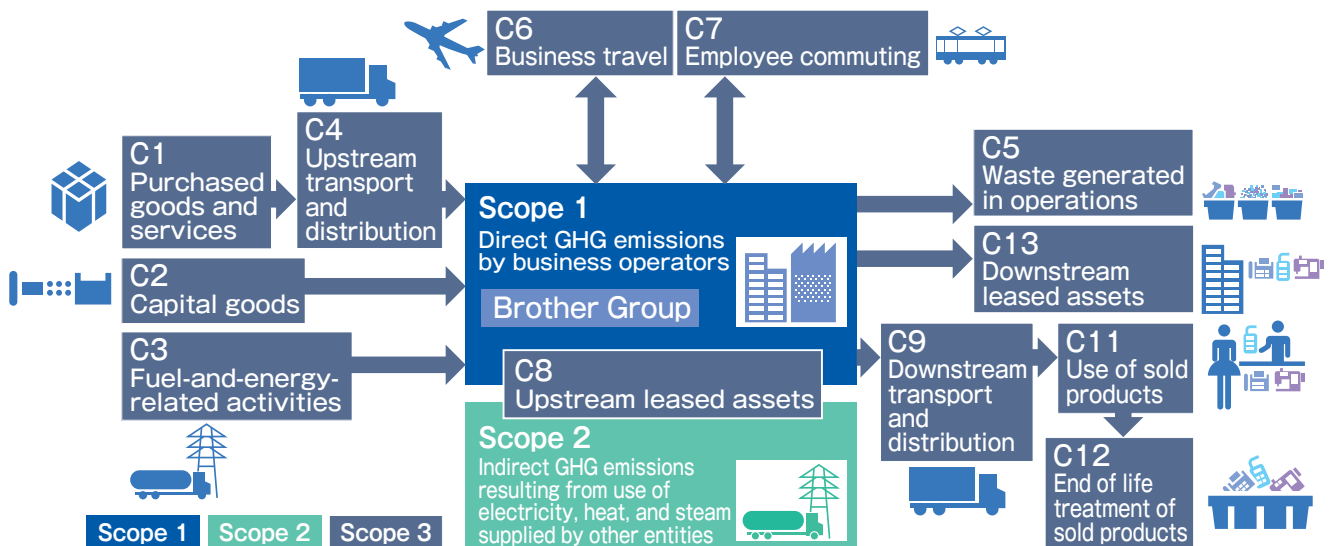
Entire value chain

The Brother Group started calculations for Scopes 1 and 2 in FY2013, and has determined the CO₂ emissions from the entire value chain since FY2014 (April 1, 2014-March 31, 2015). The calculation results for GHG emissions and energy consumption, which are in accordance with the provisions of ISO 14064-1, have been subject to verification by a third-party organization, starting with the calculation results in FY2014.

In FY2017, calculations were performed using two methods (location-based method*1 and market-based method*2) in accordance with the GHG Protocol Scope 2 Guidance released in January 2015.

*1: The location-based method aims to perform calculations based on the grid-average emission factors in a certain area such as a country or region. The choice of low-carbon electricity is not reflected.

*2: The market-based method aims to perform calculations based on the emission factors of electricity purchased by companies in accordance with contracts. The choice of low-carbon electricity is reflected.



Reducing Environmental Impact

CO2 Emission Reduction Activities

Brother Group Environmental Action Plan 2018 (2016-2018) and achievements in FY2017

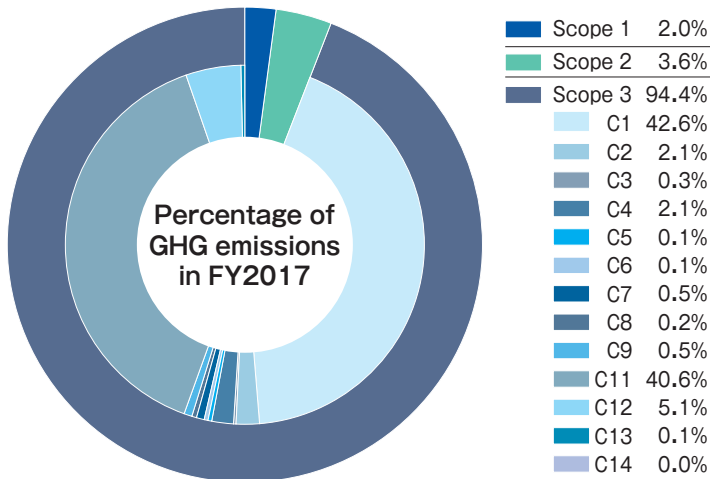
Greenhouse gas (GHG) emissions based on ISO 14064 (Scopes 1, 2, and 3)*

Category		CO2 emissions in t-CO2 equivalent			Remarks	
		FY2016	FY2017	Increase / decrease value		
■ Scope 1 (t-CO2): direct emissions		72,819	67,068	-5,752		
Emissions by GHG type	CO2	18,235	18,532	297		
	CH4	46	54	8		
	N2O	95	62	-33		
	HFCs	9,542	7,097	-2,445		
	PFCs	44,901	41,322	-3,579		
	SF6	0	0	0		
	NF3	0	0	0		
■ Scope 2 (t-CO2): indirect emissions from energy use	Location-based	123,093	122,220	-873		
	Market-based	122,244	118,524	-3,719		
■ Scope 3 (t-CO2): other indirect emissions		2,774,361	3,112,337	337,976		
■ C1	Purchased goods and services	1,245,408	1,405,569	160,161		
■ C2	Capital goods	59,849	68,872	9,023		
■ C3	Fuel- and energy-related activities	10,305	11,334	1,029		
■ C4	Upstream transport and distribution	86,629	70,416	-16,213		
■ C5	Waste generated in operations	3,357	3,452	95		
■ C6	Business travel	4,895	4,528	-368		
■ C7	Employee commuting	14,326	15,689	1,362		
■ C8	Upstream leased assets	4,312	7,211	2,899		
■ C9	Downstream transport and distribution	18,238	16,017	-2,221		
■ C10	Processing of sold products	—	—	—	No calculation target	
■ C11	Use of sold products	1,175,761	1,339,720	163,959		
■ C12	End-of-life treatment of sold products	149,551	167,704	18,153		
■ C13	Downstream leased assets	1,729	1,729	0		
■ C14	Franchises	—	97	97		
■ C15	Investments	—	—	—	No calculation target	
Total of Scopes 1, 2, and 3		Location-based	2,970,274	3,301,625	331,351	
		Market-based	2,969,425	3,297,929	328,504	

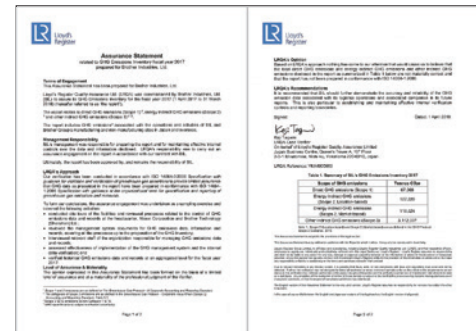
*: The sources of emission factors for the location-based method are as follows:
 • IEA - CO2 EMISSIONS FROM FUEL COMBUSTION 2016 edition
 • GHG Protocol - Calculation tools
 • DEFRA

Reducing Environmental Impact CO2 Emission Reduction Activities

Brother Group Environmental Action Plan 2018 (2016-2018) and achievements in FY2017



Statement for verification by a third party organization



PDF View the PDF [PDF/571KB]
http://download.brother.com/pub/com/en/eco/pdf/2018/lrqa_assurance.pdf

Scope 3 calculation method

Scope 3		Calculation method
C1	Purchased goods and services	Calculated using LCA Calculated by multiplying the emission intensity in the materials manufacturing stage per product by the number of units sold
C2	Capital goods	Calculated by multiplying the amount of fixed assets acquired in FY2016 (April 1, 2016-March 31, 2017) by the emission intensity based on the Input-Output Tables
C3	Fuel- and energy-related activities	Calculated by multiplying the energy consumption aggregated in Scopes 1 and 2 by the CO2 emission coefficient
C4	Upstream transport and distribution	Calculated using the ton-kilometer method Calculated by multiplying the transportation distance by transportation weight using the CO2 emission coefficient established for each transportation category (aircraft, vessels, and trucks)
C5	Waste generated in operations	Calculated using the CO2 emission coefficient established for each type of waste and the amount of waste generated in business operations (excluding valuables)
C6	Business travel	Calculated by multiplying the CO2 emission coefficient established for each means of transport by business travel expenses Or, calculated by multiplying the CO2 emission coefficient established in advance by the number of persons on a business trip
C7	Employee commuting	Calculated by multiplying the CO2 emission coefficient established for each means of commuting by commuting expenses Or, calculated by multiplying the CO2 emission coefficient established for each scale of cities where business sites are located by the number of persons commuting
C8	Upstream leased assets	Calculated by multiplying the CO2 emission coefficient established for each type of leased assets by energy consumption (kWh)

Reducing Environmental Impact

CO2 Emission Reduction Activities

Brother Group Environmental Action Plan 2018 (2016-2018) and achievements in FY2017

Scope 3 calculation method

Scope 3		Calculation method
C9	Downstream transport and distribution	Calculated using the ton-kilometer method Calculated by multiplying the transportation distance by transportation weight using the CO2 emission coefficient established for each transportation category (aircraft, vessels, and trucks)
C10	Processing of sold products	No target to calculate
C11	Use of sold products	Calculated using the LCA database
C12	End-of-life treatment of sold products	Calculated by multiplying the CO2 emission coefficient established for each life stage of products by the product weight
C13	Downstream leased assets	Calculated by multiplying the CO2 emission coefficient established for each type of leased assets by energy consumption (kWh)

For the scope of aggregation for Scopes 1, 2, and 3, refer to the history of audit in compliance with ISO 14064-1.

▶ List of ISO 14001-certified facilities
<https://global.brother/en/eco/facility/iso-14001>

Harnessing renewable energy

Introducing photovoltaic power generation systems



Photovoltaic power generation system at the Mizuho Manufacturing Facility



Photovoltaic power generation systems set up at two locations of BIC (USA)

Brother Industries, Ltd. introduced two photovoltaic power generation systems (power generation capacity: about 100 kW each) at the Mizuho Manufacturing Facility and one system at the Kariya Manufacturing Facility. Power generation started in February 2002 and June 2014 at the Mizuho Manufacturing Facility and in March 2009 at the Kariya Manufacturing Facility. The annual total power generation in FY2017 was 341 MWh, bringing the cumulative total since installation to 3,290 MWh. The photovoltaic power generation covers about 2.3% of power consumption at the Mizuho Manufacturing Facility and about 1.0% at the Kariya Manufacturing Facility.

Brother International Corporation (U.S.A.) (BIC (USA)) introduced two photovoltaic power generation systems (power generation capacity: about 60 kW each). Power generation started in January 2012. The total power generation in FY2017 was 193 MWh, which was equivalent to about 1.9% of the power consumption at the business site. Meanwhile, Brother International S.A. (Pty) Ltd. introduced a photovoltaic power generation system (power generation capacity: 28 kW). Power generation started in October 2015.

Reducing Environmental Impact

CO2 Emission Reduction Activities

Brother Group Environmental Action Plan 2018 (2016-2018) and achievements in FY2017

Purchasing renewable energy

Brother Industries (Slovakia) s.r.o. (a manufacturing facility) and Brother Central and Eastern Europe GmbH (a sales facility) purchase renewable energy. Thus, their CO2 emissions in Scope 2 (market-based) were zero in FY2017.

	2015	2016	2017
Total amount of electricity generated by photovoltaic power generation systems (MWh)	498.73	501.84	533.64
Consumption of electricity generated by photovoltaic power generation systems (MWh)	333.63	339.24	340.75

*: The difference between the total amount of electricity generated by photovoltaic power generation systems and the consumption of electricity is attributed to the electricity sold by Brother International Corporation (U.S.A.).

See ▶ 73p Material Balance

Efforts in logistics

Efforts in Japan

In Japan, the New Comprehensive Program of Logistics Policies (2009-2013) was approved at a government cabinet meeting in July 2009. This program takes into consideration the trend of measures against global warming and includes targets to achieve logistics with less environmental impact. Systematic and comprehensive efforts have been made to develop logistics measures.

The Brother Group has been reviewing delivery routes and adjusting the delivery service frequency, etc. as necessary to increase the efficiency of logistics in Japan. The logistics network was rearranged to unload products shipped from manufacturing facilities outside Japan (including those in China and ASEAN countries) at the Port of Tokyo and the Port of Osaka, which are closely located to large market areas, instead of the Port of Nagoya, which had been used before. In addition, some products are unloaded at the Port of Yokohama, which is close to customers, and the group also delivers products from warehouses in Yokohama. Truck transportation was reduced and delivery distances were significantly reduced by increasing warehousing facilities. As a result of these measures, CO2 emissions were cut by about 38% per shipped weight. The Brother Group has successfully kept CO2 emissions low ever since.

Since 2013, a modal shift has been introduced for some product shipments to large customers by switching from trucks to railroad. As a result, CO2 emissions in FY2017 were reduced by 18 metric tons.

3PL (third party logistics) is also used in the sales logistics of Brother products. It is noteworthy that sales logistics are undertaken by companies that are committed to reducing CO2 emissions (e.g., use of small hybrid delivery trucks).

Reducing Environmental Impact

CO₂ Emission Reduction Activities

Efforts in logistics

Efforts at facilities outside Japan

Brother's manufacturing facilities in China and Southeast Asia produce nearly all Brother products. Many of these manufacturing facilities are located in industrial parks near ports that are served by container ships, thus the products can be shipped to overseas markets. The manufacturing facilities also employ containers with higher loading capacity to increase the loading efficiency and reduce the number of containers required.

Sales facilities in respective regions have been stepping up efforts to track logistics-related CO₂ emissions, from unloading at ports to delivery warehouse and retailers, and analyze the data, so that future CO₂ emissions reduction measures can appropriately reflect local conditions.

Regarding transportation of products to sales facilities in the U.S., the U.S. arrival port for unloading was changed for some products, thereby reducing distances traveled by sea, facilitating transshipping from sea to land, and enabling Brother to transport more by railway. The ratio carried by rail was increased, almost eliminating the use of trucks for urgent shipments. Since FY2011 (April 1, 2011-March 31, 2012), efforts have been made to improve respective operations by optimizing order placement cycles and transporting orders by pallet.

At the same time, a transport management system was introduced to load different products (orders received from various customers) with optimal combinations and to increase the cargo loading efficiency per truck. As a result, the transport frequency was reduced by 25% from the results of FY2009 (April 1, 2009-March 31, 2010).

Products manufactured in Southeast Asia had been transported to sales facilities via Brother International Singapore Pte. Ltd. In 2011, this system was replaced by direct delivery from manufacturing facilities to reduce marine transportation distances, etc. At various facilities (mainly manufacturing facilities) in China and other regions in Asia, delivery trucks of less than three tons were replaced with larger ones of three tons or more (whose CO₂ emissions coefficient is small) to reduce CO₂ emissions.

Reducing Environmental Impact

Zero Waste Emission Activities

Brother Group Environmental Vision 2050 formulated

Resource recycling

Toward 2050, the Brother Group will maximize its resource recycling to ensure sustainable use of natural resources and minimize the environmental impact caused by waste.

In March 2018, the Brother Group formulated the Brother Group Environmental Vision 2050 as a new long-term target of the Brother Group to contribute to resolving global environmental issues under the slogan "Brother Earth," and established a mid-term target for FY2030 as a milestone.

Mid-term target for FY2030

Mechanisms for recycling resources have been established throughout the value chain. Efforts have been made to reduce the amount of new natural resources that are used in main products.

The group's manufacturing facilities continuously endeavor to ensure efficient use of water resources and proper treatment of wastewater.

*: An excerpt from the Brother Group Environmental Vision 2050

[See](#) ▶ 6p Environmental Vision 2050

Building a recycling framework

Ensuring activities to curb waste generation and emissions

To help use resources effectively and prevent resource depletion, the Brother Group ensures activities are carried out to curb waste generation, reduce emissions, and achieve "zero landfill waste" (meaning that less than 1% of waste generated at factories is sent to landfill). In our operations, respective business sites follow the ISO 14001 framework (under which they are certified) and the waste management manual, thereby systematically and continuously working to reduce waste.

In FY2003 (April 1, 2003-March 31, 2004 for business sites in Japan; and January 1, 2003-December 31, 2003 for facilities outside Japan), manufacturing facilities outside Japan and business sites in Japan started to share waste data using a common format. In FY2016 (April 1, 2016-March 31, 2017), a new system was introduced to monitor the overall status involving main sales facilities in and outside Japan. Commitment to the activities mentioned above helps avoid the risks of damage to the brand image due to noncompliance such as illegal dumping and violation of the WEEE Directives in Europe. Proper separation helps ensure effective utilization of resources and reduce the waste treatment cost.

Reducing Environmental Impact

Zero Waste Emission Activities

Building a recycling framework

Results of the Brother Group's activities in FY2017

Nissei Corporation, which treated waste fluids properly for release into a river, commissioned the process to a waste treatment contractor. Meanwhile, the production volume at the Kariya Manufacturing Facility and Brother Industries (Vietnam) Ltd. increased. Thus, the amount of waste generated increased.

From the viewpoint of effective utilization of resources, all the manufacturing facilities (except for Brother Industries (Philippines), Inc. which started production in 2013 and Brother Machinery Vietnam Co., Ltd. (BMV) which started production in 2014) and business sites in Japan maintained zero landfill waste.

All the manufacturing facilities (except for Brother Industries (Philippines), Inc. which started production in 2013 and Brother Machinery Vietnam Co., Ltd. (BMV) which started production in 2014) and business sites in Japan maintained zero landfill waste.

Details of the Brother Group's activities in FY2017

Main activities at business sites in Japan

In FY2001 (April 1, 2001-March 31, 2002), the Brother Group's business sites in Japan achieved zero landfill waste, and work is continuing to prevent the generation of landfill waste at business sites.

Main zero waste activities at business sites in Japan

- Promoting the material recycling of plastics such as polyethylene (PE) and polypropylene (PP) used as packaging materials
- Turning food waste from the cafeterias of the Mizuho Manufacturing Facility and Hoshizaki Manufacturing Facility, which have large kitchen equipment, into compost through a specialized collection contractor; recycling waste edible oil as biofuel and using it in the logistics division within the group
- Changing the disposal method of products returned by customers as industrial waste processing to processing as valuable commodities for material recycling
- Processing corrugated fiberboard used as a cushioning material and reusing it as packing material for shipping service parts
- Launching a website for exchanging information to promote the reuse of furniture and furnishings between divisions to contribute to reducing waste and cutting the purchase cost

Reducing Environmental Impact

Zero Waste Emission Activities

Building a recycling framework

Main activities at business sites outside Japan

Focusing on waste generation, all the manufacturing facilities worked to reduce and recycle waste and achieve zero landfill waste. Major sales facilities also worked toward obtaining/maintaining ISO 14001 certification and promoting waste reduction activities.

Main zero waste activities at manufacturing facilities outside Japan

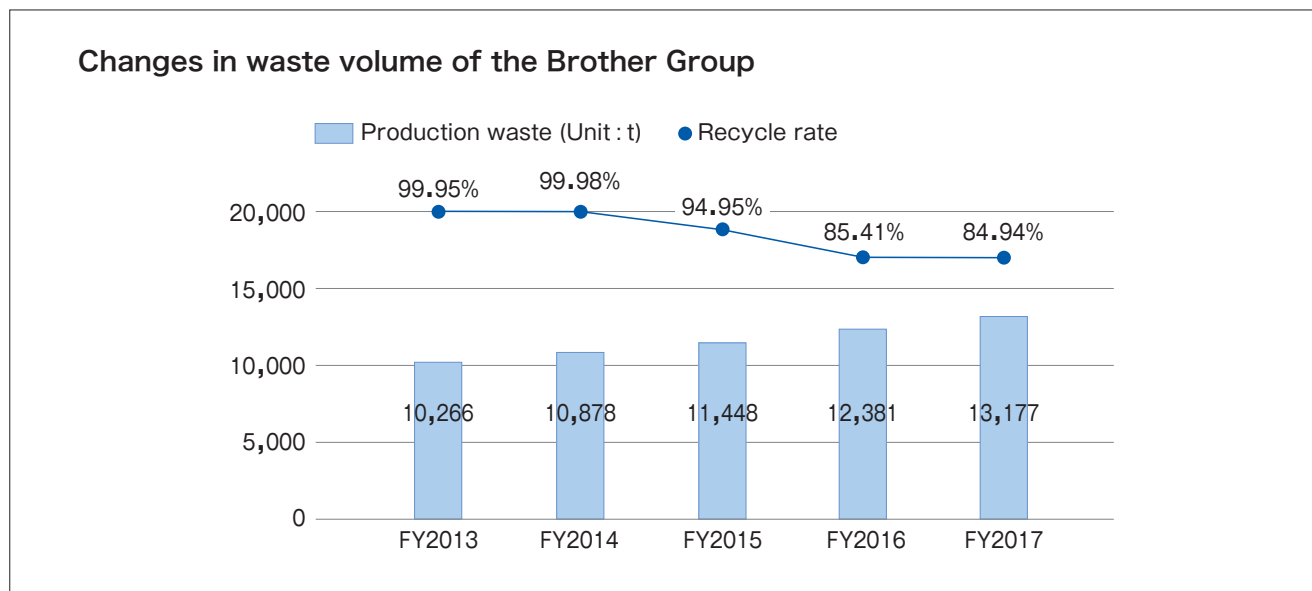
- Separating chips contaminated with water-soluble cutting fluid (emulsified liquid) which was disposed of as industrial waste into water-soluble cutting fluid and chips, in order to reuse the water-soluble cutting fluid and sell the chips (compressed into solids) to recyclers as valuable commodities
- Significantly reducing waste paper by replacing application documents with electronic files at manufacturing facilities, reducing paper consumption in printing tests for printers, etc.
- Significantly reducing packaging-related waste by reducing consumption (e.g., replacing packaging boxes for parts with returnable containers and increasing the density of parts packaged in innovative packaging styles)
- Improving collection boxes for used printer cartridges and upgrading skills to repair scratches on the resin case surfaces, to improve the refurbishment rate for toner cartridges and to address waste generation
- Promoting reuse of production equipment to reduce waste
- Reducing the consumption of the degreasing agent for coating and cleaning parts and thereby reduce waste fluid

Main zero waste activities at sales facilities outside Japan

- Acquiring ISO 14001 certification at main sales facilities, and promoting waste reduction activities
- Ensuring separation of waste by type, and raising awareness about zero waste activities
- Having separated waste appropriately recycled by a specialized contractor to effectively utilize resources
- Having waste electronic appliances (brought by employees from their homes) properly processed by contractors, and promoting recycling and raising employees' environmental awareness

Reducing Environmental Impact Zero Waste Emission Activities

Building a recycling framework



*: It was found that the recycled amount for the past fiscal years included incineration of waste without energy recovery when aggregating the results for FY2016. The amount cannot be determined retrospectively. Thus, the amount is reported from FY2015 and FY2016.

Scope of aggregation

FY2013	FY2014-FY2017
<p>Eight business sites in Japan (head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility,^{*1} Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, and Logistics Center), Brother Industries (U.K.) Ltd., Taiwan Brother Industries, Ltd., Zhuhai Brother Industries, Co., Ltd., Brother Machinery Xian Co., Ltd.,^{*2} Brother Industries (Shenzhen), Ltd.,^{*3} Brother Technology (Shenzhen) Ltd., Brother Industries Technology (M) Sdn. Bhd.,^{*4} Brother Industries (Vietnam) Ltd., Mie Brother Precision Industries, Ltd., and Brother Industries (Slovakia) s.r.o. , Brother Industries Saigon, Ltd., Brother Industries (Philippines), Inc., and Nissei Corporation</p>	<p>Brother Machinery Vietnam Co., Ltd. was added to the scope of aggregation on the left.</p>

*1: The Minato Manufacturing Facility stopped production on September 30, 2017.

*2: Brother Machinery Xian Co., Ltd. is a business site established through the merger of Xian Brother Industries, Co., Ltd. (formerly Xian Typical Brother Industries, Co., Ltd.) with Brother Sewing Machine Xian Co., Ltd. in 2010. In the same year, Brother Sewing Machine (Shanghai) Co., Ltd. transferred its business to Brother Machinery Xian Co., Ltd.

*3: Brother Industries (Shenzhen), Ltd. was subject to an absorption-type merger in October 2016, with Brother Technology (Shenzhen) Ltd. as the surviving company.

*4: Brother Industries Technology (M) Sdn. Bhd. terminated its business operations on March 31, 2017.

See 73p Material Balance

Reducing Environmental Impact

Activities to Reduce Water Consumption

Brother Group Environmental Vision 2050 formulated

Resource recycling

Toward 2050, the Brother Group will maximize its resource recycling to ensure sustainable use of natural resources and minimize the environmental impact caused by waste.

In March 2018, the Brother Group formulated the Brother Group Environmental Vision 2050 as a new long-term target of the Brother Group to contribute to resolving global environmental issues under the slogan “Brother Earth,” and established a mid-term target for FY2030 as a milestone.

Mid-term target for FY2030

Mechanisms for recycling resources have been established throughout the value chain. Efforts have been made to reduce the amount of new natural resources that are used in main products.

The group’s manufacturing facilities continuously endeavor to ensure efficient use of water resources and proper treatment of wastewater.

*: An excerpt from the Brother Group Environmental Vision 2050

[See](#) ▶ 6p Environmental Vision 2050

Brother Activities to reduce water consumption in different regions around the world

Enhancing efforts by setting new reduction targets

Securing safe water resources is an important environmental challenge for the global community. The Brother Group has been working to reduce water consumption to fulfill its responsibilities as an operator of manufacturing facilities in many countries and regions. In the Brother Group Environmental Action Plan 2018 (2016-2018), a target of reducing water consumption by 30% from FY2010 (April 1, 2010-March 31, 2011) levels by FY2018 (April 1, 2018-March 31, 2019) (per unit of sales) has been set, and various efforts were made to meet this target.

Brother Group’s results of activities in FY2017

In FY2017 (April 1, 2017-March 31, 2018), water conservation activities were promoted across the company to reduce waste. However, water consumption increased by 1.0% (about 8,725 m³) from FY2016 (April 1, 2016-March 31, 2017) due to the increase in production volume at manufacturing facilities and water leakage from deteriorated water pipes at some business sites. Per unit of sales, water consumption decreased by 8.8%. Recently, water issues have attracted much public attention around the world due to the increased water stress and water disasters caused by climate change, tight supply-demand balance due to population increase and economic development, among other factors. These issues may directly affect our business operations in various ways. To assess the water-related risks on business operations at the business sites of the group, Aqueduct (a water risk evaluation tool offered by the World Resources Institute) is used to monitor water-related risks.

The Brother Group remains committed to further implementing measures to save water in FY2018 (April 1, 2018-March 31, 2019) to attain new reduction targets set out in the Brother Group Environmental Action Plan 2018 (2016-2018).

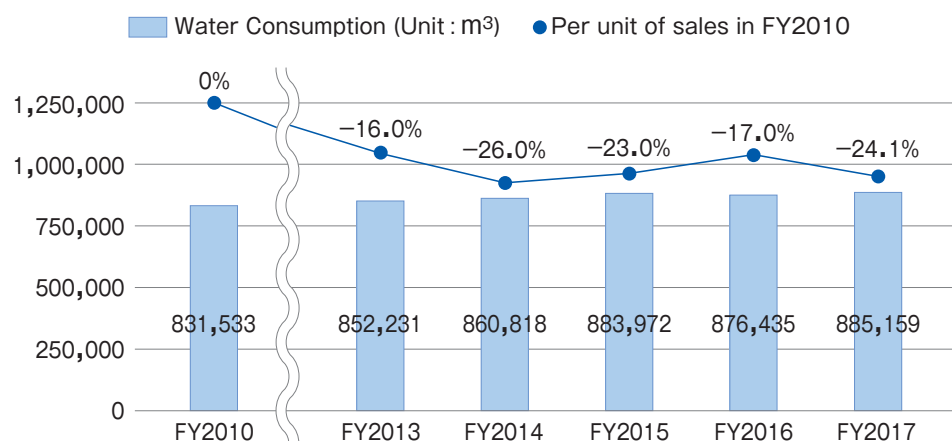
Reducing Environmental Impact

Activities to Reduce Water Consumption

Brother Activities to reduce water consumption in different regions around the world

Changes in water consumption at the Brother Group

30% reduction from FY2010 levels by FY2018 (per unit of sales)



Scope of aggregation

FY2010	FY2013	FY2014-FY2017
Eight business sites in Japan (head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility,*1 Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, and Logistics Center), Brother Industries (U.K.) Ltd., Taiwan Brother Industries, Ltd., Zhuhai Brother Industries, Co., Ltd., Brother Machinery Xian Co., Ltd.,*2 Brother Industries (Shenzhen), Ltd.,*3 Brother Technology (Shenzhen) Ltd., Brother Industries Technology (M) Sdn. Bhd.,*4 Brother Industries (Vietnam) Ltd., Nissei Corporation, Mie Brother Precision Industries, Ltd., and Brother Industries (Slovakia) s.r.o.	Brother Industries Saigon, Ltd. and Brother Industries (Philippines), Inc. were added to the scope of aggregation on the left.	Brother Machinery Vietnam Co., Ltd. was added to the scope of aggregation on the left.

*1: The Minato Manufacturing Facility stopped production on September 30, 2017.

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See ▶ 73p Material Balance

Reducing Environmental Impact

Preventing Pollution

Preventing pollution associated with different sources

To become an environmentally advanced company, the Brother Group is committed to continually reducing environmental impact under the Brother Group Environmental Policy, throughout the life cycle of products (from development and design of products, procurement of parts and materials to production, packaging and logistics, use by customers, collection, and recycling), placing priority on maintaining compliance with legal regulations and preventing environmental pollution in the respective countries and regions in which Brother operates. The risks and opportunities of environmental pollution are recognized as follows. Efforts have been made to prevent pollution through ISO 14001 activities, etc.

- Risks: Environmental impact due to air, water, and soil pollution, etc. caused by leakage and outflow of hazardous chemical substances
Delay in business operations due to cancellation of sales or modification of land if soil pollution is found, and cost incurred to clean the land
- Opportunities: Biodiversity conservation by preventing leakage and outflow of hazardous chemical substances

Managing and reducing chemical substances

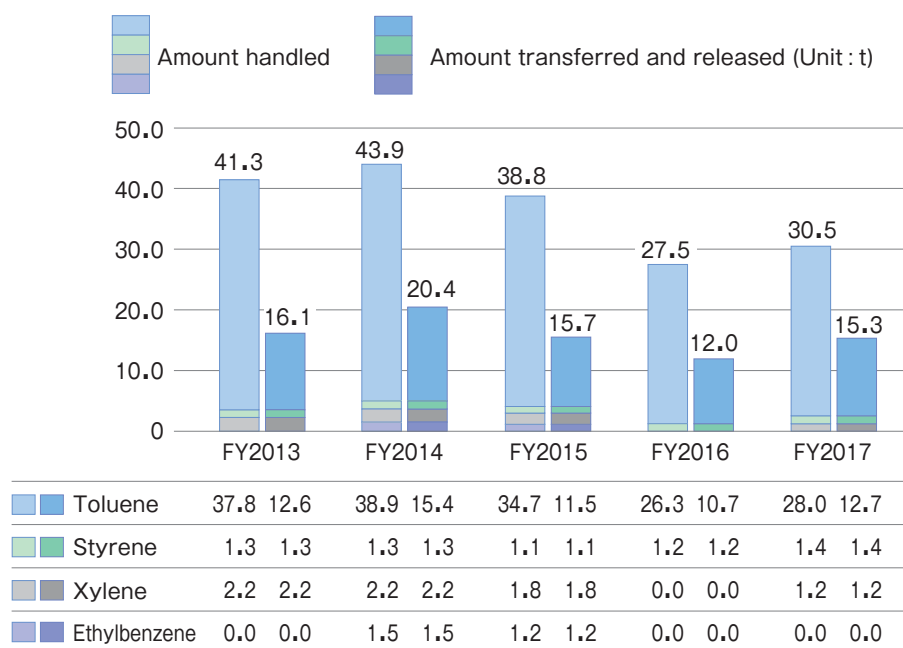
Main activities at business sites in Japan

Brother Industries, Ltd. (BIL) participated in a priority review in line with the introduction of the PRTR system by KEIDANREN (Japan Business Federation) in 1998. BIL started to report the amount of chemical substances transferred and released, starting with those used at the business sites in FY1997 (April 1, 1997-March 31, 1998). Of substances subject to PRTR used in FY2017 (April 1, 2017-March 31, 2018), xylene, toluene and styrene had to be reported. Toluene (15.3 metric tons) was treated and rendered harmless using a catalytic combustion system. Thus, the total amount of these aforementioned three substances handled was 30.5 metric tons, and the amount transferred and released was 15.3 metric tons.

Reducing Environmental Impact Preventing Pollution

Preventing pollution associated with different sources

Flow of Substances Subject to PRTR at Brother Industries, Ltd.



Scope of aggregation (including the amount handled by affiliated companies):

Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, Mizuho Manufacturing Facility, Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center

* Only the Kariya Manufacturing Facility handled more than one metric ton.

* The Minato Manufacturing Facility stopped its operation on September 30, 2017.

Since 2008, BIL has systematically commissioned disposal in accordance with the Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes. At the end of FY2017, BIL completed the commissioning of disposal of all electrical equipment containing waste PCB oil. Regarding high-concentration PCB waste, BIL has disposed of 2,468 units including capacitors and ballasts for fluorescent lamps. Regarding low-concentration PCB waste, BIL has disposed of 41 units of waste electrical equipment including transformers, capacitors, etc. Regarding waste PCB oil, BIL has continued to keep about 70 kg in storage; its handling has been reviewed by Japan Environmental Storage & Safety Corporation (JESCO) (a disposal contractor). The waste PCB oil will be promptly disposed of as soon as the handling becomes possible. Regarding fluorocarbons, air conditioning equipment has been managed using the refrigerant management system of the Japan Refrigerants and Environment Conservation Organization (JRECO) since 2015 after the Act on Rational Use and Proper Management of Fluorocarbons came into force (April 2015). This system enables centralized and real-time monitoring of about 1,600 air conditioners at BIL in Japan.

Reducing Environmental Impact

Preventing Pollution

Preventing pollution associated with different sources

Main activities at manufacturing facilities outside Japan

Manufacturing facilities outside Japan have identified applicable laws and regulations in respective regions within ISO 14001 systems. Management frameworks have also been established to ensure local environmental management.

The Brother Green Procurement Management System is in operation with collaboration from suppliers to carefully select parts, materials and sub-materials used in production processes to prevent contamination with harmful chemical substances.

Concept of preventing air, water, and soil pollution

The Brother Group gives high priority to preventing environmental accidents by reviewing target facilities and processes and switching to alternatives that are less likely to cause pollution. When managing existing facilities, activities to prevent pollution include setting and complying with voluntary management targets through ISO 14001.

Preventing air pollution

Replacing fossil fuel-fired boilers and heaters with electric or city gas-fired boilers and heaters has reduced the impact of emissions to the environment. In fact, city gas has a low CO₂ emission coefficient. Thus, efforts are underway to prevent air pollution.

The risks of global warming due to CO₂ emissions, as well as soil and underground water contamination have been reduced due to the abolishment of heavy oil-fired boilers at all business sites of BIL including employees' dormitories.

Solar water heaters and heat pump equipment have replaced the oil boilers used for employees' dormitories at manufacturing facilities outside Japan. The electricity supply for Brother Technology (Shenzhen) Ltd. (BTSL) in Huanan, China, had been private power generation systems (fueled by heavy oil). They were replaced by the city's public utility service, thus reducing the risk of air pollution, CO₂ emissions and underground water pollution.

A catalytic combustor was introduced in 1994 to the coating process at the Kariya Manufacturing Facility to reduce VOC (volatile organic compounds) emissions. Exhaust gases are burned to control VOC emissions and prevent odors. Ongoing measures also include switching to materials with low organic solvent content and reducing consumption. BTSL set up VOC treatment facilities and implements measures for reducing emissions from the processes used to form resin products and manufacture printed wiring boards for mounting parts.



VOC treatment facility (BTSL)

Reducing Environmental Impact

Preventing Pollution

Preventing pollution associated with different sources

Preventing water pollution

Measures to prevent water pollution include wastewater treatment facilities introduced at manufacturing facilities, such as at the Kariya Manufacturing Facility (in Japan) to treat its wastewater with the latest membrane bioreactor (in FY2011 [April 1, 2011-March 31, 2012]), Brother Industries Saigon, Ltd. (in Vietnam) to treat wastewater from the parts cleaning process, Brother Machinery Xian Co., Ltd. (in China) to treat its pre-coating surface treatment wastewater, Taiwan Brother Industries, Ltd. to treat pre-coating surface treatment wastewater, and Brother Industries (Vietnam) Ltd. (which expanded its factory in 2012) to replace the conventional wastewater treatment facility with a biofilm type facility. The increased treatment capacity has significantly lowered the environmental impact values of wastewater. At Brother Machinery Vietnam Co., Ltd. (BMV), which was established in 2013, a wastewater purification plant was introduced. Waste heat generated in the manufacturing facility is utilized to remove the water content of the wastewater from the coating pretreatment process, reducing the volume to sludge. By eliminating the waste fluid, the solid waste is appropriately treated. Other business sites do not have specified activities that cause significant environmental impact. At sites without sewage infrastructure, facilities have been installed to clean sewage and treat the resulting wastewater. These facilities comply with regional standards in accordance with the ISO 14001 facility management procedure.

As part of Brother's preventative measures, we periodically conduct exercises to assess for potential incidents such as hazardous wastewater flowing into sewage or permeating into soil. Other specific preventative measures include equipping wastewater treatment facilities with systems which constantly monitor COD (chemical oxygen demand) and installing oil traps for wastewater from cafeterias, to cope with an oil outflow accident. BOD (biochemical oxygen demand) and n-hexane extracts (an index of the oil content in water, etc.) are regularly measured and monitored.



Wastewater treatment facility (BMV)

Reducing Environmental Impact

Preventing Pollution

Preventing pollution associated with different sources

Preventing soil contamination

At Nissei Corporation (Nissei), a manufacturer of reducers and high precision gears, etc., a survey conducted in FY2015 found that the soil and underground water at the main factory had been contaminated with lead and its compounds due to damage to the hazardous substance storage facility. At the parking lot of the site of the former headquarters, the soil was found to be contaminated with organochlorine compounds. Nissei reported the contaminations to the local government that has jurisdiction, and coped with the problems properly based on guidance offered by the local government.

In FY2016, the underground hazardous substance storage facility at the main factory was reestablished as a facility above ground. The status of the underground water is confirmed to be normal based on monitoring. At the site of the former headquarters, a purification project was launched based on microbiological methods to prevent the pollution from spreading. It has been confirmed that the purification project is progressing well.

Preventing generation of noise, vibration, and offensive odors

BIL takes great care to prevent the generation of noise, vibration and offensive odors, so as not to cause inconvenience to local communities including homes, schools, and pedestrians. To prevent the generation of noise and vibration, facilities that cause noise or vibration such as chillers and exhaust outlets are installed or relocated as far away within the manufacturing facilities as possible. To prevent the generation of noise, BTSL (a manufacturing facility outside Japan) has set up a noise prevention system at the water treatment facility. Ongoing efforts have been made to prevent noise by using noise-absorbing flexible ducts and replacing exhaust fans with inverter-driven types, in particular.

To prevent the generation of offensive odors, filters and/or deodorizing equipment are provided at exhaust outlets at various facilities, including coating facilities. Measures in the coating process also include switching to paints with lower organic solvent content (which gives rise to offensive odor) and reducing the consumption of paints. For measures to prevent noise and offensive odors, facilities that cause noise and offensive odors are buried underground. For example, an underground type water tank has been employed at the new wastewater treatment facility that was built at the Kariya Manufacturing Facility in FY2011. In particular, noise and offensive odors are measured when facilities are built, and then constantly monitored after construction is complete.

Nissei implemented further measures to reduce the noise affecting its neighborhood by relocating the die-cast machine within the factory (away from the direction of the housing lots) and stopping and scrapping a large melting furnace (to reduce the noise generated when raw materials were charged).

Reducing Environmental Impact

Environmental Accounting

For greater efficiency in our environmental activities

Concept of environmental accounting

The Brother Group performs environmental accounting as an effective means to continuously improve the efficiency of environmental management, targeting eight business sites in Japan ("in Japan") and manufacturing facilities outside Japan ("outside Japan"). The Brother Group quantitatively assesses their effects, and then uses the results to plan environmental activities to be carried out the next fiscal year.

Calculation results for FY2017 (April 1, 2017-March 31, 2018)

Presented below are the expenses, investments, and effectiveness of environmental activities in FY2017 based on the Brother Group Environmental Action Plan 2018 (2016-2018) (the increases and decreases are based on a comparison with the previous fiscal year).

Environmental conservation costs

The Brother Group spent JPY 346 million in Japan (a decrease of JPY 99 million) and JPY 68 million outside Japan (an increase of JPY 26 million). The total amount was JPY 414 million (a decrease of JPY 73 million). In Japan, investments were made mainly to implement energy conservation measures, etc. for conserving the global environment and to build an environmental management system using IT equipment, etc. for administrative purposes. Outside Japan, investments were made in the upstream and downstream processes to introduce equipment for measuring dangerous and hazardous substances for green procurement, etc. and to implement energy conservation measures, etc. for conserving the global environment. Expenditures and labor costs for various environmental conservation activities were JPY 815 million (a decrease of JPY 98 million) in Japan and JPY 210 million (an increase of JPY 52 million) outside Japan.

In FY2017, about 1.6 million yen was spent separately for the purchase of carbon credits.

Reducing Environmental Impact

Environmental Accounting

Calculation results for FY2017 (April 1, 2017-March 31, 2018)

Classification of Environmental Conservation Costs		Details of main activities and their effects	Investment (unit: JPY million)		Expenses (unit: JPY million)	
			In Japan	Outside Japan	In Japan	Outside Japan
1. Business area cost	1) Pollution prevention cost	Pollution prevention measures (including air, water, vibration and noise)	16 (14)	8 (2)	38 (13)	96 (30)
	2) Global environmental conservation cost	Global warming prevention (energy-saving) measures	171 (-158)	28 (-8)	125 (-35)	14 (-1)
	3) Resource circulation cost	Recycling and reduction in waste generation	2 (1)	1 (1)	125 (-32)	52 (14)
2. Upstream / downstream cost	Costs incurred to reduce environmental impact when procuring parts and materials and after selling products	Green procurement activities; collection and recycling of used products / consumables	1 (1)	31 (31)	71 (11)	0 (0)
3. Administration cost	Costs incurred by activities that contribute indirectly to reducing the environmental impact of business operations	Establishment, administration, and maintenance of the ISO 14001 system; environmental training for employees; disclosure of environmental information; greening and cleanup of manufacturing facilities and their surrounding areas	143 (42)	0 (0)	306 (-43)	32 (1)
4. R&D cost	R&D costs for reducing environmental impact	Development of eco-conscious products and technologies such as energy conservation and resource conservation designs; implementation of product environmental assessments; design improvement	10 (-2)	0 (0)	135 (-14)	6 (1)
5. Social activity cost	Costs of environmental conservation that is not directly linked with corporate activities	Support for environmental conservation groups and organizations; support for environmental activities by local citizens; information services	3 (3)	0 (0)	13 (3)	10 (7)
6. Cost to deal with environmental damage	Costs incurred to restore the natural environment (including soil remediation)	Soil contamination surveys; soil remediation	0 (0)	0 (0)	2 (-1)	0 (0)
Total			346 (-99)	68 (26)	815 (-98)	210 (52)

Figures in parentheses show increases/decreases in the amount from the previous fiscal year.

Reducing Environmental Impact

Environmental Accounting

Calculation results for FY2017 (April 1, 2017-March 31, 2018)

Environmental conservation effects

Energy input increased 6.8% in Japan, and increased 12.3% outside Japan. The energy input increased both in and outside Japan due to the increased production at manufacturing facilities.

Water consumption increased 0.6% in Japan and 2.4% outside Japan, resulting in an overall increase of 2.2%. The CO₂ emissions increased by 3.6% in Japan and slightly decreased outside Japan. The total CO₂ emissions increased by 1.0%.

In FY2017, carbon credits for 1,500 t were purchased separately to cover the increase in CO₂ emissions in Japan.

Content of environmental conservation effects		Classification of index to measure environmental conservation effects		In Japan	Outside Japan	
Effects resulting from business area cost	Effects related to resource input into business operations	Total energy input	(kL: converted into crude oil quantity)	10,929 (698)	26,408 (2,893)	
		Water input	m ³	88,322 (550)	720,417 (16,903)	
	Effects related to environmental impact and waste released from business operations	Release into the atmosphere from energy use	CO ₂ (t-CO ₂ /year)* from energy use Based on the emission factors of the international standards		23,111 (813)	55,738 (-2)
			NO _x (kg/year)		2,404 (249)	5,540 (264)
			SO _x (kg/year)		11 (3)	125 (2)
		Generation of waste	Amount of waste generation (t)		1,772 (69)	7,172 (1,068)
	Landfill waste (t)			0 (0)	121 (0)	

Figures in parentheses show increases/decreases in the amount from the previous fiscal year.

*: Since FY2016 (April 1, 2016-March 31, 2017), the CO₂ emissions from energy use have been calculated based on the emission factors of the international standards. For electricity, emission factors of respective countries released by the International Energy Agency (IEA) are used. For fuel, emission factors of respective countries released by the GHG Protocol are used. The values calculated using the conventional emission factors are also indicated for reference. The values calculated based on the international standards have been increased by more than 40% compared to the conventional values.

Reducing Environmental Impact

Environmental Accounting

Calculation results for FY2017 (April 1, 2017-March 31, 2018)

Economic effects derived from environmental conservation measures*

The main economic effects were reduction in waste treatment costs due to resource saving and recycling in Japan, and reduction in energy cost due to energy conservation measures and operating income from the recycling of waste outside Japan.

Content of economic effects		In Japan (unit: JPY million)	Outside Japan (unit: JPY million)
Income	Operating income from recycling of waste generated from main business operations	5.5 (3.0)	60.2 (13.6)
Cost reduction	Reduction in energy cost by energy saving	17.5 (-0.5)	80.2 (59.6)
	Reduction in waste treatment cost due to resource saving and recycling	32.5 (-0.4)	19.1 (-5.7)
Other	Publicity effects, such as newspaper reporting, calculated in terms of advertising expenses	0.8 (-0.6)	0.4 (0)
Total		56.3 (1.5)	159.9 (67.5)

Figures in parentheses show increases/decreases in the amount from the previous fiscal year.


*: Economic effects derived from environmental conservation measures are those that can be calculated in monetary terms from among the effects derived from the environmental conservation activities. Effects that cannot be calculated based on solid grounds (i.e., assumed effects and accidental effects) are not calculated.

Scope of aggregation

FY2017
Eight business sites in Japan (head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility,*1 Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center*2), Brother Industries (U.K.) Ltd., Brother Industries (Slovakia) s.r.o., Taiwan Brother Industries, Ltd., Zhuhai Brother Industries, Co., Ltd., Brother Machinery Xian Co., Ltd., Brother Technology (Shenzhen) Ltd., Brother Industries (Shenzhen), Ltd., Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Machinery Vietnam Co., Ltd., Brother Industries (Philippines), Inc.

*1: The Minato Manufacturing Facility stopped production on September 30, 2017.

*2: For Logistics Center, only "Environmental Conservation Effects" was aggregated.

 Environmental Accounting (Detailed Data: FY2013-FY2017) [PDF/128KB]
<http://download.brother.com/pub/com/en/eco/pdf/2018/accounting.pdf>

Reducing Environmental Impact

Material Balance

Identifying the environmental impact of business operations

Overview of main environmental impact associated with the Brother Group operations

The Brother Group facilities are engaged in processing and assembly to manufacture products. The environmental impacts (including resource consumption, CO₂ emissions, and waste generated) associated with all business operations are quantitatively monitored and summarized to reduce environmental impacts.

Input of Resources, Production & Emission of Substances in FY2017 (April 1, 2017-March 31, 2018)

Resource and energy inputs in FY2017

Resource consumption		Total energy consumption		Water consumption	
Product material (t)	242,152	Crude petroleum equivalent (kL)	48,388	Total amount of water consumption (m ³)	885,159

*: The scope of aggregation was directly related to the product range (main business sites in 74p).

Production & Emission of Substances in FY2017

CO ₂ emissions		Amount of wastewater		Amount of waste	
Greenhouse gas emissions from energy use (t-CO ₂)	149,299	Amount of wastewater (m ³)	786,267	Production-related waste (t)	13,177
		Amount of wastewater recycled (m ³)	552	Amount of waste recycled (t)	11,193
		Recycling rate (%)	0.1		

Reducing Environmental Impact

Material Balance


Identifying the environmental impact of business operations

Environmental impact data of main business sites in FY2017

Location/Main line of business

Name of site	Location	Main line of business (as of March 31, 2018)
Eight business sites in Japan (head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility,* Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center)	Nagoya, Aichi Prefecture (various locations)	[Mizuho Manufacturing Facility] Research and development of telecommunication/printing equipment, electronic stationery, and home sewing machines [Hoshizaki Manufacturing Facility] Prototype production of printer heads [Momozono Manufacturing Facility, Research & Development Center] Research and development [Kariya Manufacturing Facility] Production of electronic stationery, garment printers, and machine tools
Nissei Corporation	Anjo, Aichi Prefecture	Manufacture and sales of speed reducers, small gears, and die-cast products; and lease of real estate properties (including condominiums)
Mie Brother Precision Industries, Ltd.	Taki-gun, Mie Prefecture	Production of consumables for mobile printers, electronic stationery, etc., recycling of toner cartridges, and product repair services
Brother Industries (U.K.) Ltd.	Wales, U.K.	Production of consumables for printers, All-in-Ones, etc.
Brother Industries (Slovakia) s.r.o.	Krupina, Slovakia	Production of consumables for printers, All-in-Ones, etc.
Taiwan Brother Industries, Ltd.	Kaohsiung, Taiwan	Production of home sewing machines
Zhuhai Brother Industries, Co., Ltd.	Guangdong, China	Production of electronic stationery, scanners, karaoke systems for business use, industrial printing equipment, etc.
Brother Machinery Xian Co., Ltd.	Shaanxi, China	Production of industrial sewing machines and machine tools
Brother Technology (Shenzhen) Ltd.: Baolong Manufacturing Facility, Nanwan Manufacturing Facility	Guangdong, China	Production of printers and All-in-Ones
Brother Industries (Philippines), Inc.	Batangas, the Philippines	Production of printers, All-in-Ones, and electronic stationery
Brother Industries (Vietnam) Ltd.	Hai Duong Province, Vietnam	Production of printers and All-in-Ones
Brother Machinery Vietnam Co., Ltd.	Hai Duong Province, Vietnam	Production of industrial sewing machines
Brother Industries Saigon, Ltd	Dong Nai Province, Vietnam	Production of home sewing machines

*: The Minato Manufacturing Facility stopped production on September 30, 2017.

 Environmental impact data for before FY2016 (April 1, 2016-March 31, 2017) is available on the CSR Report PDF Download page. <https://global.brother/en/csr/download>

Reducing Environmental Impact

Material Balance


Identifying the environmental impact of business operations

Environmental impact data of main business sites in FY2017

Resource consumption, Energy consumption

Name of site	Resource consumption (t)	Energy consumption					
		Electricity (MWh)	LPG(t)	City gas (1,000m ³)	Gasoline (kL)	Light oil (kL)	Kerosene (kL)
Eight business sites in Japan (head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility,* Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center)	35,657	38,503	0	850	39	2	0
Nissei Corporation	9,279	32,253	17	2,193	33	4	4
Mie Brother Precision Industries, Ltd.	216	578	0	0	2	0	0
Brother Industries (U.K.) Ltd.	559	1,297	0	78	1	1	0
Brother Industries (Slovakia) s.r.o	886	582	0	70	0	11	0
Taiwan Brother Industries, Ltd.	1,127	1,708	5	0	0	0	0
Zhuhai Brother Industries, Co., Ltd.	8,685	3,418	0	0	9	6	0
Brother Machinery Xian Co., Ltd.	12,485	10,718	0	405	0.2	3	0
Brother Technology (Shenzhen) Ltd.	62,325	24,794	0	376	114	48	0
Brother Industries (Philippines), Inc.	24,223	21,319	44	0	1	0.2	0
Brother Industries (Vietnam) Ltd.	75,284	25,219	104	0	0	65	0
Brother Machinery Vietnam Co., Ltd.	1,502	3,002	146	0	0	7	0
Brother Industries Saigon, Ltd	9,924	3,924	0	0	0.2	1	0

*: The Minato Manufacturing Facility stopped production on September 30, 2017.

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Reducing Environmental Impact

Material Balance

Identifying the environmental impact of business operations

Environmental impact data of main business sites in FY2017

Greenhouse gas emissions

Name of site	Greenhouse gas emissions (t-CO ₂)		
	Scope 1	Scope 2	
		Location-based	Market-based
Eight business sites in Japan (head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility,* Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center)	2,451	21,408	18,674
Nissei Corporation	4,291	17,932	15,642
Mie Brother Precision Industries, Ltd.	3	321	280
Brother Industries (U.K.) Ltd.	153	536	506
Brother Industries (Slovakia) s.r.o.	687	94	0
Taiwan Brother Industries, Ltd.	13	992	902
Zhuhai Brother Industries, Co., Ltd.	292	2,328	2,328
Brother Machinery Xian Co., Ltd.	774	7,299	7,299
Brother Technology (Shenzhen) Ltd.	13,691	16,885	16,885
Brother Industries (Philippines), Inc.	135	12,877	19,714
Brother Industries (Vietnam) Ltd.	34,269	8,953	8,953
Brother Machinery Vietnam Co., Ltd.	455	1,066	1,066
Brother Industries Saigon, Ltd	2	1,393	1,393

*: The Minato Manufacturing Facility stopped production on September 30, 2017.

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<https://global.brother/en/csr/download>

Reducing Environmental Impact

Material Balance


Identifying the environmental impact of business operations

Environmental impact data of main business sites in FY2017

Water intake, Amount of wastewater, Amount of recycled water

Name of site	Water intake (m ³)			Amount of wastewater (m ³)			Amount of recycled water (m ³)
	Clean water	Industrial water	Under-ground water	Public water	Sewer system	Others	
Eight business sites in Japan (head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility,* Momozono Manufacturing Facility, Research & Development Center, Logistics Center)	71,078	0	0	0	69,631	180	0
Eight business sites in Japan (Manufacturing Facility, Kariya)	17,244	0	0	17,244	0	0	0
Nissei Corporation	75,035	0	0	0	22,917	0	0
Mie Brother Precision Industries, Ltd.	48	0	1,338	1,386	0	0	0
Brother Industries (U.K.) Ltd.	1,332	0	0	0	1,332	0	0
Brother Industries (Slovakia) s.r.o.	0	0	2,628	2,628	0	0	0
Taiwan Brother Industries, Ltd.	12,761	0	0	0	7,807	0	0
Zhuhai Brother Industries, Co., Ltd.	126,425	0	0	0	113,783	0	0
Brother Machinery Xian Co., Ltd.	29,890	0	0	0	23,386	0	0
Brother Technology (Shenzhen) Ltd.: Baolong Manufacturing Facility	178,148	0	0	0	178,148	0	534
Brother Technology (Shenzhen) Ltd.: Nanwan Manufacturing Facility	113,822	0	0	113,822	0	0	0
Brother Industries (Philippines), Inc.	0	0	94,876	0	80,645	0	0
Brother Industries (Vietnam) Ltd.	124,361	0	0	124,361	0	0	0
Brother Machinery Vietnam Co., Ltd.	9,675	0	0	0	7,798	243	18
Brother Industries Saigon, Ltd	26,499	0	0	0	21,199	0	0

*: The Minato Manufacturing Facility stopped production on September 30, 2017.

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Reducing Environmental Impact


Material Balance

Identifying the environmental impact of business operations

Environmental impact data of main business sites in FY2017

Water pollution load

Name of site	Water pollution load (mg/L)			
	BOD	COD	n-hexane	SS
Eight business sites in Japan (Hoshizaki Manufacturing Facility)	148.0	—	5.6	—
Eight business sites in Japan (Kariya Manufacturing Facility)	2.6	8.0	—	1.0
Eight business sites in Japan (Logistics Center)	10.0	—	1.4	—
Nissei Corporation	40.7	5.5	0.6	2.6
Mie Brother Precision Industries, Ltd.	3.0	23.0	—	15.0
Brother Industries (U.K.) Ltd.	—	—	—	—
Brother Industries (Slovakia) s.r.o.	3.9	28.2	—	17.0
Taiwan Brother Industries, Ltd.	1.9	15.2	—	6.8
Zhuhai Brother Industries, Co., Ltd.	4.6	59.0	2.4	38.0
Brother Machinery Xian Co., Ltd.	7.3	63.3	0.04	7.5
Brother Technology (Shenzhen) Ltd.: Baolong Manufacturing Facility	75.9	131.0	2.1	56.0
Brother Technology (Shenzhen) Ltd.: Nanwan Manufacturing Facility	4.5	19.2	1.5	10.8
Brother Industries (Philippines), Inc.	75.0	116.2	1.7	24.4
Brother Industries (Vietnam) Ltd.	19.03	29.2	—	—
Brother Machinery Vietnam Co., Ltd.	3.0	10.0	0.7	6.0
Brother Industries Saigon, Ltd	73.0	161.0	—	—

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Reducing Environmental Impact

Material Balance

Identifying the environmental impact of business operations

Environmental impact data of main business sites in FY2017

Waste amount

Name of site	Waste amount						
	Production-related waste (t)	Material recycling (t)	Thermal recycling (t)	Incineration amount (t)	Other disposal amount (t)	Amount of landfill waste (t)	Rate of landfill waste (%)
Eight business sites in Japan (head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility,* Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center)	1,891	1,709	168	13	0	0	0
Nissei Corporation	4,027	3,016	1,012	0	0	0	0
Mie Brother Precision Industries, Ltd.	87	70	17	0	0	0	0
Brother Industries (U.K.) Ltd.	270	260	9	0	0	0	0
Brother Industries (Slovakia) s.r.o.	514	442	73	0	0	0	0
Taiwan Brother Industries, Ltd.	822	20	0	52	751	0	0
Zhuhai Brother Industries, Co., Ltd.	253	178	0	67	8	0	0
Brother Machinery Xian Co., Ltd.	648	424	0	156	69	0	0
Brother Technology (Shenzhen) Ltd.	920	876	44	0	1	0	0
Brother Industries (Philippines), Inc.	1,076	844	0	0	125	107	10
Brother Industries (Vietnam) Ltd.	1,887	1,708	0	180	0	0	0
Brother Machinery Vietnam Co., Ltd.	500	67	0	358	60	14	3
Brother Industries Saigon, Ltd	281	257	0	25	0	0	0

*: The Minato Manufacturing Facility stopped production on September 30, 2017

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Reducing Environmental Impact

Material Balance

Identifying the environmental impact of business operations

Environmental impact data of main business sites in FY2017

Calculation method

Resource and energy inputs in FY2017		
Resource consumption	<p>The resource consumption is calculated by multiplying the shipments to major products shipped in FY2017 per weight.</p> <p>*: The calculation methods of resource consumption have been changed from FY2015 (April 1, 2015-March 31, 2016).</p>	
Total energy consumption	Total amount of electricity, gasoline, light oil, LPG, city gas, etc. consumed at target business sites in FY2017	
	Crude petroleum equivalent	<p>Calculated by converting electricity, gasoline, light oil, LPG, city gas, etc., into crude petroleum, respectively</p> <p>*: The conversion rate for crude oil equivalent is based on the Appended Table 1 of the Ordinance for Enforcement of the Act on the Rational Use of Energy enacted by the Japanese Ministry of Economy, Trade and Industry.</p>
Water consumption	Total amount of water consumed at target business sites in FY2017	
	Clean water	Measurement using a water meter
	Industrial water	
	Underground water	

Production and emission of substances in FY2017		
CO ₂	<p>Calculated based on the location-based method (using the grid-average emission factors in a certain area such as a country or region)</p> <p>*: The sources of emission factors for the location-based method are as follows:</p> <ul style="list-style-type: none"> • IEA - CO₂ EMISSIONS FROM FUEL COMBUSTION 2016 edition • GHG Protocol - Calculation tools • DEFRA 	
Amount of wastewater	<p>The amount is equivalent to the amount of water intake. However, the amount is calculated based on the measured wastewater amount or in accordance with the formula set in respective regions (based on the amount of water intake), if such measured amount or formula is available.</p>	
Amount of waste	Production-related waste	Total amount of waste (including metals, waste plastics, circuit boards, sludge, waste oil/solvents, waste acids/alkalis, glass/ceramics, and batteries) generated in the production process at target business sites in FY2017

Communicating Environmental Commitment

Environmental Communication Activities

Engagement with stakeholders

The Brother Group's relationship with stakeholders is defined in "3. Stakeholders" of the Basic Policies in the Brother Group Global Charter published in 1999. All Group companies and all our employees base their decisions and actions on the Charter. Six types of stakeholders are specified in the Basic Policies: "Customers," "Our Associates," "Business Partners," "Shareholders," "Local Community," and "The Environment." Notably, "The Environment" affects all aspects of our business operations. Thus, the Brother Group endeavors to enhance its engagement in environmental conservation to fulfill mutually acceptable social responsibility with the five other stakeholders.



Working with you for a better environment

Under the environmental slogan "Brother Earth" formulated in 2010, the Brother Group has been accelerating these activities based on the unified message of "Working with you for a better environment."

Stakeholders	Examples of engagement in environmental conservation
Customers	<ul style="list-style-type: none"> Disseminate environmental information on Brother's special website on the environment (brotherearth.com) Ensure interactive communication through SNSs Promote eco-conscious design of products and offer environmental information about products
Our Associates	<ul style="list-style-type: none"> Disseminate environmental information and ensure interactive communication on the intranet Encourage employees to work on environmental conservation and contribute to local communities
Business partners	<ul style="list-style-type: none"> Hold dialogues and build partnerships through green procurement activities Hold dialogues and promote collaboration by calculating Scope 3 and reducing GHG emissions
Shareholders	<ul style="list-style-type: none"> Disseminate environmental information through shareholder newsletters (Brother Industries, Ltd.) Introduce environmental activities and hold dialogues with shareholders at communication meetings (Brother Industries, Ltd.)
Local community	<ul style="list-style-type: none"> Clean up areas around facilities, beaches, etc. Promote activities to conserve biodiversity in collaboration with communities

Communicating Environmental Commitment

Environmental Communication Activities

Promote and upgrade Brother's special website on the environment (brotherearth.com)

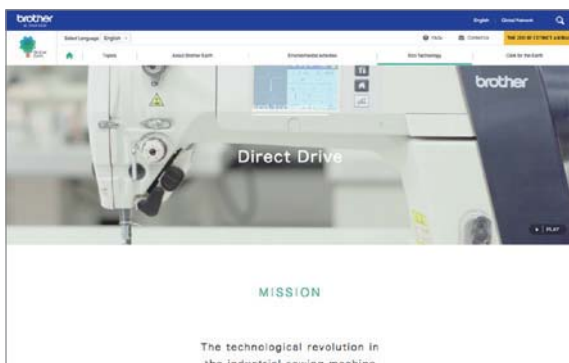
Brother's special website on the environment (brotherearth.com) was launched to publicize Brother's environmental vision and efforts, and environmental technologies.

"Environmental Views" presents videos about environmental conservation activities on which Brother has been working with many stakeholders in different parts of the world. "Eco-conscious products" aims to introduce the designers' commitment to the product development.

The website also explains the environmental performance of Brother's main products, hosts Click for the Earth (an environmental conservation activity which enables visitors to donate with a single click), and provides information about events based on the theme of the environment, in particular.

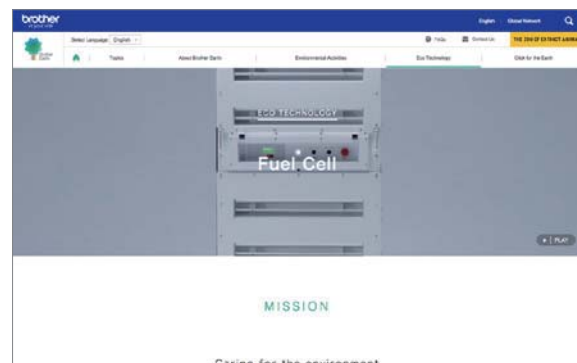
Brother's official Facebook, Twitter, and YouTube SNS accounts are also utilized to disseminate information. On the night of January 31, 2018, the total lunar eclipse was broadcast by live streaming on Brother Earth, Brother's special website on the environment.

Video contents released in 2017



Direct Drive

<https://www.brotherearth.com/en/tech/direct-drive.html>



Fuel Cell

<https://www.brotherearth.com/en/tech/fuel-cell.html>



The Americas - Environment and Education
<https://www.brotherearth.com/en/activity/usa.html>

Communicating Environmental Commitment

Brother Eco Point Program

Brother eco point program introduced in more than 40 countries and regions

Under the Brother eco point program, eco points are awarded for eco-conscious actions by employees and their families. Eco points are also awarded for used consumables collected from customers. Brother carries out various environmental conservation activities depending on the number of points earned.

To raise the environmental awareness of employees and thus help prevent global warming, the Brother eco point program was launched in April 2008 for group facilities in Japan, and has been shared by the group's facilities outside Japan since FY2009 (April 1, 2009-March 31, 2010).

At the Brother Group, employees and their families have been working to reduce CO₂ emissions as much as possible in their daily lives. In addition to making financial contributions, employees actively participate in environmental conservation activities. Personal experience helps increase eco consciousness and expands the scope of activities.

As of March 31, 2018, the Brother eco point program is in place in more than 40 countries and regions.

Brother facilities that have introduced the eco point program



Number of participants in the eco point program

	FY2013	FY2014	FY2015	FY2016	FY2017
Number of participants	21,440	25,908	31,899	31,663	29,993

Communicating Environmental Commitment

Brother Eco Point Program

Activities under the Brother eco point program

Group companies in Japan (Japan)

Brother Industries, Ltd. (BIL) is working with Brother Sales, Ltd. (Brother Sales) and other group companies in Japan to promote the Brother eco point program. Specifically, eco points are awarded for eco-conscious actions taken by employees and their families, such as turning off unnecessary lights, saving water, separating waste, using washable cups instead of disposable ones, using stairs (2UP3DOWN), traveling on foot, by bicycle or public transportation, and participating in local clean-up activities. The points earned are used as contributions to fund the environmental conservation activities in which employees and their families participate as volunteers.

A commendation program is in place to boost this program, and each year, participants who earned many points during the past year are commended.

Brother Sales also awards points when used toner and ink cartridges of All-in-Ones and printers are collected.

参照 ▶ 26p Environmental Commendation and Awards

参照 ▶ 85p Biodiversity



Brother eco point program commendation for FY2017 (June 2018)

Biodiversity

Brother Group Environmental Vision 2050 formulated

Biodiversity conservation

By 2050, the Brother Group will minimize the environmental impact of business operations on the ecosystem and promote activities to restore and conserve the ecosystem beyond the impact.

In March 2018, the Brother Group formulated the Brother Group Environmental Vision 2050 as a new long-term target of the Brother Group to contribute to resolving global environmental issues under the slogan “Brother Earth,” and established a mid-term target for FY2030 as a milestone.

Mid-term target for FY2030

The Brother Group will assess the environmental impact of its business operations on the ecosystem and the effectiveness of restoration and conservation activities, and work to avoid and reduce the environmental impact on the ecosystem.

The manufacturing and sales facilities of the entire group will work on ecosystem restoration and conservation activities on a voluntary basis depending on the situation in each region.

*: An excerpt from the Brother Group Environmental Vision 2050

 7p Environmental Vision 2050

Biodiversity

Policy of activities

To maintain the health of Mother Nature which sustains humankind, it is essential to implement measures against global warming and ensure biodiversity conservation and sustainability. The Brother Group launched greening activities in 1966, and started to work on biodiversity conservation through activities to plant seedlings, etc. in 2005.

The Nagoya Protocol and Aichi Biodiversity Targets were adopted at the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD-COP10) held in Nagoya, Aichi in October 2010. In response, the Brother Group added a new commitment: "We will endeavor to reduce our impact on the ecosystem and to conserve biodiversity in all our operations." to the Action Guidelines in the Environmental Policy in FY2011 (April 1, 2011-March 31, 2012). In FY2012 (April 1, 2012-March 31, 2013), the Brother Group established a biodiversity conservation policy, and the scope has been expanded to cover activities in all business operations.

Brother Group's biodiversity conservation policy

Basic policy

To help build a sustainable society, the Brother Group will endeavor to reduce the impact of its operations on biodiversity and ensure biodiversity conservation through environmental and social contribution activities.

1. Challenges in management

- The Brother Group recognizes biodiversity conservation as an important challenge for corporate survival, and works on environmental management.

2. Business operations

- The Brother Group identifies the impact of all its operations (including procurement of raw materials) on biodiversity, and constantly endeavors to reduce the impact.

3. R&D activities

- The Brother Group gathers information and acquires technologies regarding conservation and sustainable use of biodiversity, and promotes technological development.

4. Social contribution activities

- The Brother Group works on biodiversity conservation activities in collaboration with stakeholders including government organizations, local residents, and NGOs.

5. Activities involving all employees

- Actions are led by top management, and measures are taken throughout the company to help all employees increase their knowledge about biodiversity and encourage them to work voluntarily on conservation activities.

6. Communication

- Details of activities are actively disclosed in and outside the company to raise awareness of biodiversity conservation activities.

Biodiversity

Brother's biodiversity conservation project has been recognized as a cooperative project endorsed by the Japan Committee for United Nations Decade on Biodiversity.



This project is recognized as a cooperative project endorsed by the Japan Committee for UNDB (UNDB-J).

In March 2018, Brother Industries, Ltd. (BIL)'s contribution to restoration and conservation of forests through seedling planting activities, Brother eco point program, and Click for the Earth, was recognized as one of the 12th cooperative projects endorsed by the Japan Committee for United Nations Decade on Biodiversity (UNDB-J).

UNDB-J is a Japanese committee that was established to facilitate participation and cooperation from all the sectors in Japan and promote efforts related to biodiversity conservation and sustainable use in order to achieve the Aichi Biodiversity Targets, which were adopted as the global targets at the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP10) in 2010. To encourage cooperation for biodiversity conservation activities in respective sectors, cooperative projects endorsed by UNDB-J are recognized twice a year from among projects, etc. registered under the Nijyu-maru Project (Double 20 campaign).*

Of the nine projects by the Brother Group registered under the Nijyu-maru Project, BIL's contribution to restoration and conservation of forests through seedling planting activities, Brother eco point program, and Click for the Earth, was recognized as a cooperative project that is highly effective in terms of biodiversity conservation and sustainable use.

Key points of recognition

Cooperation of various entities	The activities are undertaken through cooperation between a business operator and NGOs, research institutes, etc.
Importance of the efforts	Employee education, eco point donation, seedling planting activities, etc. have been implemented in different parts of the world. The efforts are highly effective in terms of biodiversity conservation and sustainable use.
Effectiveness of publicizing the efforts	By publicizing the efforts, the scope of participants and collaborators, etc. in the project is expected to expand through similar efforts.

*: Under the Nijyu-maru Project, citizen groups, companies, local governments, etc. declare contributions to the Aichi Biodiversity Targets (Nijyu-maru declaration) within the scope of their efforts and register their declaration. The project is administered by the Japan Committee for IUCN. Starting with the 12th cooperative projects, the Nijyu-maru Project website is interlinked with the project database of the Environment Strategy Liaison Committee's Biodiversity Working Group of the Four Electrical and Electronic Industry Associations of Japan (in which BIL participates as a member company.)

Biodiversity

Brother's biodiversity conservation project has been recognized as a cooperative project endorsed by the Japan Committee for United Nations Decade on Biodiversity.

Brother Group's projects registered under the Nijyu-maru Project

Project name	Name of business site
Contribution to restoration and conservation of forests through seedling planting activities, Brother eco point program, and Click for the Earth	BIL PDF ▶ Registration certificate (Japanese) [PDF/2.5MB] http://download.brother.com/pub/jp/eco/pdf/2017/bil-registration-1.pdf ▶ A webpage that introduces the cooperative projects recognized by UNDB-J https://undb.jp/authorization/4459/ (Link to the website of UNDB-J)
Project to suppress the propagation of moso bamboo, which hinders the growth of precious forests of broad-leaved trees, etc.	BIL PDF ▶ Registration certificate (Japanese) [PDF/2.1MB] http://download.brother.com/pub/jp/eco/pdf/2017/bil-registration-2.pdf
Project for combating desertification in Inner Mongolia	Brother (China) Ltd. PDF ▶ Registration certificate (Chinese) [PDF/2.1MB] http://download.brother.com/pub/com/cn/eco/pdf/2017/bcn-registration_cn.pdf
Contribution to environmental conservation in Shenzhen City	Brother Technology (Shenzhen) Ltd., Brother Industries (Shenzhen), Ltd.* PDF ▶ Registration certificate (Chinese) [PDF/1.8MB] http://download.brother.com/pub/com/cn/eco/pdf/2017/btsl-registration_cn.pdf
Support for protection and restoration of mangrove forests	Brother Commercial (Thailand) Ltd. PDF ▶ Registration certificate [PDF/1.8MB] http://download.brother.com/pub/com/en/eco/pdf/2017/bctl-registration_en.pdf
Reforestation at a former quarry site	Brother Industries (U.K.) Ltd. PDF ▶ Registration certificate [PDF/2.2MB] http://download.brother.com/pub/com/en/eco/pdf/2017/biuk-registration_en.pdf
Promotion of forest conservation activities through Click for the Earth, etc.	Brother International Corporation (U.S.A.) PDF ▶ Registration certificate [PDF/2.2MB] http://download.brother.com/pub/com/en/eco/pdf/2017/bicusa-registration_en.pdf
Conservation of tropical rainforests in Peru	Brother International Europe Ltd. PDF ▶ Registration certificate [PDF/2.2MB] http://download.brother.com/pub/com/en/eco/pdf/2017/bie-registration_en.pdf
Manta ray ecosystem research survey through Click for the Earth	Brother International (Aust.) Pty. Ltd. PDF ▶ Registration certificate [PDF/2.2MB] http://download.brother.com/pub/com/en/eco/pdf/2017/bia-registration_en.pdf

The Brother Group remains committed to promoting various environmental conservation projects in various parts of the world under the Brother Earth slogan.

*: Brother Industries (Shenzhen), Ltd. was subject to an absorption-type merger in October 2016, with Brother Technology (Shenzhen) Ltd. as the surviving company.

Biodiversity

Brother Group's commitment to Aichi Biodiversity Targets

The Aichi Biodiversity Targets represent the global targets that serve as the core of the Strategic Plan for Biodiversity 2011-2020 adopted at CBD-COP10. It was agreed at CBD-COP10 to "take effective and urgent action to halt the loss of biodiversity" by 2020, and actions required of respective countries were compiled as 20 items in the Aichi Biodiversity Targets. Based on these items, the Four Electrical and Electronic Associations* Biodiversity Working Group, of which Brother Industries, Ltd. is a member, identified eight items that are closely linked with the environmental and biodiversity conservation activities which companies in the electrical and electronic industries can work on and make more significant contributions through active promotion. The vision for contributing to respective targets by member companies was compiled and released as the Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries in March 2015.

The table below summarizes the main activities undertaken by the Brother Group in line with the guidelines (as of March 31, 2018).

Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries and the status of the Brother Group's activities


Aichi Biodiversity Targets		Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries	Status of the Brother Group's activities
Target 1: Awareness increased	People recognize the value of biodiversity and related activities.	Member companies will conduct employee education on biodiversity wherever possible so that the importance of biodiversity conservation will be widely recognized. Member companies will also contribute to raising public awareness of information about their conservation activities through by cooperating with other stakeholders.	<ul style="list-style-type: none"> • The biodiversity basic policy was established based on the Brother Group Environmental Policy, and all employees were informed of the policy. • The eco point program and Click for The Earth donation program have been promoted. Employees and their families, as well as customers, have been encouraged to work on eco-conscious actions, and have been solicited to participate in biodiversity-related activities, etc., thereby raising environmental awareness and expanding the scope of the programs. <p>See ▶ 83p Brother Eco Point Program</p> <p>▶ Click to save our planet with Brother Earth https://www.brotherearth.com/en/top.html</p>

*: The Four Electrical and Electronic Associations consist of the Japan Electrical Manufacturers' Association, the Japan Electronics and Information Technology Industries Association, the Communications and Information network Association of Japan, and the Japan Business Machine and Information System Industries Association.

Biodiversity

Brother Group's commitment to Aichi Biodiversity Targets

Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries and the status of the Brother Group's activities

Aichi Biodiversity Targets		Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries	Status of the Brother Group's activities
Target 4: Sustainable consumption and production	All parties concerned implement their plans for sustainable production and consumption.	<p>Member companies will conduct the following activities in their production activities and supply chains at each life-cycle stage wherever possible, in order to achieve sustainable consumption and production.</p> <ul style="list-style-type: none"> • Continuous efforts to reduce CO2 emissions in the production process • The provision of products and services that contribute to achieving a low-carbon society • Reducing the volume of waste to be landfilled • The 3R activities (Reduce, Reuse and Recycle) • The procurement of biodiversity-friendly materials, etc. 	<ul style="list-style-type: none"> • Resource conservation has been promoted, with reductions in size and weight, collection, and recycling of products in mind, from the development phase. • CO2 emissions have been reduced by increasing the energy-saving performance of electronic circuits, implementing energy-saving functions, etc., thereby promoting the prevention of global warming. • ISO 14001 was introduced at respective business sites. Environmental conservation activities involving all employees (e.g. energy and resource conservation, chemical substances control, waste management, water saving, prevention of pollution) have been promoted to reduce impacts on ecosystems. • Efforts have been made to reduce CO2 emissions and prevent global warming by increasing efficiency in energy use (e.g. electricity and fuel) at business sites and shifting to substances whose global warming coefficient is small, etc., thereby mitigating climate change and impacts on ecosystems. <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>▶ Fuel Cell https://www.brotherearth.com/en/tech/fuel-cell.html</p> </div> </div> <ul style="list-style-type: none"> See ▶ 29p Environmental Considerations within Product Life Cycles See ▶ 49p CO2 Emission Reduction Activities See ▶ 58p Zero Waste Emission Activities See ▶ 62p Activities to Reduce Water Consumption See ▶ 41p Collection and Recycling

Biodiversity

Brother Group's commitment to Aichi Biodiversity Targets



Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries and the status of the Brother Group's activities

Aichi Biodiversity Targets		Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries	Status of the Brother Group's activities
Target 5: Habitat loss halved or reduced	The loss of natural habitats including forests is at least halved, and degradation and fragmentation are significantly reduced.	Member companies will, wherever possible, take social actions and conduct biodiversity-conscious management of green spaces within their business premises, as well as promote the creation of ecosystem networks around the business premises, in order to protect habitats and reduce the degradation and fragmentation of habitats.	<ul style="list-style-type: none"> In the U.K., Brother has supported reforestation activities at a former quarry site, and provided opportunities to learn that reforested areas are inhabited by various animals and plants. <ul style="list-style-type: none"> ▶ Contributing to Reforestation at a Former Quarry Site (UK) https://www.brotherearth.com/en/news_detail/126.html In Inner Mongolia, Brother has worked on a project to prevent desertification and promote greening, and planted seedlings of Russian olive (<i>Elaeagnus angustifolia</i>), a plant well adapted to the desert environment and saxaul (<i>Haloxylon ammodendron</i>) which is resistant to dry conditions. <div> </div> <ul style="list-style-type: none"> ▶ China - Project for Combating Desertification in Inner Mongolia https://www.brotherearth.com/en/activity/inner_mongolia.html <p>▶ Click to save our planet with Brother Earth https://www.brotherearth.com/en/top.html</p>
Target 8: Pollution reduced	Pollution caused by chemical substances, fertilizers, and pesticides is reduced to the extent that is no longer harmful.	Member companies will strive for the appropriate management of chemical substances from a global perspective and reduce adverse effects on ecosystems wherever possible, in order to prevent pollution that is detrimental to ecosystems and biodiversity.	<ul style="list-style-type: none"> When procuring raw materials for products, Brother has actively promoted green procurement, avoided chemical substances that affect the environment, and pursued biodiversity-conscious procurement of raw materials. Efforts have been made to reduce environmental impacts due to operations at manufacturing facilities (e.g. eliminating boilers fueled by heavy oil, decomposing pollutants using catalytic combustion systems, introducing advanced wastewater treatment systems), thereby reducing the impacts on ecosystems due to the pollution of air, water, soil, etc. <ul style="list-style-type: none"> ▶ See 43p Compliance with Environmental Laws and Regulations on Products ▶ See 46p Green Procurement ▶ See 64p Preventing Pollution

Biodiversity

Brother Group's commitment to Aichi Biodiversity Targets

Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries and the status of the Brother Group's activities

Aichi Biodiversity Targets		Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries	Status of the Brother Group's activities
Target 9: Invasive alien species prevented and controlled	Invasive alien species are controlled or eradicated.	Member companies will actively work on the eradication of invasive alien species, the prevention of the introduction of invasive alien species and awareness-raising activities about the problem, particularly in the transportation of their products, in the management of green spaces within their business premises and in their social actions, in order to prevent the impacts caused by invasive alien species.	<ul style="list-style-type: none"> Taiwan Brother Industries, Ltd. removed Mikania micrantha (a climbing annual plant of Asteraceae) and ran an environmental education program to prevent damage caused by the rapidly-proliferating alien species at Kaohsiung Metropolitan Park.  <p>Mikania micrantha</p> <ul style="list-style-type: none"> Click to save our planet with Brother Earth https://www.brotherearth.com/en/top.html
Target 11: Protected areas increased and improved	At least 17% and 10% of the land and marine areas are designated as protected areas, etc. for conservation.	Member companies will, wherever possible, conduct biodiversity-conscious green space management which contributes to protected areas within their business premises and on land owned by their companies, as well as conduct conservation activities in protected areas outside their company premises, in order to expand protected areas that are important for biodiversity.	<ul style="list-style-type: none"> In Central and South America (e.g. the Republic of Peru), Brother has supported activities to conserve tropical rainforests and protect habitats of endangered wild animals in the Amazon Basin. <ul style="list-style-type: none"> Protecting the Amazon Rainforest in Peru https://www.brotherearth.com/en/news_detail/141.html In Canada, Brother has supported activities to restore forests and protect habitats for wildlife, and helped prevent soil erosion and improve the water quality of the Red River Basin. <ul style="list-style-type: none"> Developing reforestation activities in Canada https://www.brotherearth.com/en/news_detail/440.html In Thailand, Brother has supported protection and recovery of local mangrove forests, and planted seedlings. As the mangrove forests have grown, the number of species of birds and aquatic animals has increased. <ul style="list-style-type: none"> Thailand - Mangrove Reforestation Project https://www.brotherearth.com/en/activity/thailand.html  <ul style="list-style-type: none"> Click to save our planet with Brother Earth https://www.brotherearth.com/en/top.html

Biodiversity

Brother Group's commitment to Aichi Biodiversity Targets



Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries and the status of the Brother Group's activities

Aichi Biodiversity Targets		Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries	Status of the Brother Group's activities
Target 14: Ecosystems and essential services safeguarded	Ecosystems that offer the blessings of nature are restored and conserved.	Member companies will conduct activities for conserving and restoring ecosystems wherever possible, so that ecosystem services can be used sustainably.	<ul style="list-style-type: none"> • Based on a survey on its premises, Mie Brother Precision Industries, Ltd. (Mie Brother) has removed alien species and protected and cultivated native species in order to build a rich forest that increases ecosystem diversity. This forest has been named "Saiku Kobushi-no-Mori Mie Brother - Resource Cycling Manufacturing Facility in Harmony with Nature" to reflect the vision of promoting environmental conservation activities in its business operations. • In the U.S., Brother has supported the Replanting Our National Forests campaign to protect national forests that provide habitats for wildlife, as well as precious natural resources for construction materials, clean air, and drinking water, thereby protecting forests threatened by fire, diseases, and insects. <ul style="list-style-type: none"> ▶ The Americas - Environment and Education https://www.brotherearth.com/en/activity/usa.html • In Slovakia, Brother has worked on a reforestation project in the High Tatra mountains where more than three million trees were lost due to a severe storm. <div> </div> <ul style="list-style-type: none"> ▶ Slovakia - Tatra mountains the reforestation project https://www.brotherearth.com/en/activity/slovakia.html <p>▶ Click to save our planet with Brother Earth https://www.brotherearth.com/en/top.html</p>

Biodiversity

Brother Group's commitment to Aichi Biodiversity Targets

Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries and the status of the Brother Group's activities

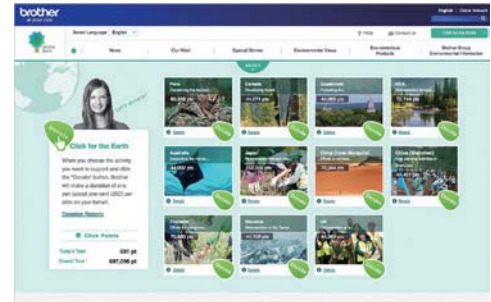
Aichi Biodiversity Targets		Action Guidelines for Biodiversity Conservation in the Electrical and Electronic Industries	Status of the Brother Group's activities
Target 19: Knowledge improved, shared and applied	Relevant knowledge, science and technology are improved.	Member companies will work on the development and dissemination of monitoring technologies which use ICT as well as promote the accumulation of data through biodiversity monitoring wherever possible, in order to improve knowledge, the scientific base and technologies relating to biodiversity.	<ul style="list-style-type: none"> In Australia, Brother has supported a survey on the biology and ecology of manta rays (<i>Manta birostris</i>) which are an icon of Australia's oceans and seas and assessed the impact of marine debris on sea turtles (endangered species), in order to understand and conserve the country's unique ocean environment. <div style="display: flex; align-items: center; margin-top: 10px;">  <div style="margin-left: 10px;"> <p>▶ Australia - Project Manta https://www.brotherearth.com/en/activity/australia.html</p> </div> </div> In Gujo, Gifu, Japan, Brother has planted seedlings of indigenous deciduous trees such as <i>Quercus serrata</i> Murray and <i>Quercus crispula</i> Blume as well as <i>Magnolia salicifolia</i> (willow-leafed magnolia), which is designated as the city flower of Gujo, etc. on a former ski ground by utilizing the eco point program. Brother has conducted a survey about the impact of this activity on the ecosystem and started to review the model of afforestation activities to restore the ecosystem. <div style="display: flex; align-items: center; margin-top: 10px;">  <div style="margin-left: 10px;"> <p>▶ Japan - Brother's Forest Gujo, Project for restoring ecosystem and interacting with the locals https://www.brotherearth.com/en/activity/gujo.html</p> </div> </div> <p>▶ Click to save our planet with Brother Earth https://www.brotherearth.com/en/top.html</p>

Biodiversity

Brother Group's biodiversity conservation activities

Click for the Earth donation program

Visitors to the Click for the Earth website are requested to support environmental conservation activities that are implemented by the Brother Group in different regions of the world. One click is allowed per day for each visitor, and is counted as one point. Each year, BIL funds environmental conservation activities in the following fiscal year or later depending on the total points (1 yen per point).



- ▶ Fiscal year 2017 points and donation amounts for each activity have been determined
https://www.brotherearth.com/en/news_detail/679.html
- ▶ Fiscal year 2016 points and donation amounts for each activity have been determined
https://www.brotherearth.com/en/news_detail/659.html
- ▶ Fiscal year 2015 points and donation amounts for each activity have been determined
https://www.brotherearth.com/en/news_detail/596.html
- ▶ Fiscal year 2014 points and donation amounts for each activity have been determined
https://www.brotherearth.com/en/news_detail/469.html
- ▶ Fiscal year 2013 points and donation amounts for each activity have been determined
https://www.brotherearth.com/en/news_detail/325.html
- ▶ You are invited to join in Click for the Earth donations (free of charge) for supporting Brother's activities.
<https://www.brotherearth.com/en/top.html>

Biodiversity

Brother Group's biodiversity conservation activities

Brother Industries, Ltd., Brother Sales, Ltd., Brother Real Estate, Ltd. [Japan]

On the occasion of the 100th anniversary of its founding in 2008, the Brother Group concluded an agreement with Gujo City in Gifu Prefecture to build healthy forests. The Brother Group supports activities to plant seedlings and thin forests at Brother Forests in Gujo*1.

Employees and their families of Brother Industries, Ltd. (BIL), Brother Sales, Ltd. (Brother Sales), and customers of Brother Real Estate, Ltd. (Brother Real Estate) among others work on the activities to plant seedlings, with the help of local people. Since FY2008 (April 1, 2008-March 31, 2009), seedlings have been planted in spring and autumn each year. Brother Sales earns Brother eco points depending on the number of used consumables for printing equipment collected, while Brother Real Estate earns the points depending on the number of houses built. They plant the number of seedlings equivalent to the total points earned, respectively.

Along with the activities to plant seedlings, from FY2015 (April 1, 2015-March 31, 2016) to FY2016 (April 1, 2016-March 31, 2017), a team from the Consulting Firm for Clinical Environmental Studies, Nagoya University was asked to assist in a survey to estimate the survival rate of planted seedlings, growth status by species, moisture and gravel content in soil, and species of butterflies, wild birds, and plants which inhabit the forests, among others. The survey found that the soil of some areas was inappropriate for planting seedlings, and that these areas were inhabited by *Luehdorfia japonica* and *Argyrogonome laodice* (butterfly species designated as VU)*2. Based on consultations with the university, it was decided to regularly weed these areas, utilize the grassland as a habitat for endangered species, and intensively plant new seedlings in areas appropriate for planting seedlings. We continue to protect the environment inhabited by various species of organisms and to create biodiverse woods.

*1: "Brother Forests in Gujo" refers to three sites in Gujo City, Gifu Prefecture. In February 2008, a three-party agreement was signed among Gifu Prefecture, Gujo City, and BIL to restore the three forests, as part of "the program to build forests in collaboration with companies" promoted by Gifu Prefecture. In ten years since signing the agreement, we will plant seedlings of indigenous species on a former ski ground (8 hectares) and thin two forests (20 hectares in total) to encourage the growth of healthy forests. About 6,000 seedlings (reviewed in FY2013 [April 1, 2013-March 31, 2014]) will be planted during this ten-year period. By the end of October 2017, 5,906 seedlings (including 2,178 and 515 seedlings planted by Brother Sales and Brother Real Estate, respectively) have been planted in total.

*2: VU represents a high risk of endangerment in the wild.



Ecosystem Restoration Project in the Brother Forests in Gujo



Luehdorfia japonica

Biodiversity

Brother Group's biodiversity conservation activities

Brother Industries, Ltd., Brother Sales, Ltd., Brother Real Estate, Ltd. [Japan]

Number of seedlings that have been planted (April 2013-October 2017)

Year	2013		2014		2015		2016		2017	
Month	April	October	April	October	April	October	May	October	May	October
Number of seedlings planted	250	250	250	250	250	250	350*1	250	250	254
Brother Sales	201	106	100	100	100	100	100	100	100	100
Brother Real Estate	38	37	38	37	38	37	38	37	38	37

These activities are covered by the Brother eco point program, which has been promoted by BIL with group companies, and by the Click for the Earth donation program*2, which customers can join on brotherearth.com, Brother's special website on the environment.

*1: Gujo City, Gifu Prefecture paid the expenses for 100 out of 350 seedlings.

*2: Visitors to the Click for the Earth website are requested to support environmental conservation activities that are implemented by the Brother Group in different regions of the world. One click is allowed per day for each visitor, and is counted as one point. Each year, BIL funds environmental conservation activities in the following fiscal year or later depending on the total points earned (1 yen per point).

- ▶ You are invited to join in Click for the Earth donations (free of charge) to support Brother's activities.
<https://www.brotherearth.com/en/top.html>
- ▶ Environmental Views on brotherearth.com, Brother's special website on the environment
<https://www.brotherearth.com/en/>