



SUBARU Environmental Policies

< SUBARU Sustainability Principles >

“The earth, the sky and nature” are Subaru’s fields of business.

With the automotive and aerospace businesses as the pillars of Subaru’s operations, our fields of business are the earth, the sky and nature.

Preservation of the ecosystem of our planet, the earth, the sky and nature, is of utmost importance to ensure the future sustainability of both society and our organization. We align our business strategy to enhance these global goals in all of our operations.

1. We develop and deliver products to meet societal needs and contribute to the environment through advanced technologies.

By striving to create advanced technologies that put the environment and safety first, we will develop and deliver products that can contribute to protecting the earth’s environment.

2. We focus on efforts aimed at coexistence with nature.

Together with efforts to reduce carbon-dioxide emissions in all of our operations, we will promote active engagement with nature by stressing forest conservation.

3. We take on challenges as one through an all-Subaru approach.

Utilizing our unique organizational character that allows us to oversee the entire supply chain, all of us together will take on the challenges of environmental protection of our planet through an all-Subaru approach.

< Environmental Principles >

Subaru’s fields of business are the earth, the sky and nature.

Subaru understands that the health and preservation of biodiversity and controlling climate change are critical to ensuring a sustainable future for our planet earth, nature, communities and businesses.

Products:	We develop our products and conduct R&D in light of the lifecycle environmental impacts of our products.
Purchasing:	Our purchasing activities reflect consideration for biodiversity and other aspects of environmental protection.
Production:	We strive to minimize our environmental impact through improving energy efficiency and waste management.
Logistics:	We strive to minimize our environmental impact through enhancing energy efficiency and promoting pollution prevention.
Sales:	We endeavor to recycle resources efficiently and reduce waste.
Management:	We will strive to improve our sustainability program through contributions that meet societal needs and by publicizing our activities as Team Subaru.

[Established in April 1998, revised in April 2017]



➤ **Environmental Management**



➤ **Environmentally Friendly Automobiles**



➤ **Climate Change**



➤ **Resource Recycling**



➤ **Water Resources**



➤ **Biodiversity**



➤ **Preventing Pollution**



➤ **Environmentally-conscious Procurement**



➤ **Environmental Communication**



➤ **Environmental Data**



Appropriate Environmental Management Enhances the Results of Environmental Initiatives

Environmental initiatives need to go beyond merely setting goals and targets to be achieved. Subaru believes that the process of putting into practice efforts to bring them to fruition is also important.

Subaru began implementing our Voluntary Plan for the Environment in FYE1994 and we are currently promoting our sixth plan (FYE2018–FYE2021).





Subaru has introduced ISO 14001 and Eco Action 21 as needed at appropriate sites, with the aim of achieving our Voluntary Plan for the Environment, and also maintain a system (the PDCA cycle) for efficiently creating and maximizing the effects of our initiatives.

Practical efforts to protect the environment from a medium- to long-term perspective are needed now more than ever to ensure the sustainable growth of both Subaru and society as a whole. Subaru will further enhance our efforts to contribute to the environment through our business.

As part of these efforts, Subaru has set to work on formulating our new Environment Action Plan, which will take effect in FYE2022, following the end of the Sixth Voluntary Plan. Having already set some of the plan's targets (aspirations), Subaru is considering the content of specific initiatives and putting them into practice.

Initiatives and Results

1. The 6th Voluntary Plan for the Environment (FYE2018-FYE2021)

- › [1] Global Warming Measures 
- › [2] Resource Recycling 
- › [3] Pollution Prevention and Reduction of Hazardous Chemical Use 
- › [4] Environmental Management 

The 6th Voluntary Plan for the Environment (FYE2018 to FYE2021)

[1] Global Warming Measures

Field	Item	Up to FYE2021 Target/Initiative	FYE2019		FYE2020 Target/Initiative	
			Target	Results		
Products	Fuel economy improvement	◆Continue to improve fuel economy through full model changes and annual improvements.	◇Innovate to an environmental engine, and realize category top level fuel efficiency. ◇Introduce horizontally opposed direct-injection downsized turbo engines to the market.	• Adopt newly developed power unit "e-BOXER" that combines the horizontally opposed engine and electrification technology to new Forester. Also added the e-BOXER model to new SUBARU XV. • Move to mass production phase of the horizontally opposed direct injection downsized turbo engine.	• Launched the new Forester and Subaru XV with the new e-Boxer power unit, which combines a direct injection engine with an electric motor. • Moved to performance evaluation stage of mass-produced vehicles equipped with the downsized turbo engine.	• Expand global rollout of the new Forester and Subaru XV fitted with the new e-Boxer power unit. • Complete the development phase for mass production of the downsized turbo engine and move to production readiness.
	Clean energy use	◆Promote introduction of electric vehicles.	◇Introduce plug-in hybrid vehicles into the main markets in FYE2019. ◇Promote research for introducing electric vehicles into the market.	• Starting production of plug-in hybrid vehicle based on Crosstrek (in Japan, SUBARU XV) and introduce to the US market by the end of 2018. • Based on the last fiscal year's achievement, aim for electrification system with improved electric efficiency.	Launched Subaru's first plug-in hybrid vehicle based on "Crosstrek" (Japanese name: SUBARU XV) in the US market.	Move forward with efforts to have good prospects for basic advanced development for the next-generation electric vehicle designed with mass production in mind, with a view to expanding the rollout of electric vehicles.
	Road traffic improvement - IT technology (Automate driving technology and preventive safety technology)	◆Make efforts to expand deployment of advanced driver assist system and development of automated driving technology, further advance technological development to prevent accidents, and contribute to CO ₂ reduction through preventing traffic congestion - due to accidents and improving traffic flow with driving support technology.	◇Promote technological development of advanced driver assist system technology and preventive safety technology, focused on the EyeSight advanced driver assist system, and expand to more markets. ◇Introduce the traffic jam assist feature that keeps a car in the same lane on expressways to the market in FYE2018. ◇Introduce the highway automatic driving feature including lane changes to the market in FYE2021.	• Promote development that aims zero fatal road accidents. Assist driving operations in all speed ranges on highways. • Continue to promote development of advanced driver assist system technology, focusing mainly on expanded deployment of EyeSight Touring Assist and popularization and dissemination of accident damage reduction technology using assessment. • Continue to promote activities based on promotion plans of industry/government/academia such as SIP/ASV.	• Expanded rollout of EyeSight Touring Assist to the new Forester. • New Forester was awarded ASV+++ , the highest rating in the JNCAP preventive safety performance assessment for FYE2019. • Moved forward with the development of technology to facilitate automatic driving on expressways, with the aim of making this function available in 2020.	Promote development that aims zero fatal road accidents by 2030. Continue to promote development of advanced driver assist system technology, focusing mainly on expanded deployment of EyeSight Touring Assist and popularization and dissemination of accident damage reduction technology using assessment. Continue to promote activities based on promotion plans of industry/government/academia such as SIP/ASV.
Production	Production facilities	◆Reduce CO ₂ emissions per unit of production at domestic production facilities.	◇Reduce CO ₂ emissions per unit of production by 14% from FYE2007 level by FYE2021 at domestic production facilities.	Reduce CO ₂ Emission per unit of production at domestic production facilities by 12% from FYE2007 level.	Reduced CO ₂ Emission per unit of production at domestic production facilities by 40% from FYE2007 level.	Reduce CO ₂ Emission per unit of production at domestic production facilities by 13% from FYE2007 level.
		◆Promote activities to reduce CO ₂ emissions at overseas production facilities*	◇For overseas production facilities, set medium term CO ₂ emissions reduction targets and continue to promote activities to attain them.	Improve production efficiency and continue to reduce CO ₂ emissions.	Maintained CO ₂ emissions per vehicle produced at the 0.56 t-CO ₂ level, broadly in line with the figure achieved in the previous fiscal year.	Improve production efficiency and continue to control and reduce CO ₂ emissions.
Distribution/Sales	Distribution	◆Promote CO ₂ emissions reduction activities synchronized with the Energy Saving Law.	◇Use FYE2007 per unit of CO ₂ emission as a benchmark, and reduce emission by 1% every year.	Review transport efficiency and routes, and aim for 1% reduction every year. [Target: 30.32kg/vehicle]	Achieved the target of 1% reduction. [Achieved : 28.57kg/vehicle]	Continue activities synchronized with the Energy Saving Law, and aim for 1% emission reduction every fiscal year with FYE2007 result as a benchmark.

* SIA : Subaru of Indiana Automotive, Inc.

The 6th Voluntary Plan for the Environment (FYE2018 to FYE2021)

[2] Resource Recycling

Field	Item	Up to FYE2021 Target/Initiative	FYE2019		FYE2020 Target/Initiative	
			Target	Results		
Products	Recyclability improvement	◆Continue to implement measures to comply with the Automobile Recycling Law.	◇Promote new model design for recycle, and contribute to actual recycling rate of 95% by FYE2021.	Continue design for recycle and aim to achieve the actual recycling rate target.	• Continued to achieve an actual recycling rate of 95% or better. • Added/revised sections concerning Li-ion batteries for electric vehicles in the recycling design guidelines. Also promoted technology development that incorporates design for recycle.	• Continue to promote design for recycle, including large Li-ion batteries for PHEVs, etc. • Continue to promote the development of models designed with consideration for ease of dismantling
		◆Continue to implement measures to make parts and materials more detachable, separable, and sortable.	◇Promote technological development regarding easy dismantling of CFRP products.	Continue to promote technological development considering easy dismantling.	Began efforts to take ease of dismantling into consideration in development and design as part of the advanced development of CFRP products.	• Maintain an understanding of trends in the social environment and in laws and regulations, and promote the use of recycled materials in plastic parts
	◆Make efforts for CFRP recycling technology.	◇Promote release of LCA data from full model change vehicles.	Plan to release new Forester and hybrid vehicles.	Calculated and published LCA data for the new Forester (HEV).	Continue to promote technological development considering easy dismantling.	
	Promotion of life-cycle assessment	◆Promote disclosure of life-cycle assessment (LCA) data.	◇Promote release of LCA data from full model change vehicles.	Plan to release new Forester and hybrid vehicles.	Calculated and published LCA data for the new Forester (HEV).	No targeted vehicle to be released in FYE2020.
Production	Domestic dealerships and dismantlers	◆Establish processing schemes for difficult material to process, etc.	◇Improve recycling and proper treatment.	Promote and demonstrate high-level treatment and recycling.	Demonstrated treatment and recycling and established higher level treatment scheme.	Continue to promote high-level treatment and recycling, and demonstration experiment.
	Production facilities	◆Continue the appropriate disposal of waste and reducing waste generation.	◇Appropriately manage waste, and continue the waste reduction maintenance/management by improving yield and packaging.	Continue to reduce waste generation by thorough sorting and by charging cost.	Waste generation was reduced to 92% of the target value for FYE2019.	Appropriately manage waste and continue to maintain and manage waste reduction by improving yield.
		◆Continue zero landfill (zero landfill waste either directly or indirectly) at both domestic and overseas production facilities.	◇Continue zero landfill at both domestic and overseas production facilities.	Continue zero landfill at both domestic and overseas production facilities.	Achieved zero landfill at both domestic and overseas production facilities.	Continue zero landfill at both domestic and overseas production facilities.
		◆Manage volume of water used at both domestic and overseas production facilities.	◇Manage volume of water used at production facilities across Group companies in and outside Japan.	Properly manage volume of water use at production facilities in and outside Japan.	Properly managed volume of water used at production facilities across Group companies both domestic and overseas.	Properly manage volume of water use at production facilities in and outside Japan.

The 6th Voluntary Plan for the Environment (FYE2018 to FYE2021)

[3] Pollution Prevention and Reduction of Hazardous Chemical Use

Field	Item	Up to FYE2021 Target/Initiative	FYE2019		FYE2020 Target/Initiative	
			Target	Results		
Products	Reduction in emissions	<ul style="list-style-type: none"> Promote the introduction of low-emission vehicles to improve [3] Pollution Prevention and Reduction of Hazardous Chemical Use air quality. 	<ul style="list-style-type: none"> Japan: Increase the number of low emission standard certified models by WLTP (produced by Subaru). Overseas: Promote the introduction of low-emission vehicles to improve air quality in each country and region. 	To continue expanding destinations of vehicles with gasoline particulate filters (GPFs) that curb fine particulate matter.	Completed development of vehicles with gasoline particulate filters (GPFs) for mass production for the European market and began development of such vehicles for mass production for the Chinese market.	<ul style="list-style-type: none"> Bring vehicles with gasoline particulate filters (GPFs), which curb emission of fine particulate matter, to market. Undertake advanced development aimed at expanding the rollout of SULEV-compliant vehicles in North America.
	Reduction in the use of environmentally hazardous substances	<ul style="list-style-type: none"> Promote the management and reduction in the use of environmentally hazardous substances. 	<ul style="list-style-type: none"> Improve management of chemical substances contained in products. Promote switching to substances with lower environmental impact 	<ul style="list-style-type: none"> Strengthen management of chemical substances using IMDS. Promote switching to substances with lower environmental impact. 	<ul style="list-style-type: none"> Built an IMDS system to facilitate the management of substances in all parts and put it into operation. Completed the switchover of washer fluid to ethanol-based products for the European market. <p>Other efforts to reduce environmental impact include moving forward with the development of lead-free alternatives to the solder used in laminated glass ahead of the ban due to take effect in 2020 under the ELV Directive.</p>	<ul style="list-style-type: none"> Chemical substance management Continue to enhance chemical substance management using IMDS. Promote alternatives to Substances of Concern Promote alternatives in line with policies on alternatives to phthalates and other regulated substances.
Production	Automobiles	<ul style="list-style-type: none"> Further reduce per unit of VOC emissions (g/m²) at production lines. 	<ul style="list-style-type: none"> Reduce per unit of VOC emissions. 	Set the per unit of emission target lower than that of FYE2018 and continue to make efforts to reduce environmental burden.	Per unit VOC emissions were curbed at about 96% of the FYE2019 target (a reduction of about 5% from the FYE2018 target).	Set the per unit of emission target lower than that of FYE2019, and continue to make efforts to reduce environmental burden.
		<ul style="list-style-type: none"> Continue to reduce emissions of PRTR substances into the environment. 	<ul style="list-style-type: none"> Identify and manage the chemical substances regulated by the PRTR law and promote further reduction in the use of these substances. 	Continue aggregation management of chemical substances regulated by the PRTR law.	Continued aggregation management of chemical substances regulated by the PRTR law, and reported the FYE2019 results.	Continue aggregation management and control of chemical substances regulated by the PRTR law.
	Management and emission reduction of environmentally hazardous substances at production facilities	<ul style="list-style-type: none"> Promote activities targeting the elimination of occurrences of hazardous substances leaking off site, complaints, and exceeding legal standards. 	<ul style="list-style-type: none"> Promote activities targeting the zero occurrence of environmental accidents, complaints, and cases exceeding legal standards through environmental risk reduction activities. Set stricter voluntary standards and conduct small-risk elimination activities. 	Continue efforts to reduce environmental risk (enlightenment, education, and coexistence with community).	As a result of environmental risk reduction activities, there were no off-site leakages, six on-site leakages, no instances of exceeding legal standards, two complaints about odor, five complaints about noise, and no complaints about vibration.	Continue to implement environmental risk reduction activities (enlightenment, education, and coexistence with community), and aim to achieve the FYE2020 target of reducing instances of the issues listed on the left to zero in all cases.

The 6th Voluntary Plan for the Environment (FYE2018 to FYE2021)

[4] Environmental Management

Field	Item	Up to FYE2021 Target/Initiative	FYE2019		FYE2020 Target/Initiative		
			Target	Results			
Procurement	Green procurement activities	<ul style="list-style-type: none"> Request both domestic and overseas suppliers to establish, maintain, and strengthen environmental management systems (EMS). 	<ul style="list-style-type: none"> Continue to establish and maintain the EMS including new suppliers. 	Continue to maintain the structure to establish EMS including new suppliers.	Continued to maintain the structure to establish EMS including new suppliers.	Continue to maintain the structure to establish EMS including new suppliers.	
		<ul style="list-style-type: none"> Reduce environmentally hazardous substances. 	<ul style="list-style-type: none"> Encourage suppliers to further improve management of and reduce the use of environmentally hazardous substances contained in parts and materials. 	Continue to investigate content of environmentally hazardous substances by using alternatives.	Sort out the latest edition of the Technical Standard (TS) and requests to participate in a survey concerning the International Material Data System (IMDS) to suppliers.	Continue to investigate content of environmentally hazardous substances by using alternatives.	
		<ul style="list-style-type: none"> Apply the supplier CSR guidelines and green procurement guidelines. 	<ul style="list-style-type: none"> Revise the guidelines according to changes in the social environment and corporate policy, and request suppliers to deploy, disseminate, and comply with the guidelines. 	Publish the revised guidelines and deploy and disseminate them to suppliers.	Published the revised guidelines and deployed and disseminated them to suppliers.	As necessary, publish the revised guidelines, and deploy and disseminate them to suppliers.	
Distribution/Sales	Promotion of environmental conservation activities among dealerships	<ul style="list-style-type: none"> Provide support to Subaru dealerships' environmental activities. 	<ul style="list-style-type: none"> Support all dealerships maintain "Eco Action 21" certification. Support voluntary implementation of environmental measures, such as energy conservation and waste reduction measures, under "Eco Action 21". 	<ul style="list-style-type: none"> Continue to support voluntary environmental risk reduction activities of each company. Integrate environmental related reports from dealerships to D-SPES system so that work efficiency is improved and compliance with laws and regulations is strengthened. 	<ul style="list-style-type: none"> All dealerships subject to renewal examination appeared to be able to maintain EA21 certification. Set to work on the Inspection for Transition to the 2017 Version of the EA21 Guidelines. Continued to support the use of D-SPES. Integrated responses to the revised Fluorocarbons Act (management of periodic inspections, leakage reporting, etc.) into the system and promoted greater operational efficiency. 	<ul style="list-style-type: none"> Provide individual companies with education and other support to ensure that each dealership can undergo the Inspection for Transition to the 2017 Version of the EA21 Guidelines without fail. 	
		<ul style="list-style-type: none"> Promote environmental conservation activities, including biodiversity conservation, in cooperation with local communities Conduct cleanup and greening activities, including biodiversity conservation efforts, near factories. Support activities of and work with environmental organizations. 	<ul style="list-style-type: none"> Continue to provide factory tours, hold on-site events, and carry out environmental exchange classes. Continue cleanup activities around factories and offices. Promote greening activities taking biodiversity into consideration. 	<ul style="list-style-type: none"> Continue to provide school visits to lecture on the environment and invite visitors to the Guma Visitor Center. Continue to carry out community cleaning activities. Concrete forest conservation projects to be carried out in Guma, Itsumiya and BiFuka, where Subaru has close ties with communities. 	<ul style="list-style-type: none"> Continued to provide school visits (35 times) and invited visitors to the Guma Visitor Center. Continued to carry out community cleaning activities in communities that have close ties with each of our business sites. Based on the agreement made with related municipalities on environmental conservation activities, launched initiatives. 	<ul style="list-style-type: none"> Continue to provide school visits to lecture on the environment and invite visitors to the Guma Visitor Center. Continue to carry out community cleaning activities. Continue to carry out concrete forest conservation projects in Guma, Itsumiya and BiFuka, where we have close ties with communities. 	
Disclosure of environmental information	<ul style="list-style-type: none"> Disclose environmental information through regular publication of environmental reports and other documents in a timely manner. 	<ul style="list-style-type: none"> Provide environmental report. Provide updated information on the website. 	<ul style="list-style-type: none"> Write to bring to improve the quality of information, publicize CSR Report of the next fiscal year. Promote active answering to third-party survey that contributes to ESG investment promotion. Carry out timely information provision by press releases, etc. 	<ul style="list-style-type: none"> Published the Japanese edition of the 2019 CSR Report in October 2019 and the English edition in December 2019. Responded to GRI, DJSI, Nikkei Environmental Management Survey, etc., and cooperated with the Ministry of the Environment's Environmental Reporting Platform Development Pilot Project. Carried out timely information disclosure by means of press releases, etc. 	<ul style="list-style-type: none"> Aim to publish the 2019 CSR Report in August 2019. Respond with integrity to surveys conducted by external organizations, while also taking cost-effectiveness into account. Carry out timely information disclosure by means of press releases, etc. 	<ul style="list-style-type: none"> Aim to publish the 2019 CSR Report in August 2019. Respond with integrity to surveys conducted by external organizations, while also taking cost-effectiveness into account. Carry out timely information disclosure by means of press releases, etc. 	
		<ul style="list-style-type: none"> Improve and enhance the contents of Environmental Report (to be in compliance with Environmental Reporting Guidelines, and inclusion of Group companies in the scope of reporting) 	<ul style="list-style-type: none"> Improve compliance of Environmental Report to Environmental Reporting Guidelines of the Ministry of the Environment, and improve the contents of environmental reporting. 	Collect information regarding the new Environmental Reporting Guidelines (Ministry of the Environment) and the GRI Standards, and feed the information gathered back to our company's reporting contents.	A guideline used for the 2019 CSR Report is transitioned to the GRI Standards from the GRI G4.	Using the GRI Standards and the Environmental Reporting Guidelines as a reference, transition from using the 2012 edition of the Environmental Reporting Guidelines to the 2018 edition.	
		<ul style="list-style-type: none"> Participate in environmental events and publicize corporate environmental activities. 	<ul style="list-style-type: none"> Participate in Eco-Products Exhibitions, etc. to widely publicize the company's eco-friendly activities. 	Plan to participate in the EcoPro 2018.	Participated in the EcoPro 2018, and disseminated our environmental initiatives among a wider audience.	Consider methods of gaining understanding of Subaru's environmental initiatives among a wider audience and put them into practice.	
Promotion of environmental education and awareness activities	<ul style="list-style-type: none"> Continue environmental and social education under the in-house education system Continue employee education through in-house magazines and other media. Continue to hold lectures and workplace meetings to present improvement examples. 	<ul style="list-style-type: none"> Hold more environmental education, enlightenment and promotion events. 	Promote education, enlightenment, presentation regarding environment-related law and regulations, in particular.	<ul style="list-style-type: none"> Updated environmental education texts and delivered e-learning courses, etc. Provided training on the Waste Management and Public Cleansing Act for practitioners. 	<ul style="list-style-type: none"> Continue to use e-learning and other methods to deliver environmental education and aim to further enhance the education provided. Implement initiatives aimed at increasing understanding of the Waste Management and Public Cleansing Act. 		
		<ul style="list-style-type: none"> Establishment of an Environmental Management System 	<ul style="list-style-type: none"> Each and every Subaru site to maintain ISO14001 integrated certification. Make continuous improvements to the Environmental Management System. Increase cooperation with subsidiaries and suppliers, and maintain and improve the establishment of consolidated environmental management system. 	<ul style="list-style-type: none"> Promote sharing the internal auditing and environmental education systems for more practical EMS activities. Promote acquiring the ISO 14001 integrated certification, including three subsidiaries (Subaru Logistics Co., Ltd., Kiyu Industrial Co., Ltd., and Fuji Machinery Co., Ltd.), in order to further improve the system. Deploy the EA21 value chain to subsidiaries and suppliers. 	<ul style="list-style-type: none"> Maintained and expanded environmental management system from the perspective of Subaru Group. Expand the number of companies with EA21 value chain certification. 	<ul style="list-style-type: none"> Maintained ISO 14001 group certification. Expansion was delayed as timing overlapped with the switchover to the FYE2018 edition of EA21. 	<ul style="list-style-type: none"> Maintain eligibility for certification. Progressively revise methods of deploying the EA21 Value Chain.
		<ul style="list-style-type: none"> Each and every Subaru site to maintain ISO14001 integrated certification. 	<ul style="list-style-type: none"> Hold more environmental education, enlightenment and promotion events. 	Promote education, enlightenment, presentation regarding environment-related law and regulations, in particular.	<ul style="list-style-type: none"> Updated environmental education texts and delivered e-learning courses, etc. Provided training on the Waste Management and Public Cleansing Act for practitioners. 	<ul style="list-style-type: none"> Continue to use e-learning and other methods to deliver environmental education and aim to further enhance the education provided. Implement initiatives aimed at increasing understanding of the Waste Management and Public Cleansing Act. 	

*Eco Action 21 (EA21): An environmental management system designed by the Ministry of the

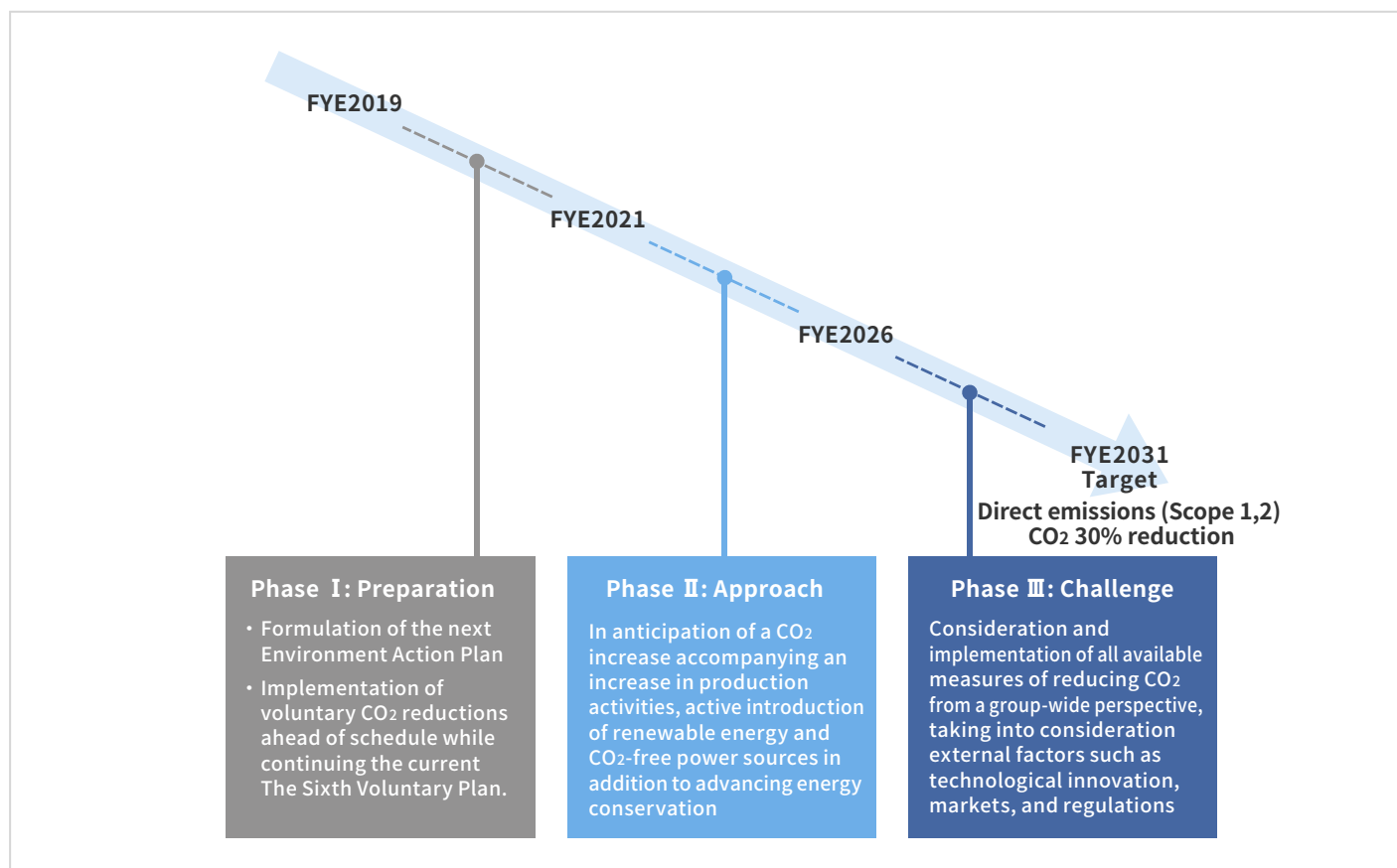
2. Formulation of the Environment Action Plan

Among the various environmental problems currently facing humankind, climate change in particular will have significant impacts on societies and economies, so initiatives to address this problem from a long-term perspective are a pressing issue. Subaru has positioned efforts to address climate change as a priority and has set a target of reducing the Subaru Group's direct CO₂ emissions (Scope 1 and 2) to 30% below FYE2017 levels (on a total emissions volume basis) by FYE2031.

As a growing company, achieving a 30% cut in CO₂ on a total emissions volume basis will certainly not be easy for Subaru. However, Subaru believes that aiming for common standards shared by society is vital, to ensure that the Paris Agreement's goal of keeping the increase in global average temperature to well below 2°C above pre-industrial levels is met.

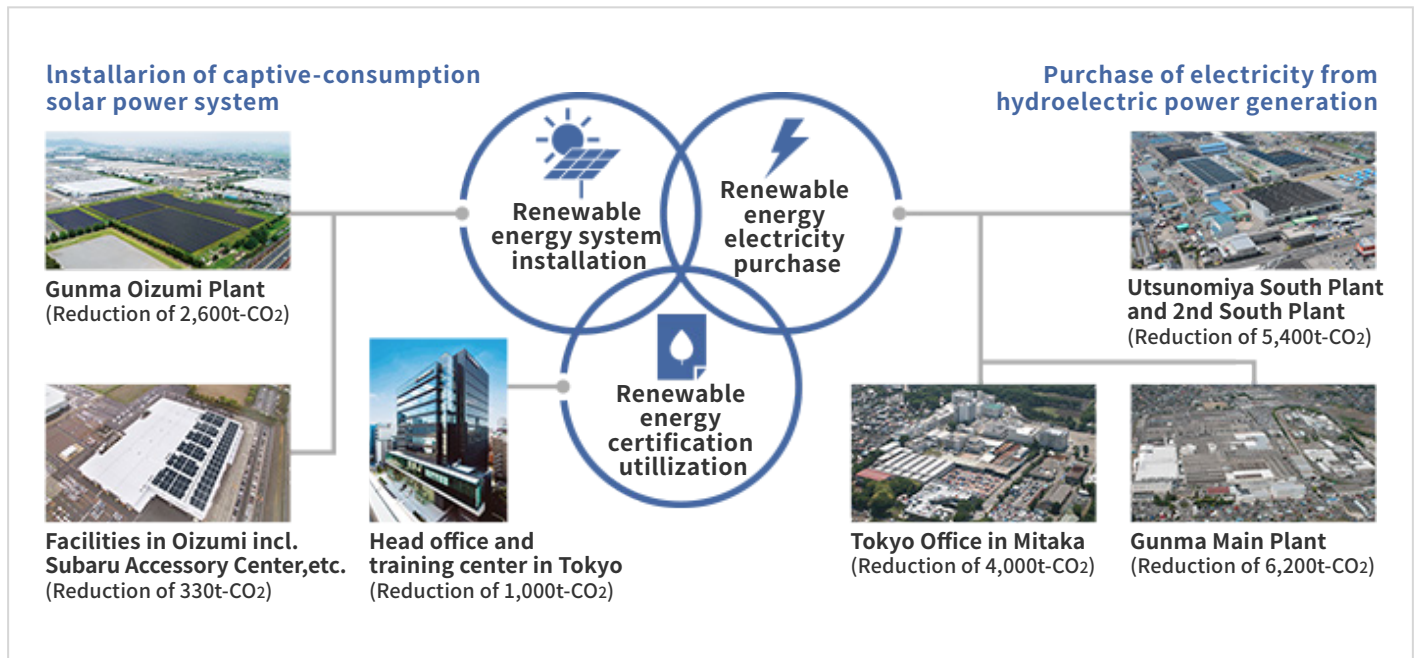
Accordingly, Subaru has drawn up a roadmap for the period up to FYE2031 and is examining proposals for initiatives based on this roadmap.

Roadmap towards FYE2031



Regarding initiatives to tackle climate change as a matter of urgency, Subaru, based on the above Roadmap Phase 1, is implementing ambitious CO₂ reductions ahead of schedule. Our aim is to reduce the Subaru Group's direct CO₂ emissions by approximately 20,000t-CO₂/year, equivalent to around 3% of annual emissions, by FYE2021, and then to further reduce the direct CO₂ emissions to 30% below FYE2017 levels by FYE2031.

Subaru's Main Initiatives Aimed at a Reduction of 20,000 t-CO₂



Related information

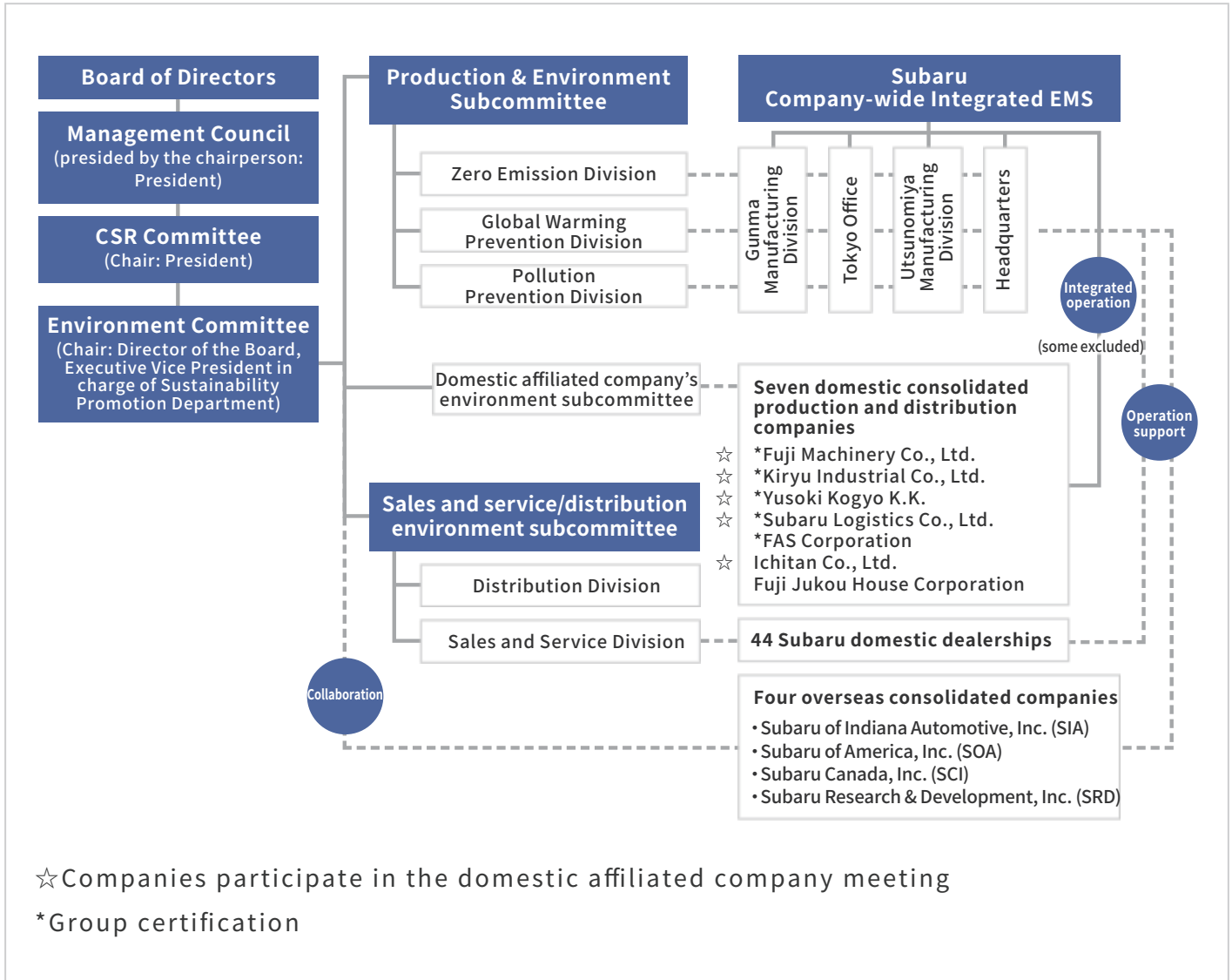
> [KPIs: Where We Want to Go](#)

Organization

Subaru established an environmental management structure across the organization with two pillars of the company-wide Environmental Management System (EMS) and the Environment Committee in order to reach the goals of our Environmental Policy and Voluntary Plan for the Environment.

Serving as the head of the company-wide EMS and the chairperson of the Environment Committee, the director responsible for environmental issues conducts reviews twice a year, and what has been discussed at the Environment Committee is reported to the CSR Committee. Also the director reports important problems to the Management council and the Board of Directors. The director proactively promotes environmental conservation activities, comprehensively managing the progress and the direction of our efforts.

Subaru Group Environmental Management Organization



Status of Establishing the Environmental Management System

Subaru, actively engaging in establishing an environmental management system for the entire Subaru Group, has established environmental management systems at offices, business partners, foreign and domestic consolidated manufacturing companies, and foreign and domestic Subaru dealerships, and has acquired third-party certification.

Subaru, the seven domestic consolidated production and distribution companies (among them, five companies with * obtained group certification) and three North American consolidated manufacturing and sales companies have obtained ISO14001 certification.

In March 2011, all of our 44 domestic dealership companies and their 700 stores obtained Eco Action 21 (EA21) *¹ certification, and this was the first in Japan among all dealerships of automobile manufacturers. And we introduced the Eco Action 21 Value Chain Model Business promoted by the Ministry of the Environment of Japan. In addition, in May 2012, Subaru of Indiana Automotive, Inc. (SIA), the US production site for Subaru, became the first automobile production plant in the US to obtain ISO50001*² certification, which is the international standard for energy management systems (EnMS), and continues to actively promote their activities.

Furthermore, Subaru Logistics Co., Ltd. obtained ISO39001*³ certification, the international standard for road traffic safety management systems, in August 2015, and ISO9001*⁴, the quality management systems standard, in February 2016.

In addition to these achievements, Subaru Group, through global business activities, will continue to promote green procurement in the supply chain, a company-wide environmental management system establishment, and green procurement to reduce environmentally hazardous substances.

*1 Environmental conservation activity promotion program for small- and medium-size enterprises formulated by the Ministry of the Environment, Japan. It is an environmental management system that addresses three areas: environmental management systems, environmental efforts, and environmental reporting, based on the guidelines.

*2 An international standard applicable to all organizations that specifies the requirements for establishing an energy use mechanism that will enable business operators to set policies, objectives, and targets; formulate plans; decide on procedures; and systematically implement activities.

*3 An international standard for road traffic safety management systems that requires organizations to appropriately manage accident risk sources and to effectively and efficiently reduce those risks, in order to reduce the number of people killed or seriously injured in road traffic accidents.

*4 A quality management standard introduced by the International Organization for Standardization (ISO) as an international unified standard in 1987. ISO 9001 (Standard for Quality Management Systems) is the element of the ISO 9000 series and is a certification registration system. It is based on the concept that putting together a quality management system to systematically engage in quality management is essential to improve quality.

Status of Subaru Group's EMS/EnMS Establishment

Factories and Offices					Dealerships/Distributors	
Category	Subaru Corporation	Business Partners	Domestic Consolidated Production and Distribution Companies	Overseas Consolidated Production Company	Domestic Consolidated Dealerships	Overseas Consolidated Distributors
Divisions	Gunma plant Tokyo Office Utsunomiya Plant Handa Plant West Handa Plant Headquarters	Green procurement Raw material suppliers	*Fuji Machinery Co., Ltd. *Kiryu Industrial Co., Ltd. *Yusoki Kogyo K.K. *Subaru Logistics Co., Ltd. *FAS Corporation Ichitan Co., Ltd. Fuji Jukou House Corporation Total: 7	SIA	All Subaru dealerships Total: 44	SOA SCI Total: 2 distributors
Acquired EMS/EnMS	ISO14001	Either ISO 14001, Eco Action 21, or voluntary diagnosis	ISO14001	ISO14001 ISO50001	Eco Action 21	ISO14001

*: Group certification

Subaru and affiliated companies indicated by * check the status of each other's establishment of EMS by conducting reciprocal internal audits within the scope required for group certification of ISO 14001.

Introduction of Eco Action 21 Value Chain Model Business

Subaru was the first automobile manufacturer to acquire Eco Action 21 certification for all domestic dealerships and outlets in March 2011 and are promoting operation under these guidelines. In November 2016, this achievement was recognized and approved as the “First Value Chain Model Business” for further promotion of the certification by the Ministry of the Environment of Japan. We plan to develop and promote Eco Action 21 to the Group while receiving instruction and support from Institute for Promoting Sustainable Societies (IPSuS)*, an accreditation institute for eco action. We support our business partners’ Eco Action 21 certification registration in order for the value chain as a whole to promote the certification.



* Institute for Promoting Sustainable Societies (IPSuS): This organization studies, plans and implements new initiatives for building sustainable societies by integrating initiatives related to business, such as Eco Action 21, and initiatives related to products and services that make use of the supply chain.

Related information

› [Environmentally-conscious Procurement](#)

Scope 3 Calculation

Regarding greenhouse gas emissions, it is a demand of society for companies to calculate and disclose emissions of their entire supply chain. Subaru has participated in the Ministry of the Environment’s project of “Supply Chain Greenhouse Gas Emissions Accounting Support for an Environmental Reporting Platform Development,” and receives assistance from NTT Data Institute of Management Consulting, Inc. in Scope 3 calculations. We will continue to promote calculating and managing GHG emissions. For detailed performance of Scope 1*¹, Scope 2*², and Scope 3*³, please refer to the section on climate change.

*1 Direct emissions of greenhouse gases from a company’s own facilities.

*2 Indirect emissions of greenhouse gases from the use of purchased or acquired electricity, heat and/or steam supplied by another company.

*3 All indirect emissions other than Scope 1 and 2 emissions, including those arising from the procurement of raw materials, transport, product use, and the disposal process, as well as emissions arising from employee commuting, business travel, etc.

Related information

› [Climate Change](#)

Management of Chemical Substances (Operation of the IMDS)

Since the enforcement of the European Union's Registration, Evaluation and Authorization of Chemicals (REACH) regulation*1, End-of Life Vehicles (ELV) Directive*2, Chemical Substance Control Law of Japan*3, etc., various chemical substances have been regulated, and at the same time, the automobile industry has been required to disclose information and foster proper management regarding the use of chemical substances in automobiles.

Subaru is promoting strengthened supply chain management by using the IMDS*4 in order to identify the names and amounts of chemical substance used in every one of several tens of thousands of parts that are in automobiles.

Through this initiative, we are managing the restricted substances (lead, mercury, cadmium, hexavalent chromium, etc.) before use, promoting replacement of newly regulated substances with alternatives, and establishing a management system that can promptly disclose information regarding the usage of substances requiring management under EU REACH, etc. Furthermore, Subaru promotes reduction and management of environmentally hazardous substances in cooperation with entire supply chain.

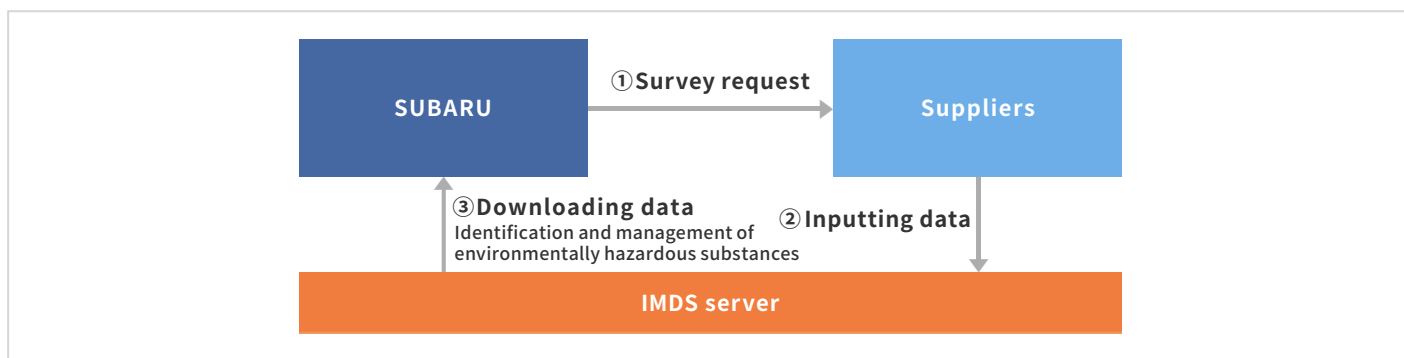
*1 European regulation on chemical substances, requiring all chemical substances to be subject to management or restriction measures commensurate to the risk that they pose to humans and the environment.

*2 The End-of Life Vehicles Directive: European Union (EU) directive brought into force in 2000 to reduce the environmental impact from the scrapping of used vehicles in the EU. It aims to prohibit the use of hazardous substances and promote a reduction in waste products by encouraging the reuse or recycling of used vehicles and their parts.

*3 The Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Chemical Substance Control Law) is a law whose purpose is to prevent environmental pollution caused by chemical substances that pose a risk of harming human health or interfering with the habitat or growth of flora and fauna.

*4 Chemical Substance Management

Environmentally Hazardous Substances Management System through IMDS



Related information

> [Prevention of pollution](#)

International Material Data System

> [International Material Data System \(IMDS\)](#) 

Environmental Risk Management

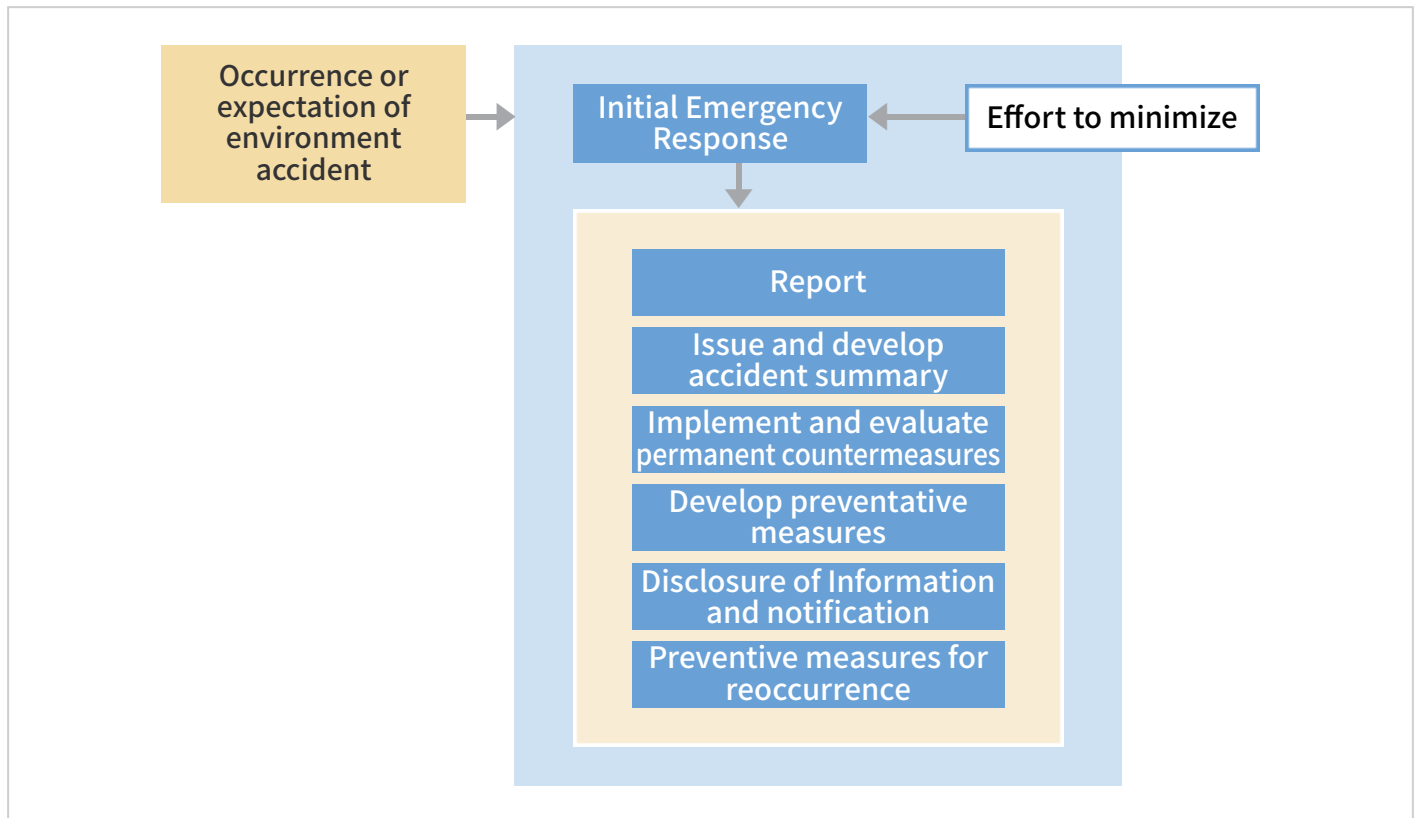
Subaru works to prevent and minimize environmental risk in our business activities (such as environmental accidents, pollution, or non-compliance with laws and regulations) by periodic sampling/identification and promoting management of environmental risks.

In addition, by standardizing the management process when an environmental risk is discovered and by carrying out training during normal times, we strive to quickly implement emergency measures and measures to prevent recurrence so that secondary risks due to confusion can be avoided.

Implementation of Environmental Audits

- (1) Regular audit in accordance with the ISO14001 Environmental Management System
- (2) On-site review at the contractors for the proper treatment of industrial wastes
- (3) Review of compliance status with environmental laws and regulations

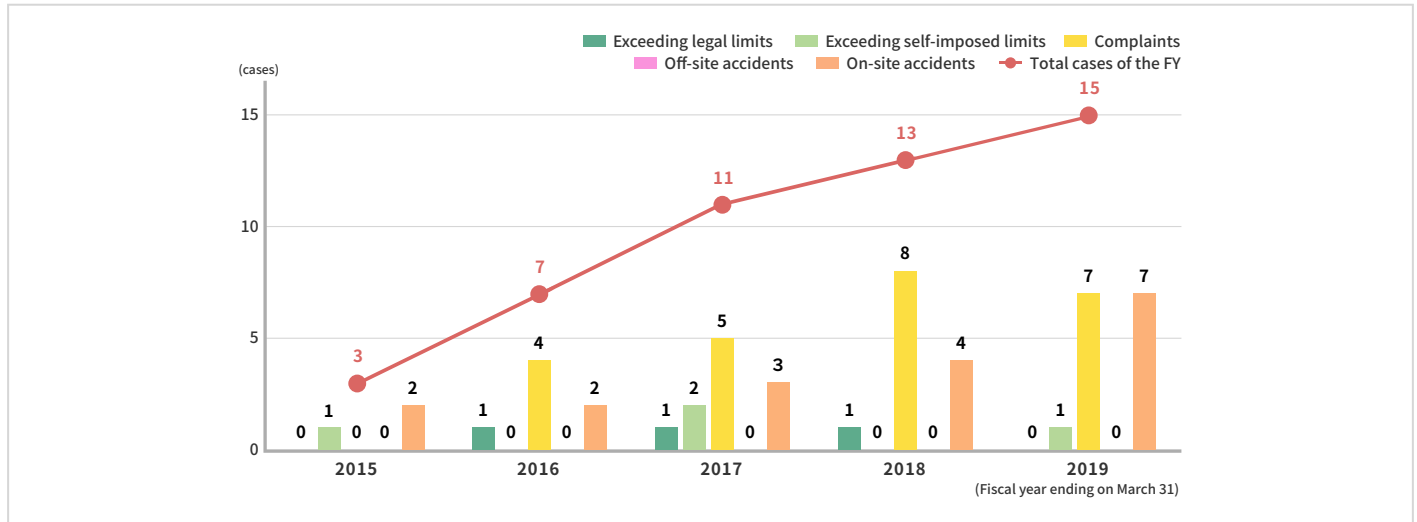
Process When An Environment-related Accident Occurs



Environmental Compliance

Status of Compliance with Environmental Laws and Regulations

Subaru strives to be in compliance with environmental laws and regulations, and to eliminate environment-related accidents and complaints. The graph below shows the results of the last five years.



Status of Compliance with Environmental Laws and Regulations in FYE2019

Subaru sets self-imposed voluntary standards, which are 20% stricter than those set by environmental laws. We are committed to achieving “zero non-compliance” with both the legal and voluntary standards. There was no case of exceeding legal standards in FYE2019.

Environmental Complaints Received in FYE2019

We are striving to achieve the goal of zero environmental complaints. However, we received seven complaints in FYE2019 and took corrective measures.

Name	Number of Cases
Gunma Plant	6 cases
Utsunomiya Plant	1 case

Status of Environmental Accident Occurrences in FYE2019

We are striving to achieve the goal of zero accidents, both on and off site. While there were no off-site accident, there were six incidents of on-site water flow accidents, and we took measures to prevent recurrence.

Name	Number of Cases
Gunma Plant	5 cases
Utsunomiya Plant	1 case

Environmental Education

Subaru regards initiatives for environmental issues as one of social responsibilities as a corporation, and provides employees at all ranks and of all tasks with a range of environmental education programs.

In April 2018, we implemented “New Employee Environmental Education” for the 566 new employees. Our personnel in charge of environment gave lectures on global environmental issues and Subaru’s environmental policy and conservation activities, including the importance of each employee’s participation in these initiatives using case studies.

We also held the ISO14001 New Internal Auditors Training Seminar to enhance the internal auditing system for the ISO14001 environmental management system and to strengthen environmental conservation activities conducted at workplaces. In this seminar, external lecturers were invited for the two-day session, in which participants gained knowledge necessary as internal auditors.

We believe it is important for employees to be fully aware of environmental problems and environmental efficiency on a daily basis, and to exercise this awareness in business and environmental activities. To this end, we continue to promote environmental education and enlightenment for employees.

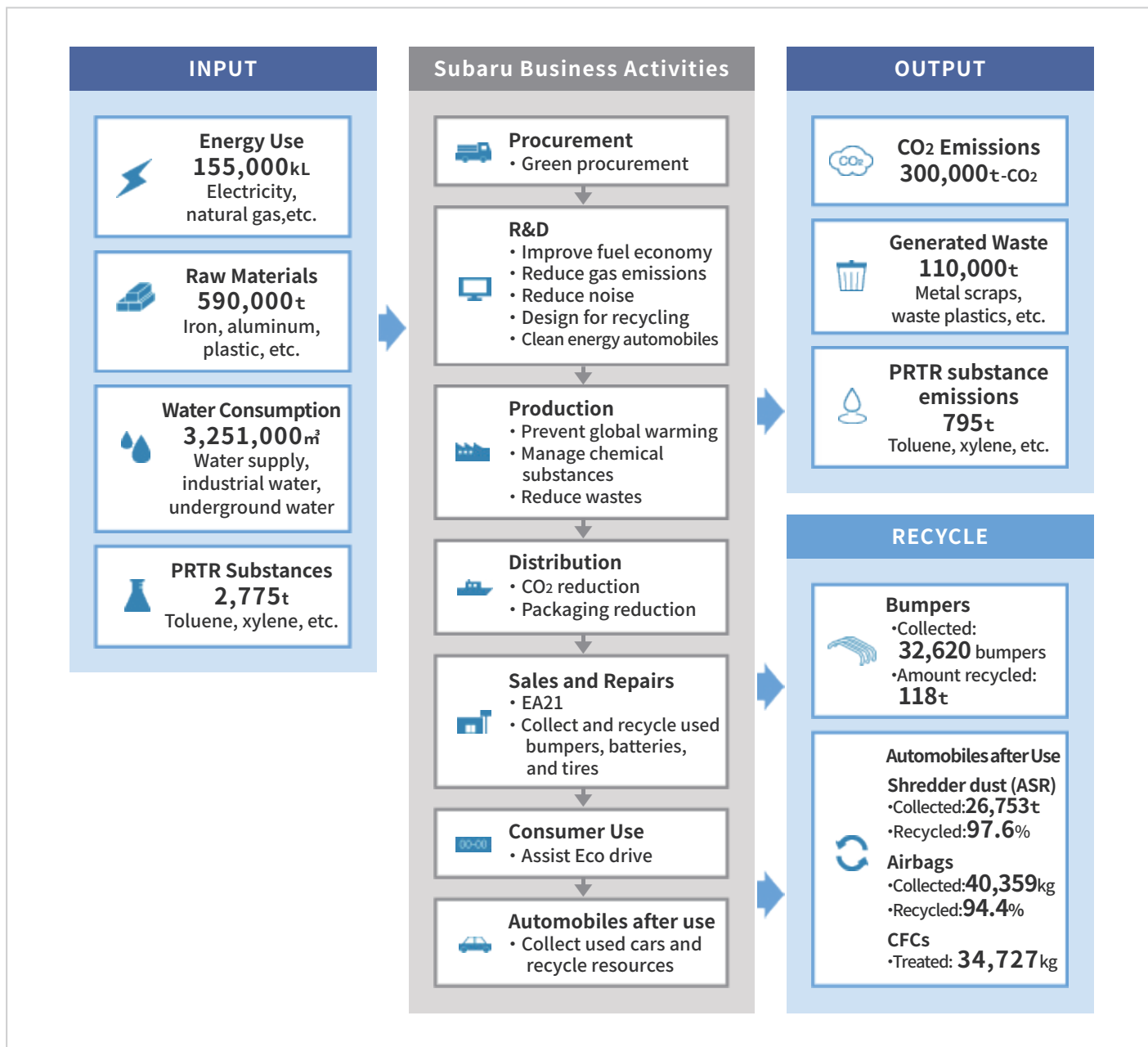


New Employee Environmental Education



ISO14001 New Internal Auditors Training Seminar

Overall Image of Subaru's Environmental Impact concerning Automobiles



Note: These are the main environmental impacts arising from our automobile manufacturing, sales, etc. In addition to this, we carry out LCA and Scope 1, 2, and 3 calculations.

Target: Tokyo Office, Gunma Plant

Energy use, CO₂ emissions: Calculated according to the Mandatory Greenhouse Gas Accounting and Reporting System based on the Act on the Promotion of Global Warming Countermeasures.

PRTR: Chemical substances listed under the PRTR Law of Japan

Environmental Accounting

Our Approach to Environmental Cost and Its Calculation Method

Subaru's independent guidelines had been established for our environmental conservation activity organizations, and environmental costs are calculated and summarized according to these guidelines (Group companies also use the same guidelines for calculations.).

FYE2019 Calculation Results

Subaru Group's environmental cost came to 31.7 billion yen, decreased 4.09 billion yen. The cost decrease was mainly due to a decrease in research and development costs (4.16 billion yen on a non-consolidated basis).

Looking at consolidated indicators of environmental management, environmental costs/revenues came to 1.03% increase.

Environmental Costs and Effects Calculation Results (FYE2019)

(Unit: million yen)

Item	Category	Subaru (non-consolidated)				Consolidated			
		FYE2018		FYE2019		FYE2018		FYE2019	
		Investment	Cost	Investment	Cost	Investment	Cost	Investment	Cost
(1) Cost in the business area	①Pollution prevention cost	452	316	189	433	452	325	189	466
	②Global environmental conservation cost	112	42	176	11	139	45	314	54
	③Resource recycling cost	0	618	0	659	4	889	4	809
(2) Upstream and downstream costs	Recycling related cost arising from changes in product materials	2,773	34,504	2,277	30,349	2,884	34,546	2,292	30,388
Grand total		3,337	35,480	2,642	31,452	3,479	35,804	2,799	31,717

Note: Due to rounding, the sum may not exactly match the corresponding total.

Economic Effect Calculation Results (FYE2019)

(Unit: million yen)

Item	Economic effect	
	Non-consolidated	Consolidated
Reduction in energy cost from energy conservation	18	22
Sales from recycling (sales of valuable items: metals, waste liquids, and cardboard boxes)	1,662	1,958
Reduced raw material cost due to recycling (packaging cost, etc.)	0	0

[Companies included in the consolidated calculation]

Six domestic affiliated companies: Yusoki Kogyo K.K., Fuji Machinery Co., Ltd., Ichitan Co., Ltd., Kiryu Industrial Co., Ltd., Subaru Logistics Co., Ltd., Industrial Products Co., Ltd.



Our Approach to Environmentally Friendly Automobiles

Subaru believes that automobile manufacturers have a corporate social responsibility to engage in ongoing efforts to reduce emissions of CO₂, which are said to be one of the factors contributing to global climate change. The Subaru Group aims not only to increase the environmental performance of our products, but also to protect the global environment throughout the automobile life cycle, from extracting raw materials, manufacturing, transport, and use, right through to disposal. In this way, the Subaru Group hopes to contribute to achieving the Paris Agreement’s goal of keeping the increase in temperature to well below 2°C, adopted in 2015.

Efforts to Reduce CO₂ Emissions in New Cars

Subaru believes that finding ways to improve fuel economy, which is a measure of our products’ environmental performance, is key to reducing emissions of CO₂, which is said to be one of the causes of global warming. While continuing to further improve the fuel economy of our gasoline engine vehicles, Subaru will strive to reduce CO₂ emissions by expanding our range of electric vehicles (EVs) and furthering the development of EVs with a view to the imposition of increasingly stringent fuel efficiency regulations in various countries.

The EV age has not yet got underway in earnest, so customer needs for conventional gasoline engine cars are still high; even hybrid vehicles use a combination of electric technology and a gasoline engine. Accordingly, the evolution of the internal combustion engine is essential to reducing CO₂ emissions. The Forester launched in July 2018 has been equipped with a newly developed 2.5 L direct injection engine, which provides increased fuel efficiency through the use of a more aerodynamic body, a higher compression ratio, and the active valve control system (AVCS) on the exhaust side. As a result, it achieved the class-top level of fuel economy performance in the small SUV class. The new Outback and Legacy due for launch in the US in fall 2019 is also equipped with this gasoline engine, with further improvements in fuel economy provided through its use in combination with an improved continuously variable transmission (CVT).



Newly developed 2.5 L direct injection engine

At the same time, Subaru is systematically enhancing our EV lineup. The Forester*¹ is equipped with the new e-Boxer*² power unit, which installed a horizontally opposed boxer engine with electric technology and which has already established its reputation in the Subaru XV. In December 2018, Subaru began accepting orders in the US for Subaru's Crosstrek Hybrid, original plug-in hybrid electric vehicle (HEV), which leverages Toyota Motor Corporation's knowledge of hybrid vehicle technology. Subaru will continue to expand and develop our range of hybrid vehicles into the 2020s by blending the electric technology that we have cultivated over the years with Subaru's unique qualities.



Crosstrek Hybrid

*1 Adopted in Advance grade.

*2 "e-BOXER" is a generic term used for "horizontally-opposed engine + electrification technology" which offers Subaru's characteristic driving enjoyment, as well as being environmentally friendly.

Subaru has also ensured that we will be ready when the EV age gets underway in earnest by taking advantage of our alliance with Toyota. In June 2019, Subaru announced an agreement with Toyota for the joint development of both a platform dedicated to battery electric vehicles (BEVs) for midsize and large passenger cars, and a C-segment-class BEV SUV model. By bringing together both companies' strengths—such as the electrification technology that Toyota is employing to bring together other companies that share its aspiration and the all-wheel drive (AWD) technology that Subaru has built up over the years—we are taking up the challenge of creating attractive products with appeal that only BEVs can offer, aiming for launch in the first half of the 2020s.



Image: BEV-dedicated platform Toyota and Subaru will jointly develop

Subaru intends to help protect the global environment through product development by developing and delivering products to meet societal needs and contribute to the environment through advanced technologies. Accordingly, with utility and customer preferences in mind, we will continue to promote the development of electric vehicles and expand our offering, gradually increasing the share of eco-friendly vehicles in our product line-up and enhancing availability in each market.

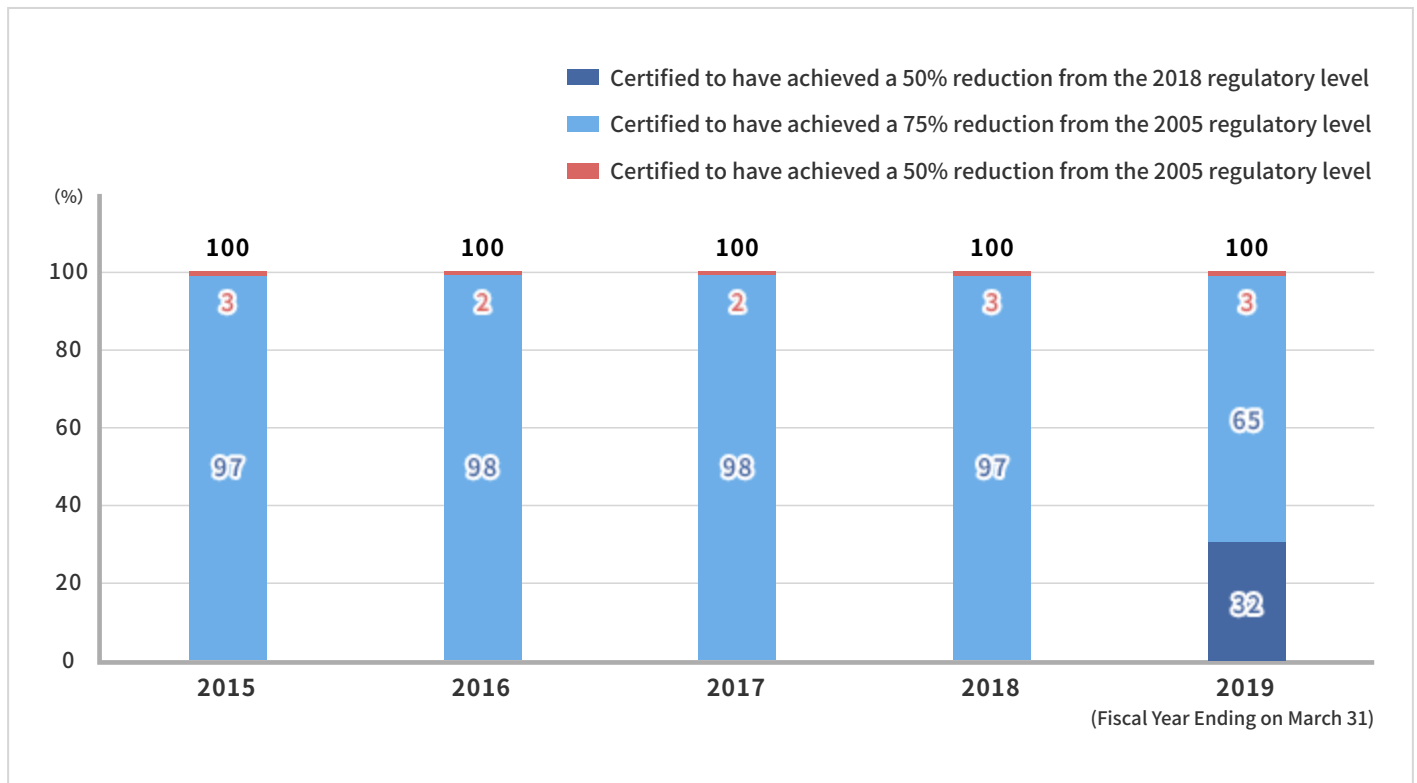
Clean Gas Emissions

Improvement and Popularization of Certified Low Emission Vehicles

In FYE2019, Subaru was certified by the Ministry of Land, Infrastructure, Transport and Tourism in Japan as having achieved a 50% reduction in exhaust gases from the 2018 regulatory level, having conformed to the new exhaust gas regulations, which incorporate the WLTP* into the exhaust gas testing procedure. We will continue to adapt to new exhaust gas regulations as they are introduced.

* Worldwide harmonized Light vehicles Test Procedure

Percentage of Low Emission Gasoline-powered Passenger Vehicles



Reducing Environmentally Hazardous Substances

Subaru is also actively working on reducing the environmentally hazardous substances in automobiles.

We promote achieving the Japan Automobile Manufacturers Association (JAMA) reduction targets for automobiles in development, further reducing lead and mercury and using alternatives to environmentally hazardous substances such as brominated flame retardants.

Reduction Targets of JAMAs Voluntary Action Program and Achievement Status

Substance	Target	Subaru's achievement
Lead	Implemented in Jan. 2006. Reduce the amount used per vehicle to less than 1/10 of 1996 levels.	All models achieved the target (Target achievement still continuing since Jan. 2006.)
Mercury	Use prohibited since Jan. 2005, with the following exceptions. (The following parts used for traffic safety are excluded.) (1) Liquid crystal panels for navigation, etc. (2) Combination meter (3) Discharge lamp (4) Interior lighting	All models achieved the target (Target achievement still continuing since Jan. 2005.)
Hexavalent Chromium	Use prohibited since Jan. 2008.	All models achieved the target (Target achievement still continuing since Jan. 2008.)
Cadmium	Use prohibited since Jan. 2007	All models achieved the target (Target achievement still continuing since Jan. 2007.)

Reducing VOCs in Vehicle Interiors

Subaru is reviewing the components and adhesive agents used in vehicle interiors in order to reduce the use of volatile organic compounds (VOCs), such as formaldehyde and toluene, which are said to cause nose and throat irritation.

In the LEGACY, LEVORG, IMPREZA, FORESTER, and SUBARU BRZ, we achieved the voluntary target by JAMA*¹ by reducing the concentration of the 13 substances defined by the Ministry of Health, Labor and Welfare to levels below the indoor concentration guideline values. We will continue our efforts to reduce the levels of VOCs*² to further make the environment in vehicle interiors comfortable.

- *1 Voluntary target by JAMA: To reduce cabin concentrations of the 13 substances designated by the Ministry of Health, Labor and Welfare to levels equivalent to or lower than the figures stipulated in the guidelines for new models (produced and sold in Japan in FYE2007 and after) under the Voluntary Approach in Reducing Cabin VOC Concentration Levels initiated by JAMA.
- *2 Volatile organic compounds (VOCs) are organic compounds that easily volatilize at ordinary temperature, such as formaldehyde and toluene, which are said to cause nose and throat irritation.

› [The Japan Automobile Manufacturers Association's voluntary approach to reducing volatile organic compounds \(VOCs\) in the cabins of passenger cars \(Japanese version only\)](#) □



Overview: Subaru's Basic Approach to Climate Change and Specific Initiatives to Tackle the Problem

Our Approach to Climate Change

As the earth, the sky and nature are Subaru's fields of business, we regard nature's bounty as essential.

Characterized by increasingly frequent and devastating abnormal weather events, climate change is a threat to all of humanity. Reducing anthropogenic greenhouse gases (referred to below as "CO₂" for the sake of convenience), which have been pinpointed as the cause of climate change, is a crucial task that will ensure the sustainable growth of both Subaru and society as a whole.

Based on this approach, the Subaru Group aims not only to increase the environmental performance of our products, but also to protect the global environment throughout the automobile life cycle, from extracting raw materials to manufacturing, transport, and use, right through to disposal. In this way, the Subaru Group will contribute to achieving the Paris Agreement's goal of keeping the increase in global average temperature to well below 2°C above pre-industrial levels, adopted in 2015.

Product Initiatives

Subaru believes that finding ways to improve fuel economy, which is a measure of our products' environmental performance, is key to reducing emissions of CO₂, which is said to be one of the causes of global warming. While continuing to further improve the fuel economy of our gasoline engine vehicles, Subaru will strive to reduce CO₂ emissions by expanding our range of electric vehicles (EVs) and furthering the development of EVs to take account of the increasingly stringent fuel efficiency regulations being imposed by various countries.

One example of improved fuel economy in our gasoline engine vehicles can be found in the Forester launched in July 2018, which achieved the class-top level of fuel economy performance in the small SUV class. The Forester has been equipped with a newly developed 2.5 L direct injection engine, which achieves increased fuel efficiency through the use of a more aerodynamic body, a higher compression ratio, and the active valve control system (AVCS) on the exhaust side. The All-New Outback and Legacy due for launch in the U.S. in fall 2019 is also equipped with same gasoline engine, with further improvements in fuel economy provided through its use in combination with an improved continuously variable transmission (CVT).

At the same time, the Forester*¹ launched to expand Subaru's lineup of EVs is equipped with the new e-Boxer*² power unit, which combines a horizontally opposed boxer engine with electric technology and which has already established its reputation in the Subaru XV. In December 2018, Subaru began accepting orders in the U.S. for our very own plug-in hybrid, the Crosstrek Hybrid, which leverages Toyota Motor Corporation's knowledge of hybrid vehicle technology. Subaru will continue to expand and develop our range of hybrid vehicles into the 2020s by blending the electric technology that we have cultivated over the years with Subaru's unique qualities.

*1 Adopted in Advance grade.

*2 "e-BOXER" is a generic term used for "horizontally-opposed engine + electrification technology" which offers Subaru's characteristic driving enjoyment, as well as being environmentally friendly.

To ensure that Subaru is ready when the age of EVs gets underway in earnest, we announced an agreement with Toyota, with which Subaru is in alliance, in June 2019 for the joint development of both a platform dedicated to battery electric vehicles (BEVs) for midsize and large passenger vehicles, and a C-segment-class BEV SUV model. By bringing together both companies' strengths—such as the electrification technology that Toyota is employing to bring together other companies that share its aspirations and the all-wheel drive (AWD) technology that Subaru has built up over the years—we are taking up the challenge of creating attractive products with appeal that only BEVs can offer, aiming for launch in the first half of the 2020s.

Initiatives at the Production Stage

Subaru's direct CO₂ emissions (Scope 1 & 2) are minimal in comparison to the total emissions, including Scope 3 emissions. However, in our Environmental Policy, Subaru has set ourselves the challenge of protecting the environment throughout the value chain, so we believe that taking the initiative in efforts to reduce direct CO₂ emissions will help to enhance activities by the Subaru Group as a whole.

Accordingly, we have set ourselves the target of reducing our direct CO₂ emissions (Scope 1 & 2) to 30% below FYE2017 levels on a total emissions volume basis by FYE2031. Furthermore, we will bring forward a part of our program to tackling climate change, which is an issue that brooks no delay. As such, we aim to achieve a reduction of approximately 20,000 t-CO₂—equivalent to around 3% of annual emissions, by FYE2021 through the introduction of renewable energy, among other measures.

Related information

› [KPIs: Where We Want to Go](#)

Community partnership: The Subaru Forest Project

Subaru is dedicating considerable energies to the conservation of forests, which are carbon sinks, in order to conserve local natural capital.

More specifically, we are working to conserve local forests by expanding the Subaru Forest Project, concluding agreements with local governments in Gunma Prefecture, Utsunomiya City in Tochigi Prefecture, and Bifuka-cho in Hokkaido, which are communities with strong links to Subaru's business.

Related information

[> Social Contribution > Subaru Forest Project](#)

Background: Key Risks and Opportunities Related to Climate Change

Approach to Risks and Opportunities

If no steps were taken to address climate change, Subaru's markets such as Japan and North America would be severely impacted and Subaru would be unable to continue doing business. Subaru has set a long-term target of keeping the temperature increase to "well below 2°C," as specified in the Paris Agreement, and has analyzed the short- to medium-term scenarios for achieving this goal, taking into account various factors.

In the case of our products, keeping in mind the fuel economy regulations set by the governments of countries where Subaru does business, we have examined a range of scenarios that comprehensively take into account the scenarios for electrification drawn up by the IEA and relevant governments, the progress of electrification in the automotive markets and the development of social infrastructure, technology that can withstand actual consumer use, the need to secure appropriate profits, and progress in achieving low-carbon/zero-carbon outcomes in upstream and downstream of product processes.

Looking at production, Subaru has set the FYE2031 target with reference to Japan's Nationally Determined Contribution (NDC); the stable supply and price of low-carbon energy in Japan and the U.S.; and progress in the energy mix promoted by governments, along with carbon pricing. While making energy conservation activities the cornerstone of our efforts, Subaru is currently formulating the Subaru Environmental Action Plan, which takes into account the installation of energy-saving equipment and the introduction of renewable energy.

[Main Risks Identified]*1

Relating to products

- (1) If Subaru does not abide by fuel economy regulations in Japan, the U.S., Europe, and China, we could incur additional costs or losses via negative incentives, such as fines or non-penal fines for violating laws and regulations, and costs associated with purchasing credits. Opportunities to sell Subaru products could also be limited if we do not meet certain fuel economy standards.
- (2) A sudden shift toward electrification at a stage when EVs do not yet meet customer needs could not only give rise to unnecessary development costs and a decline in customer satisfaction, thereby leading to unexpected losses and reduced sales opportunities, but also stall progress in electrifying Subaru products.
- (3) Ensuring profitability while pursuing low-carbon/zero-carbon outcomes at every stage, from procurement to use and disposal, is crucial in electrification. If Subaru's initiatives do not cover the whole of the value chain from upstream to downstream, we might not be able to achieve its objectives throughout the product life cycle.
- (4) Subaru regards electrification as a trend that will progress steadily from a medium- to long-term perspective and there is a possibility that EVs will suddenly permeate the market at some stage. Our product sales opportunities might be seriously impacted if we have not prepared appropriate technologies and products at that point.

Relating to production phase

- (1) If Subaru continues to use energy from fossil fuels, we could incur rising costs, due not only to geopolitical factors associated with petroleum and the like, but also to government carbon taxes and regulations on emission quotas.
- (2) Subaru believes that renewable energy will become mainstream in the medium to long term. However, cost and stable supply remain challenges at this stage, so cost-effectiveness must also be considered.

Relating to business management in general

- (1) Failure to implement adequate initiatives to achieve low-carbon/zero-carbon outcomes could harm Subaru's brand value and negatively impact the company's ability to hire personnel and sales. Capital costs could also rise, due to difficulty in securing financing from investors in the medium to long term.
- (2) Some say that the current Nationally Determined Contributions under the Paris Agreement are not enough to achieve the "well below 2°C" target, so if countries adopt more stringent targets, Subaru's business could be severely affected.

[Main Opportunities Identified]*1

- (1) If efforts to make products more environmentally friendly advance appropriately and global efforts to adapt to and mitigate climate change progress, Subaru will be able to maintain our main markets and receive even greater support for the safe and reliable products that are Subaru's strong point, even in the face of the extreme weather conditions that cannot, to some extent, be avoided in certain parts of the world. This has the potential to expand business opportunities, for example, creating new markets.
- (2) Meeting expectations around climate change could increase Subaru's brand value, thereby generating positive effects on the company's sales and ability to hire personnel. This could make it easier to secure financing from investors in the medium to long term, thereby reducing capital costs.*2
- (3) By transitioning to renewable energy, while still taking cost-effectiveness into account, Subaru could be freed from the risk of price fluctuations inherent in energy derived from fossil fuels, thereby preventing future cost increases.

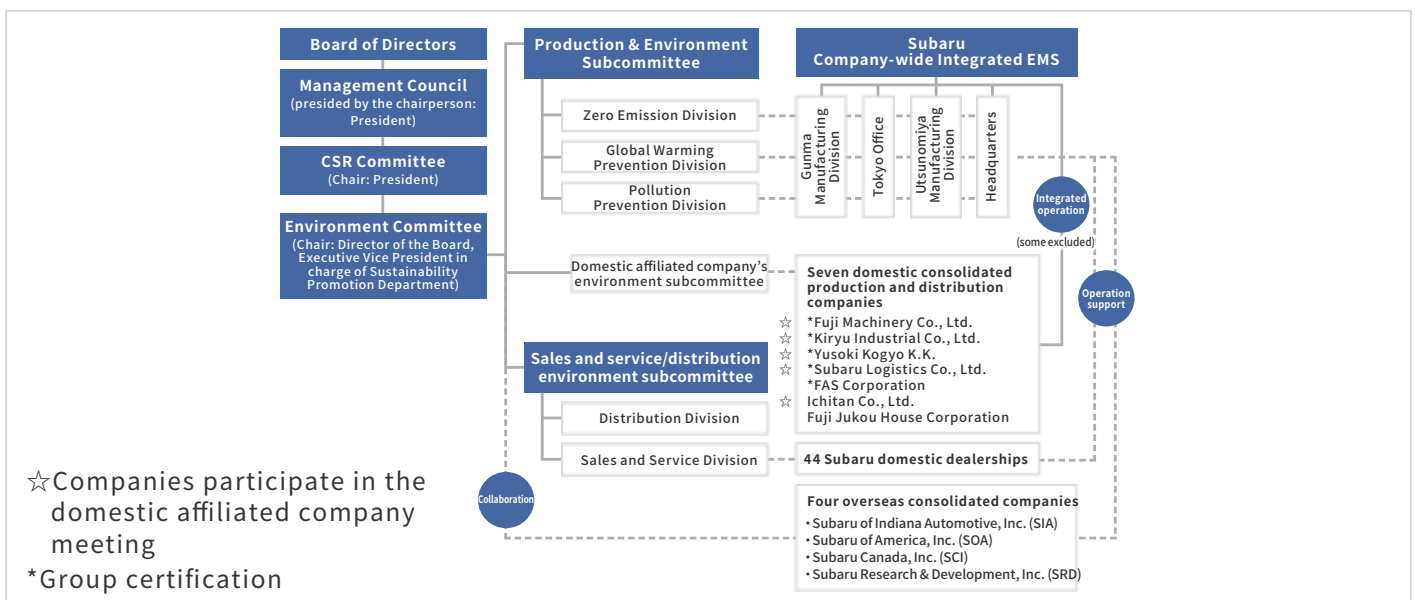
*1 The risks and opportunities described above are based on past facts and currently available information and may change significantly due to such factors as future economic trends and the business environment facing Subaru.

*2 The content represents an opportunity for SUBARU products to contribute to climate change adaptation and is not expecting degradation of climate change.
SUBARU regard initiatives to tackle the global challenge of climate change as one of the most important of these and will continue to contribute to the Paris Agreement's goal.

Systems: Governance Structure Relating to Climate Change

Subaru has established the Environment Committee to contribute to the sustainable growth of both society and the company, and to conserve the global environment. As well as discussing targets and measures in a broad and medium- to long-term perspectives that meet the environmental standards required by future societies, the committee evaluates progress in implementing and achieving these. The Environmental Committee is chaired by the Corporate Executive Vice President and Representative Director in charge of the Sustainability Promotion Department. Details of discussions by the Environment Committee are reported to the CSR Committee. There is also a system for raising/reporting matters to the Executive Management Board and Board of Directors if necessary.

Governance Structure Relating to Climate Change



KPIs: Where We Want to Go

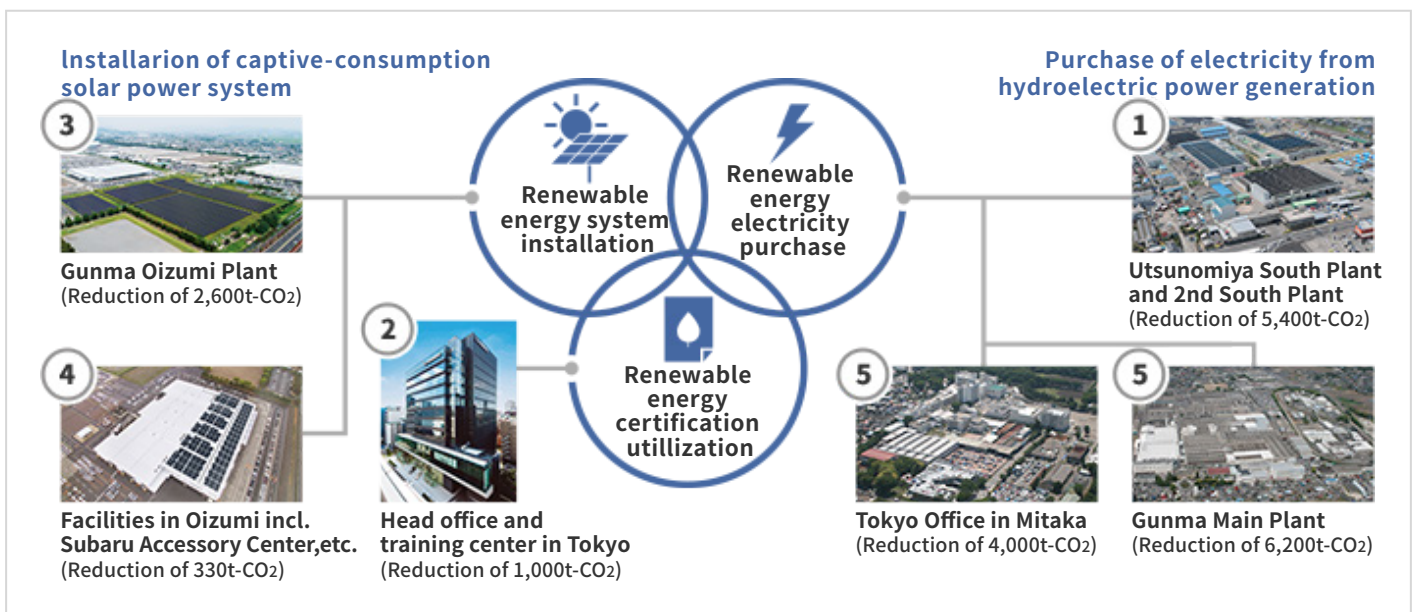
Subaru aims to reduce our direct CO₂ emissions (Scope 1 & 2) to 30% below FYE2017 levels on a total emissions volume basis by FYE2031.

As a first step toward this target, Subaru is moving forward with initiatives aimed at achieving a reduction of approximately 20,000 t-CO₂/year, by FYE2021, which will equate to around 3% of the annual emissions.

<Breakdown of efforts for CO₂ emissions reduction by FYE2021>

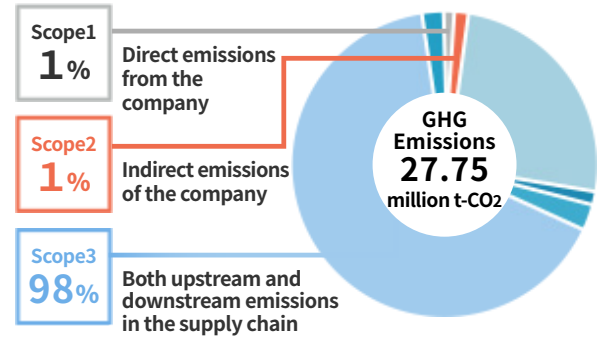
Starting year	Efforts		CO ₂ reduction
FYE 2019	1	Introduction of zero-CO ₂ -emission electricity at South Plant and 2nd South Plant of Aerospace Company's Utsunomiya manufacturing site	5,400t-CO ₂
	2	Utilization of the Green Power certification / Green Heat certification program at Head Office in Ebisu and the Subaru Training Center in Hachioji	1,000t-CO ₂
FYE 2020	3	Installation of captive-consumption solar power system at Gunma Oizumi Plant'	2,600t-CO ₂
	4	Installation of captive-consumption solar power system at Subaru Accessory Center and Kanta POI Center in Oizumi	330t-CO ₂
	5	Introduction of zero-CO ₂ -emission electricity at Main Plant in Gunma and Tokyo Office in Mitaka	10,200t-CO ₂

Efforts to achieve CO₂ emissions reduction of 20,000 t-CO₂



Performance

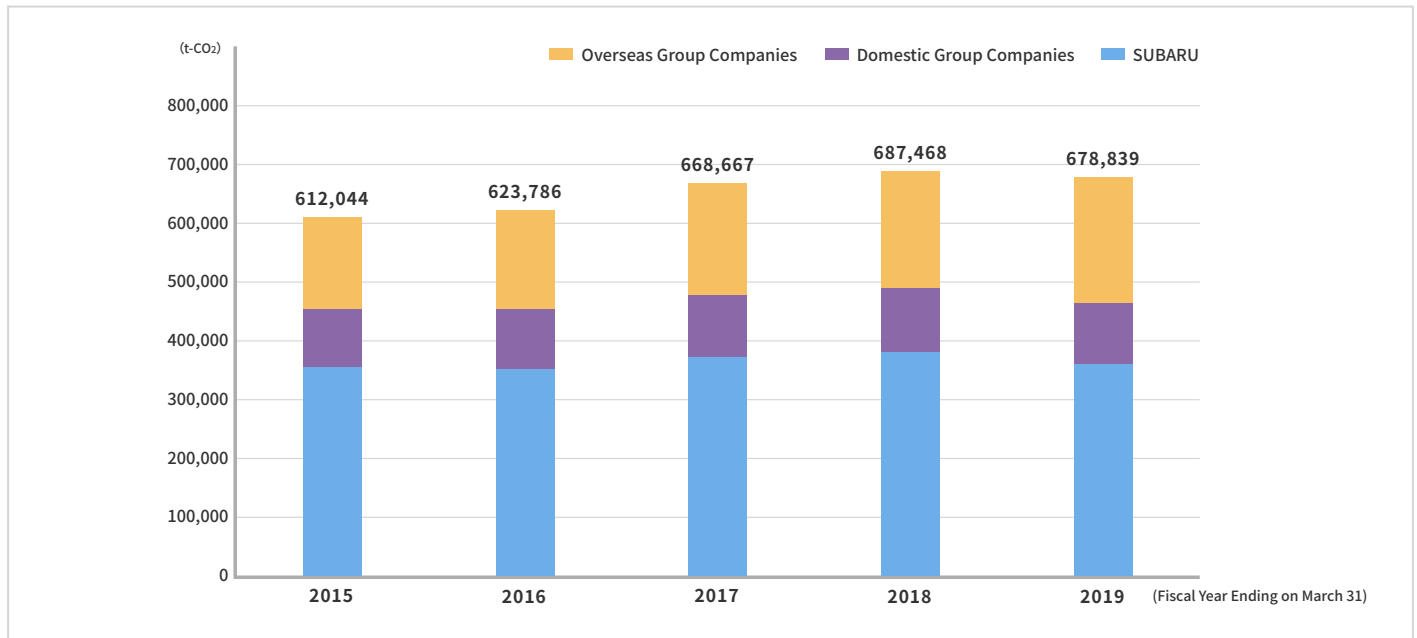
Greenhouse gas emissions in the supply chain for FYE2019 (Scope 1, 2 and 3) were 27.75 million t-CO₂. Subaru participated in the Ministry of the Environment “Support for Calculating Supply Chain Greenhouse Gas Emissions toward an Environmental Information Disclosure Infrastructure,” and received assistance from NTT Data Institute of Management Consulting, Inc. in Scope 3 calculations. We will continue to promote identifying and managing GHG emissions.



- > [CO₂ Emissions \(Scope 1, Scope 2\)](#)
- > [CO₂ Emissions \(Scope 3\)](#)

CO₂ Emissions (Scope 1, Scope 2)

CO₂ Emissions



Targeted companies Subaru Corporation
Domestic Group Companies: Yusoki Kogyo K.K., Fuji Machinery Co., Ltd., Ichitan Co., Ltd., Kiryu Industrial Co., Ltd., Subaru Logistics Co., Ltd., Industrial Products Co., Ltd., Subaru dealerships
Overseas Group Companies: Subaru of Indiana Automotive, Inc., Subaru of America, Inc., Subaru of Canada, Inc., Subaru Research & Development, Inc.

<Changes in emission factor>

This year, Subaru has changed the basis for CO₂ emissions calculations from "non-adjusted greenhouse gas emissions" to "adjusted greenhouse gas emissions", which are based on the Act on Promotion of Global Warming Countermeasures. Based on this change, we recalculated and revised the figures as far back as to FYE2015.

CO₂ Emissions (Scope 3)

Scope 3 * Breakdown

Division		Category	Greenhouse Gas Emissions (t-CO ₂)	Calculation Scope, etc.
Upstream	1	Purchased goods and services	7,418,726	Domestic and overseas
	2	Capital goods	372,211	Domestic and overseas
	3	Fuel and energy related activities not included in Scopes 1 or 2	78,815	Domestic and overseas
	4	Transportation and delivery (upstream)	1,162,964	Domestic and overseas
	5	Waste generated in operations	28,361	Domestic and overseas
	6	Business travel	4,446	Domestic and overseas
	7	Employee commuting	11,996	Domestic and overseas
	8	Leased assets (upstream)	-	N/A
Downstream	9	Transportation and delivery (downstream)	-	N/A
	10	Processing of sold products	4,027	Domestic and overseas
	11	Use of sold products	17,375,396	Domestic and overseas
	12	End-of-life treatment of sold products	556,250	Domestic and overseas
	13	Leased assets (downstream)	-	N/A
	14	Franchises	53,531	Domestic and overseas
	15	Investments	-	N/A

* In FYE2014, Subaru participated in “Support for Calculating Supply Chain Greenhouse Gas Emissions toward an Environmental Information Disclosure Infrastructure” project of the Ministry of the Environment, and calculated the figures using a method developed with the assistance of NTT Data Institute of Management Consulting, Inc.

Initiatives in Production

Based on the Act on the Rational Use of Energy, Subaru has set the mid-term targets (the 6th Voluntary Plan for the Environment) and has been making efforts to quantitatively reduce CO₂ by replacing equipment and devices such as lighting with energy-saving equipment.

Related information

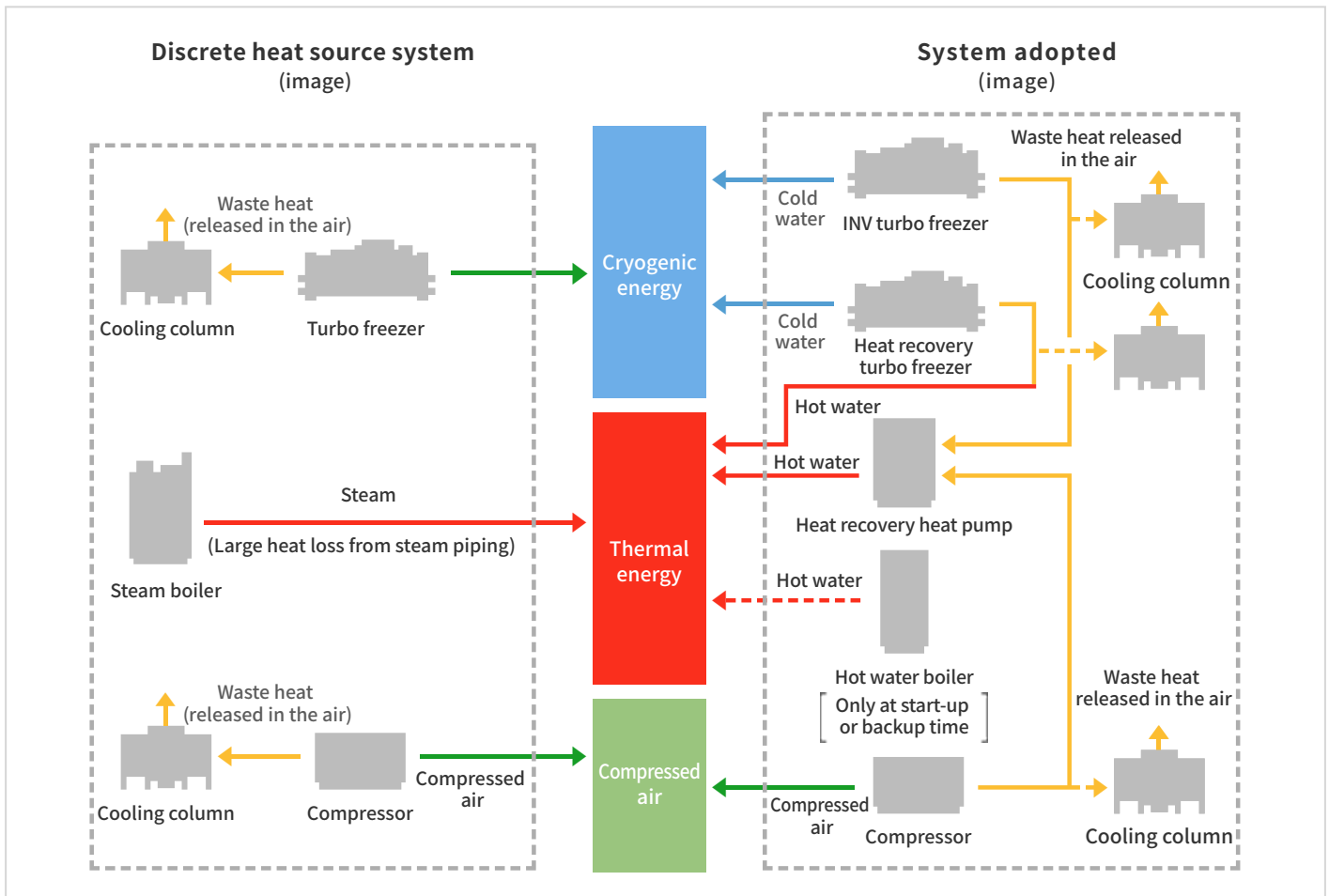
› [The 6th Voluntary Plan for the Environment](#)

Energy Conservation Initiatives

Installed latest energy-saving equipment

In the automobile painting process, it is necessary to repeat “warm up” and “cool down,” which requires much energy. Thus at the Yajima Plant of Gunma Plant, we introduced a highly efficient heat source system centered on the heat pump in 2018 and efficiently produce hot and cold heat compared to conventional technology (individual heat source system).

As a result, in FYE2019, Subaru cut CO₂ emissions by 2,221 t-CO₂ (39 percent down compared with the individual heat source systems).



Updated cogeneration facilities

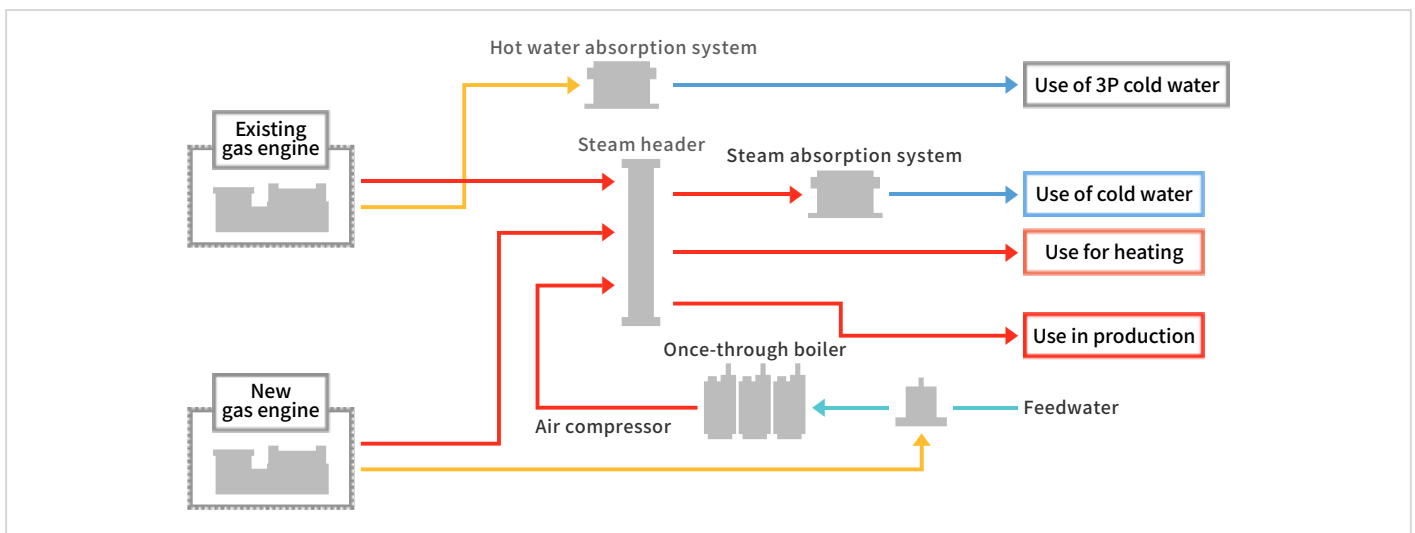
As 15 years had passed since the cogeneration facilities were first installed in Subaru's Gunma Plant, we updated these aging facilities.

(New facilities began operating in February 2019)

In updating the facilities, we chose a model with specifications that will make a greater contribution to energy conservation, taking into account the energy mix used at present.

Performance comparison of old and new facilities	(Old ⇒ New) *The old system used a gas turbine with a variable heat to electricity ratio, while the new system uses a gas engine
Power generation output	4,200-6,190kW ⇒ 9,730kW
Volume of steam generated	3.0-9.4t/h ⇒ 5.2t/h
Power generation + Steam efficiency	49.8-80.9% ⇒ 63.5%

In the three months after it began operating, the reduction in CO₂ emissions achieved by the new system was 1,532 t-CO₂ compared with the old system.



Subaru of Indiana Automotive, Inc. (overseas initiatives)

1. Replacement with the latest air compressor and dryer equipment cut electric power consumption by approximately 707,069 kWh.



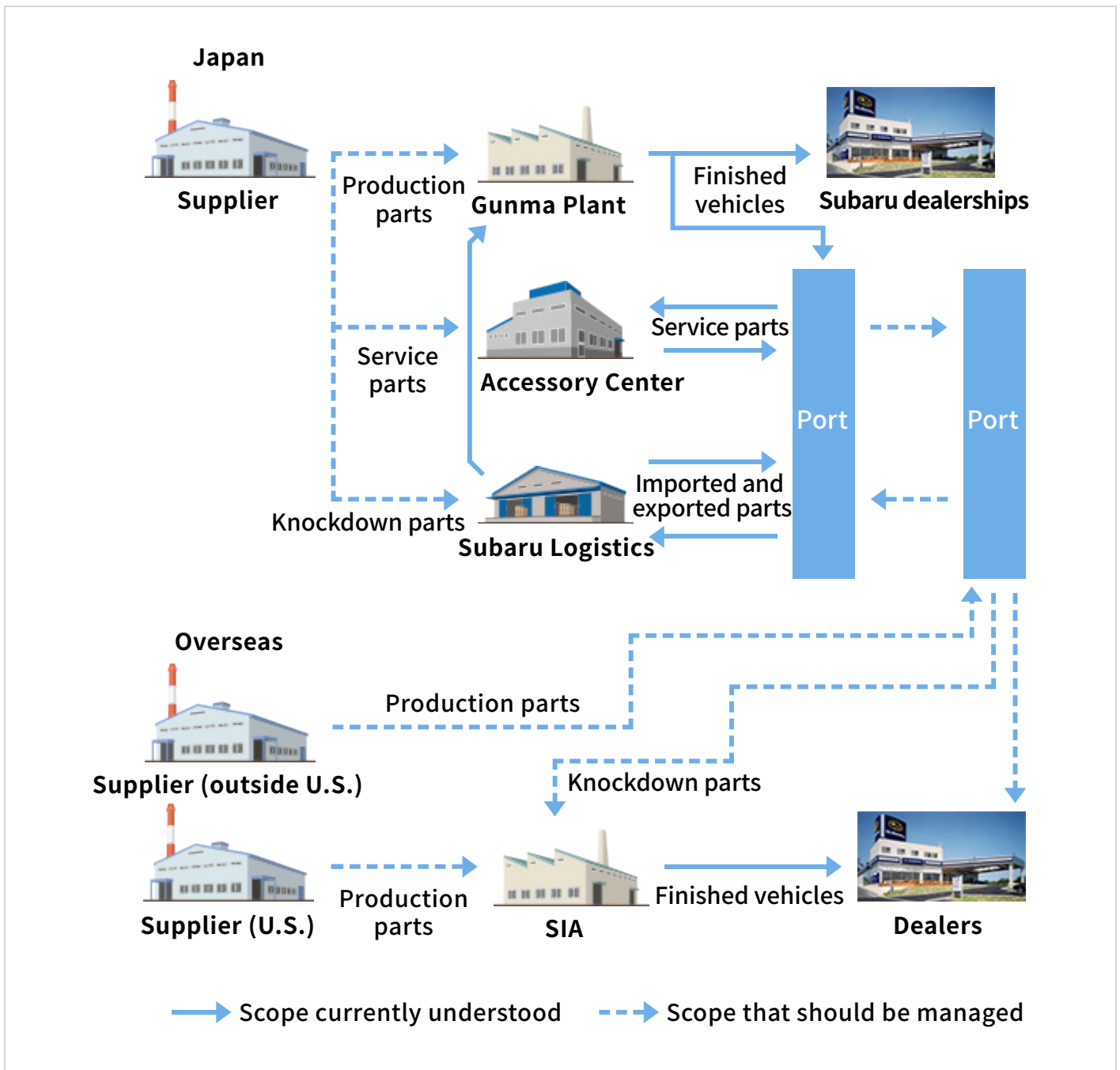
2. Some work processes were revised and the in-process compressed air knife process was eliminated, reducing electric power consumption by approximately 354,794 kWh.



Initiatives in Distribution

Reducing Environmental Impact at Subaru

In accordance with the 6th Voluntary Plan for the Environment, the Subaru Group as a whole is working with our logistics companies and dealerships to cut CO₂ emissions by promoting more efficient transportation of finished vehicles and export parts.



Initiatives in Transport of Finished Vehicles

Subaru is striving to reduce the environmental impact by ensuring more efficient transport of finished vehicles. The measures taken by the company include establishing optimal standard routes, changing the model composition of the finished vehicles being shipped, and adapting flexibly to bigger vehicles, as well as increasing loading efficiency, introducing digital tachographs*¹ to promote energy conservation, and promoting modal shifts*².



As a result of the consolidated and standardized transportation routes for finished vehicles, in FYE 2019, the CO₂ emissions during transport per Subaru vehicle decreased by 5.8%, compared with a target of a 1% reduction per year from the FYE2007 level. Subaru will continue our efforts to achieve further reductions.

- *1 This system automatically records journey information such as vehicle speed and driving time, and saves it to a memory card, etc. It is being introduced to manage driving in industries that involve the commercial operation of vehicles. As the system provides a clear visible record of such events as sudden acceleration and deceleration, fuel waste due to engine idling, and dangerous driving, it can help to increase awareness of safe driving and reduce fuel use.
- *2 Switching the mode of cargo transport from truck freight to modes that impose less of an environmental impact, namely rail or sea freight.

Initiatives Involving Exported Parts

Subaru is striving to reduce the company's environmental impact through efforts to achieve greater efficiency in transport, including establishing optimal container fill rates for the shipment of parts for export, the introduction of container round use*¹, and the use of inland container depots*².

Subaru Logistics Co., Ltd., which packages and ships parts for overseas production of Subaru vehicles, is engaged in an ongoing effort to improve the container fill rate by reducing wasted space in containers, such as the introduction of slimmer packages and lighter-weight packaging materials. Due to the introduction of a larger packaging specification for the Ascent produced in the U.S., the fill rate in FYE2019 fell 9.4% from the previous year to 78.9%

	FYE2015	FYE2016	FYE2017	FYE2018	FYE2019
Fill rate	83.2%	84.0%	88.7%	88.3%	78.9%

In July 2017, Subaru introduced round use of containers, thereby in FYE2019 achieving a reduction of 600 tons in CO₂ emissions from the previous year.

Subaru will continue our efforts to achieve further reductions in CO₂ by improving container fill rates and developing more efficient shipping routes.

- *1 Round use involves an empty sea freight container that has been used for import being directly reused for export, without first being returned to the port. This reduces the shipment of empty containers from ports, as containers are transported directly from importers to exporters.
- *2 A depot for the consolidation of container cargo located inland, to reduce the shipper's transport costs and facilitate more efficient transport through the revision of the overland portion of sea freight container transport systems.

Initiatives in Transportation Vehicles

Subaru of Indiana Automotive, Inc. (SIA), the US production base of Subaru automobiles, is in cooperation with Venture Logistics, a company in charge of parts delivery, and proceeding with the introduction of natural gas vehicles.

Compressed natural gas (CNG) has a lower environmental impact than diesel fuel and is superior in terms of cost efficiency and reliability. One significant hurdle to CNG was that there were no supply stations for natural gas close by. SIA financed the Venture Logistics with CNG truck installation fee of more than \$ 1 million in 2014 and established a natural gas stand at the SIA property site to promote the introduction. As a result of introducing CNG fleet trucks, 1,097 tons of CO₂ emissions per day were eliminated (corresponding to 85% of emissions before the introduction). Energy costs were also reduced by a total of \$389,136 compared to using diesel fuel.

Initiatives in Sales

Energy Conservation Initiatives in Domestic Dealerships

In order to reduce greenhouse gas emissions, Subaru Domestic dealerships are sequentially switching to LED lights and high-efficient type air conditioners whenever the need to replace old equipment arises.

Initiatives in Plants

As global warming measures, Subaru is rolling out measures to curb rising temperatures within our plants by painting the roofs of some factories with thermal insulation paint, as well as installing insulation sheets, to limit radiant heat from sunlight.

In FYE2019, these measures were introduced at the Utsunomiya Plant and the Subaru Accessory Center, among other sites.

In addition, Subaru has begun switching to LED lighting at some sites, including affiliated companies, replacing approximately 5,000 fluorescent lamps with LED lamps. This has reduced CO₂ emissions by around 660 t-CO₂ per year.



Insulation sheets attached to a plant roof

Initiatives in Offices

Use of Green Power Certificates

Subaru aims to achieve zero-CO₂-emission offices at our headquarters at the Ebisu Subaru Building and the Subaru Training Center by purchasing Green Power Certificates and Green Heat Certificates in respect of the power and heat consumed by those offices.

Subaru achieved a reduction of approximately 1,000 t-CO₂ in FYE2019, our first year of using this system.

Introduction of Environmentally Advanced Buildings

Use of Environmental Technologies to Reduce Environmental Impact (Gunma Plant)

The West Building in Gunma Plant completed in April 2016 had introduced various environmental technologies for reducing environmental impacts. Solar panels generate 20kW of energy. In addition, a new-generation lighting system combining individual address type control and image sensing type human sensor is introduced in the high-efficiency LED lighting. The air conditioning uses high-efficiency air-cooled heat pump chillers.

It has also introduced low-emissivity glazed window glass with high heat shielding and heat insulating properties, and a cool heat trench that takes outside air from a ventilation tower through an underground isolation layer to pre-cool or preheat the air and supplies to each floor. The building plans also introduced several innovations such as providing balconies to create a solar radiation shielding effect while creating rest areas, contributing to both energy conservation and a comfortable working environment without relying only on machinery.



Solar radiation shielding due to the effect of the balcony eaves

Initiatives Aimed at Obtaining LEED Certification (Subaru of America, Inc.)

The buildings housing the new headquarters and training center for Subaru of America, Inc. (SOA), whose construction in Camden, New Jersey was completed in April 2018, were designed with an eye to gaining LEED certification, which is awarded to buildings that take environmental impacts into consideration. In October 2018, the new headquarters building was awarded Silver certification, which indicates that it meets a higher standard than that required for basic certified level. An application for certification of the training center has also been submitted.

The LEED certification scheme aims to contribute to global environmental conservation by promoting the reduction of costs and resource use, and consideration for efforts to achieve positive effects on human health, as well as encouraging the introduction and use of clean, renewable energy. SOA launched a project dedicated to obtaining LEED certification. In March 2019, this project was recognized by the U.S. Green Building Council New Jersey Chapter as one of the most innovative green projects of 2019.

* LEED certification: Leadership in Energy and Environmental Design (LEED) is a green building certification system developed and operated by the U.S. Green Building Council (USGBC). The program provides an objective indication of the overall environmental performance of a building, by evaluating energy efficiency and environmental impacts in terms of building planning, design, construction, operation and maintenance. As such, there are growing moves to obtain LEED certification, primarily in the U.S..



SOA's new headquarters building and training center with consideration for the environmental impact

External Partnerships

Subaru is striving to address climate change through partnerships with suppliers, customers, and industry groups.

In our supplier selection and management mechanisms, Subaru has set out a code of conduct that incorporates key performance indicators (KPIs) for climate change concerning climate-related problems, and shares these at orientation sessions to ensure thorough adherence to them. In addition, environment-related accidents and defects have declined due to the voluntary acquisition of ISO14001 certification by suppliers. Subaru also builds and operates its own mechanisms to support the acquisition of Eco Action 21 certification by Tier 2 suppliers, if they so wish.

All of approximately 700 SUBARU dealerships in Japan have obtained Eco Action 21 certification, with ongoing environmental activities and compliance guaranteed through undergoing regular environmental audits. The Subaru Group is linked to each other via our own environmental report data system, which gives us access to environmental data (on the use of energy, CO₂, and water, and the volume of waste generated), enabling Subaru to respond promptly in the event of any environment-related issues.

Subaru also shares a greenhouse gas (GHG) emission management system with 15 domestic dealerships that are non-consolidated subsidiaries. Subaru is implementing an engagement campaign to raise consumer awareness of the impact of climate change, and also exchanges views on GHG reduction methods and the effectiveness thereof through Eco Action 21 briefings and the Eco Action 21 data aggregation system.

Subaru is a member of the Japan Automobile Manufacturers Association's (JAMA) committee on climate change measures. In addition, the President and Corporate Executive Vice President of Subaru participate in the industry group's decision-making process as JAMA executives and the decisions taken by JAMA are reflected in Subaru's mid-term management vision STEP.

* A secondary subcontractor that supplies parts to motor vehicle manufacturers.

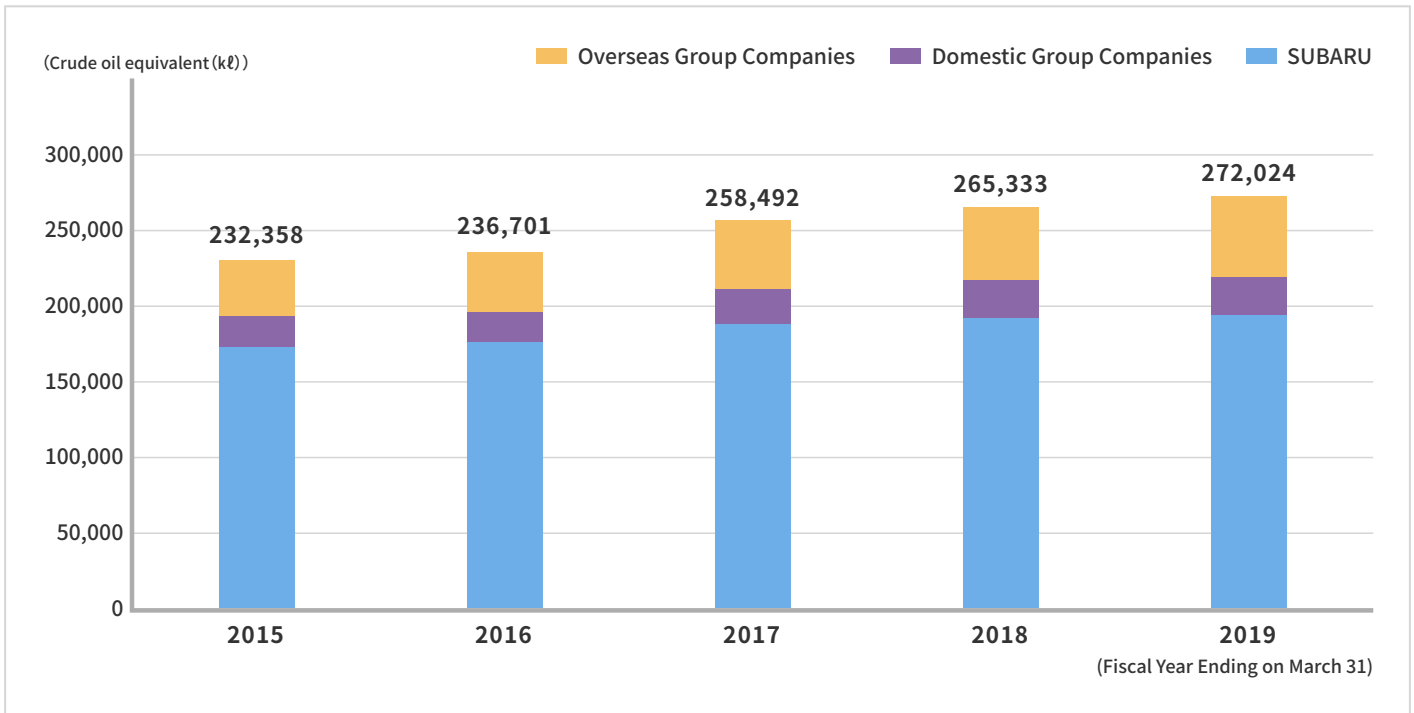
Basic Concept regarding Energy

Based on the Law Concerning the Act on the Rational Use, etc. of Energy, we are working on energy conservation through switching facilities and equipment including lighting equipment and through use of renewable energy.

We are working to replace the lighting in all buildings throughout the company with LEDs and other high-efficiency lighting by FYE2026, with the aim of conserving energy and reducing CO₂. So far, Subaru has reduced annual electricity consumption by approximately 1,388,052 kWh by changing lighting in this way.

Energy Consumption

Energy consumption in FYE2019 increased by 6,691 kℓ from the previous fiscal year. Going forward, we will aim to reduce energy consumption by introducing the latest energy-saving equipment and renewable energy.



Targeted companies Subaru Corporation
 Domestic Group Companies: Yusoki Kogyo K.K., Fuji Machinery Co., Ltd., Ichitan Co., Ltd., Kiryu Industrial Co., Ltd., Subaru Logistics Co., Ltd., Industrial Products Co., Ltd., Subaru dealerships
 Overseas Group Companies: Subaru of Indiana Automotive, Inc., Subaru of America, Inc., Subaru of Canada, Inc., Subaru Research & Development, Inc.
 Subaru Corporation: Calculated based on the notification of the Energy Conservation Law.

Related information

- > [Overall Environmental Impact](#)
- > [CO₂ Emissions \(Scope 3\)](#)

Introduction of Renewable Energy

Subaru installed solar power system facilities at the Subaru Research and Experiment Center building and the Oizumi Plant of Fuji Machinery Co., Ltd in FYE2018. Utilization of renewable energy such as solar power system is becoming an increasingly important option as an energy source that does not emit CO₂. It is also effective for securing stable supply by diversifying energy sources. At the Gunma Oizumi Plant, we are planning to reduce CO₂ emissions of about 2,600 tons-CO₂ in FYE2020 by installing the Japan's largest-scale solar power generation system (an annual approximate output of 5,000 MWh/year). In addition, Subaru plans to steadily expand the introduction of the system facilities to the Subaru Accessory Center and the Kanto PDI Center.



Subaru Research and Experiment Center



Oizumi Plant of Fuji Machinery Co., Ltd.

In the Tokyo Office, two 10kW solar power generation systems in December 2009 and March 2014 and one 5kW facility in January 2014 on the main office building roof, one 2kW system in March 2014 in the guardhouse, and one 2.7kW facility in 2016 in the special high-voltage substation were introduced. We now generate 33,809.7 kWh per year, and effectively utilize it as part of the electric power of the Tokyo Office.



Solar power generation system with the output corresponding to the use by 100 detached houses.

In FYE2015, we introduced solar power system with a rated output of 420 kW (corresponding to 100 detached houses) in Kiryu City, Gunma Prefecture, and started a project to generate and sell electricity of 427,706 kWh per year.

Establishment of Environmentally Conscious Parts Center and Training Center

Subaru of America, Inc.'s Parts and Training Center in Florence, New Jersey, opened in June 2013, is equipped with a solar power generation system with 1 MW power generation capacity on the rooftop, and a new server with about half the power consumption compared to the conventional one.



1 MW Power Generation Facility



Parts and Training Center in Florence

In FYE2018, SOA switched the lighting fixtures to LED light bulbs, reducing the total electricity consumption by 13.13%.

In FYE2019, the Subaru Group generated 8,940 MWh of power using renewable energy and consumed 8,131 MWh.

Introduction of Aqua Premium Power from Zero-Carbon Hydroelectric Generation

Subaru will partially adopt the Aqua Premium electricity rate plan at the main plant in Gunma and the Tokyo Office. Under this price plan, the electricity supplied is derived solely from hydroelectric power generation, which emits no CO₂. Subaru expects to achieve a reduction of approximately 10,000 t-CO₂ in emissions (equivalent to 21 GWh of electricity generation annually) as a result.

Introduction of Micro-Hydroelectric Power Generation System using circulating water

In January 2014, the Tokyo Office installed micro-hydroelectric power generation system (2.9 kW) as an energy recovery system using cooling circulating water at some of its research facilities, and its system is now generating about 13,000 kWh of electricity per year (corresponds to electricity use of three households). This system installs water wheel which rotates with falling water to generate electricity. Power generated by this system is used for circulating water pump.



Tochigi Furusato Denki Program for Locally Produced and Consumed Electricity

In April 2018, Subaru's Aerospace Company adopted the Tochigi Furusato Denki program* in the South Plant and 2nd South Plant at our Utsunomiya manufacturing site (Utsunomiya City, Tochigi Prefecture). Under this initiative, which is Japan's first program for local production and local consumption of electricity, power generated by hydroelectric plants belonging to Tochigi Prefecture is supplied to the participating plants.

Through the introduction of this program, Subaru expects to achieve a reduction of approximately 5,400 t-CO₂, equivalent to around 15% of its total annual CO₂ emissions at the Subaru Aerospace Company's Utsunomiya Plant. Part of the electricity charges paid by Subaru via this program will be used for environmental protection initiatives in Tochigi Prefecture.

* The Tochigi Furusato Denki program is an initiative run by Tochigi Prefecture Public Enterprise Bureau and TEPCO Energy Partner, Inc. The program supplies electricity generated by eight hydroelectric power plants run by the prefectural government, enabling CO₂ emissions arising from electricity use to be reduced to zero, as hydropower generation emits no CO₂.



Our Approach to Resource Recycling

The Subaru Group understands that constructing a recycling-based society, that is to promote resource efficiency by recycling material and in business activities based on recycling, is an important theme that deeply involves us as a corporation in the manufacturing industry.

In the product life cycle of our vehicles from development, procurement, manufacturing, transportation and to disposal, we will strive to recycle resources as speedy and short as possible, continuing zero landfill of our domestic and overseas production plants. Going forward, we intend to build a recycling-based society aiming for 3R (Reduce, Reuse and Recycle) with an integrated approach that is one dimension higher in our business activities.

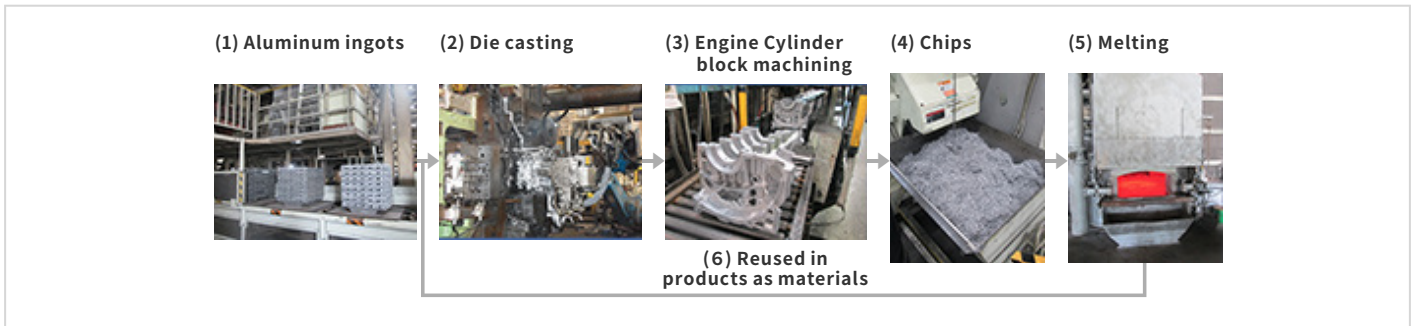
Specifically, we put “resource recycling” as one of the themes of Subaru’s Voluntary Plan for the Environment, and we will steadily implement our environmental conservation voluntary action plan based on it.

Recycling of Raw Materials

By reusing the discard generated at the time of Subaru’s automobile production, scraps, collected used materials, etc. in place of new materials to be used such as iron, aluminum, plastics, etc., which account for a large proportion of the contents of the automobile, Subaru is working on the closed loop recycling*, which reduces natural resource consumption, environmentally hazardous substances, and wastes.

Raw material used in automobiles in FYE2019		Recycling method
Iron	575,580 ton	Provide professional dealers with iron scraps and they reuse them.
Aluminum	18,975 ton	Aluminum scraps are re-melted at plants and reused almost entirely.
Plastic	23,267 ton	Plastic scraps are crushed again at plants and partly reused.

< Recycle of Aluminum >

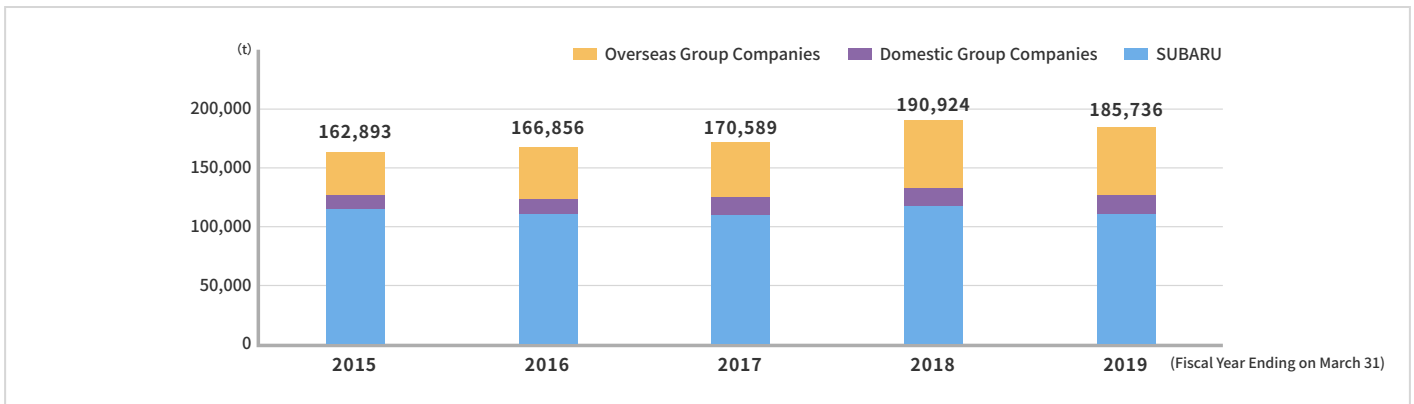


* A method in which waste and scraps generated during production as well as used products collected are recycled as materials for parts of the same quality, and then reused to make products of the same kind.

Wastes

Wastes generated in FYE2019 decreased by 5,188 tons from the previous year. It is mainly because of a decrease in the volume of automobile production. Considering wastes as valuable resources, we collect them and then reuse or appropriately treat them as much as possible to continue zero landfill.

Waste Generation



Targeted companies/divisions: Subaru:

Subaru: Gunma Plant, Tokyo Office, Utsunomiya Plant, Handa Plant, Handa West Plant

Six Domestic Group Companies: Yusoki Kogyo K.K., Fuji Machinery Co., Ltd., Ichitan Co., Ltd., Kiryu Industrial Co., Ltd., Subaru Logistics Co., Ltd., Industrial Products Co., Ltd.

Subaru of Indiana Automotive, Inc., Subaru of America, Inc., Subaru Canada, Inc., Subaru Research & Development, Inc. Four Overseas Group Companies: Subaru of Indiana Automotive, Inc., Subaru of America, Inc., Subaru of Canada, Inc., Subaru Research & Development, Inc.

* Includes scrap metal sold.

We do not import/export hazardous wastes stipulated in Basel Convention 2 Annex I, II, III, and IV.

Related information

> [Reuse of Packaging Materials](#)

Processing of End-of-Life Vehicles (ELVs)

Based on the End-of-Life Vehicle Recycling Law in Japan (Act on Recycling, etc. of End-of-Life Vehicles), car manufacturers are obliged to fully recover and appropriately recycle automotive shredder residue (ASR), airbags, and chlorofluorocarbons (CFCs) when cars they manufacture become end-of-life vehicles.

Subaru aims to ensure smooth recovery and recycling of three items, namely ASR, airbags and CFCs, generated from end-of-life vehicles, and to stably maintain a high level of recycling rates. Through ART*, a consortium Subaru and 12 other automobile manufactures, etc. have established, Subaru promotes proper recycling of ASR smoothly and efficiently. Regarding the recycling of airbags and CFCs, appropriate processing is carried out through Japan Auto Recycling Partnership Ltd., established jointly with domestic automobile manufacturers and importers.

The ASR recycling rate for FYE March 2019 was 97.6%, satisfying the legal standard of 70% of the Fiscal year ending March 2016 and after.

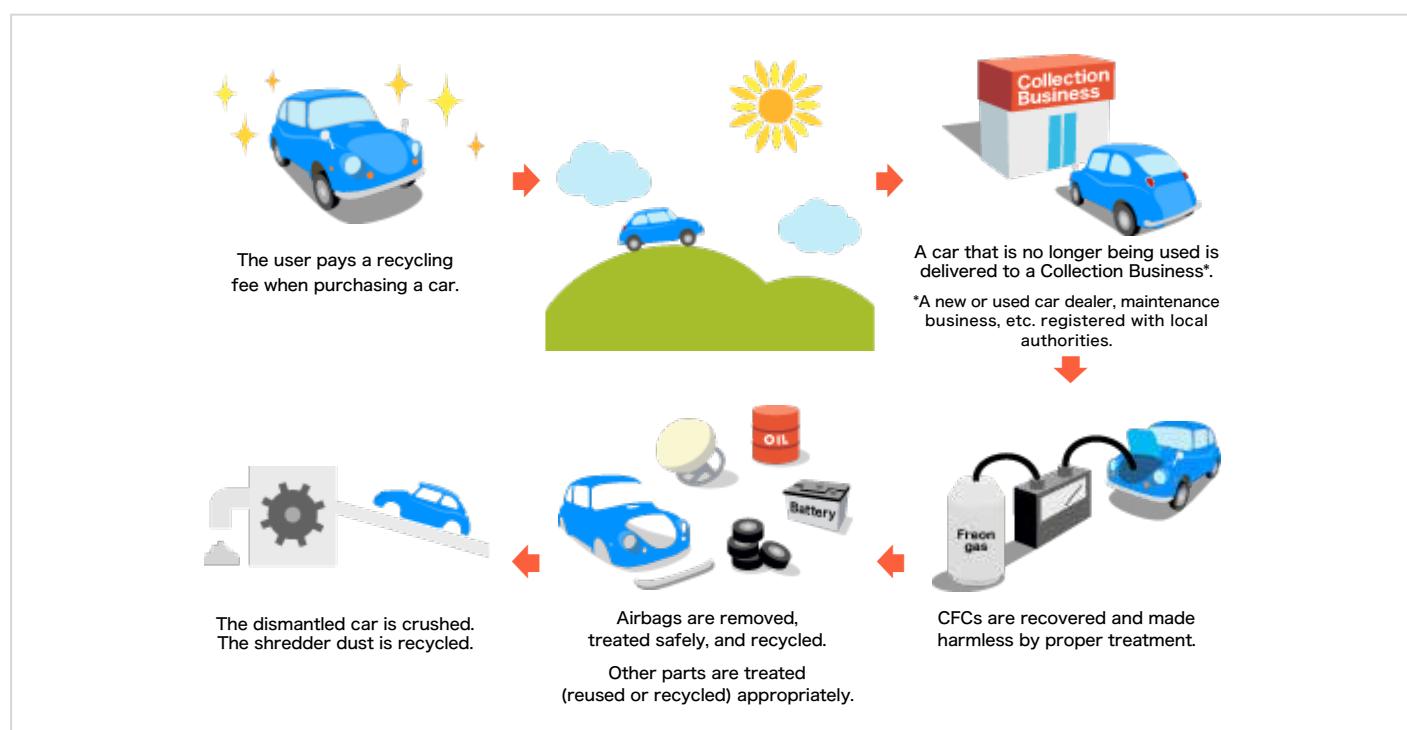
As for airbags, a recycling rate of 94.4% has been attained, exceeding the legal standard of 85%. Also, the entire amount of recovered CFCs was appropriately treated.

* ART: Automobile shredder residue Recycling promotion Team: A promotion team for automotive shredder residue (ASR) recycling, organized by 13 automobile manufacturers in December 2003. The team plans appropriate, smooth, and efficient recycling of ASR among the Parts Specified for Recycling, which are the parts that must be recycled.

Related information (Japanese only)

› [End-of-Life Vehicle Recycling Law](#)

Automobile Recycling Process



Promotion of Recycling Conscious Design

In order to use limited resources effectively, Subaru promotes recycling conscious design in automobile manufacturing.

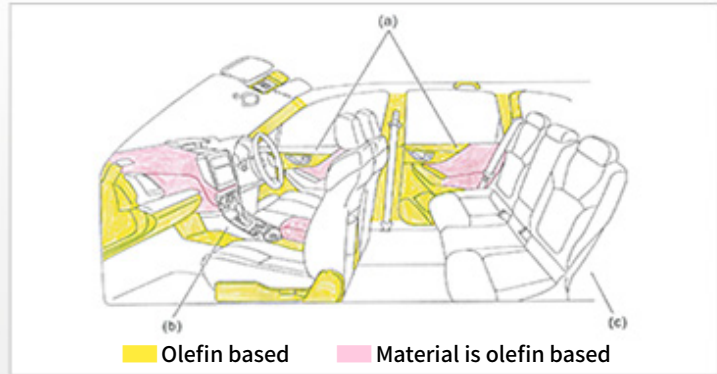
Improvement in Wiring Harness Dismantling

Adopted a harness layout and structure than can be recovered quickly and efficiently.



Use of Easily Recycled Materials

Actively adopted olefin resins that are easily recycled to use in internal parts.



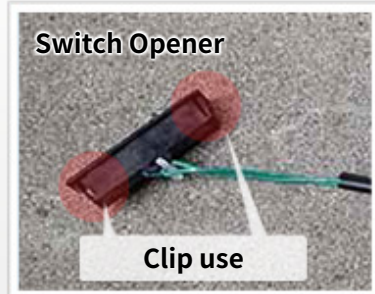
Improved Material Identification

Improved material separation by displaying the material identification not only on the inner surface of bumpers but also on the outer surface.



Adoption of Easily Dismantled Structures

Eliminated screws for the switch opener of the trunk and rear gate by using clips.

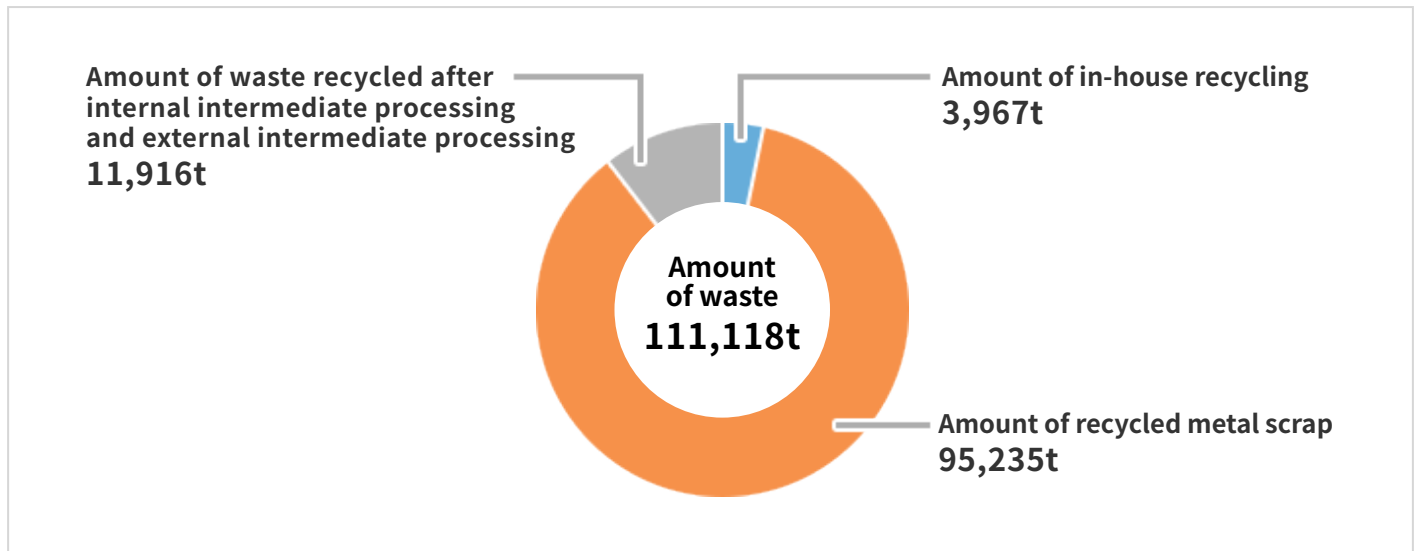


Initiatives in Production

Initiatives for Waste Reduction at Plants

All Subaru manufacturing plants in and out of Japan have maintained zero emission* of waste materials since Fiscal year ending March 2005.

Overview of Waste Generation and Processing of All Sites in FYE March 2019



Aggregation range: Gunma Plant, Tokyo Office, Utsunomiya Plant, Handa Plant, Handa West Plant

There is no landfill after external intermediate treatment.

* A system that utilizes waste and byproducts generated from an industry as resources for other industries, resulting in no waste discharge. This concept was proposed by the United Nations University (UNU) in 1994.

Primary Waste and Recycling Method

Primary waste	Primary Recycling Method
Wastewater treatment plant sludge	Raw material for cement
Paint sludge	Iron-making reducer
Waste plastics	RPF (solid fuels, etc.)
Paper waste	Recycled paper, RPF, etc.

Initiatives in Distribution

Reuse of Packaging Materials

Subaru Logistics Co., Ltd., which handles packaging and transport for complete knockdown (CKD) parts of Subaru automobiles, has been actively working on reducing environmental impact, focusing on the reuse of packaging materials.

The amount of reused packaging materials in Fiscal year ending on March 2019 was 776 tons, 11% increase from the previous year. This was due to an increase in shipments of parts for Ascent, of which production newly started in the United States, despite the partial unification of its packaging materials.

We will continue our active efforts to reduce environmental impact by expanding the reuse of packaging materials.

	FYE2015	FYE2016	FYE2017	FYE2018	FYE2019
The reused amount (t)	523	550	652	699	776
Intensity (kg/vehicle)	2.5	2.3	1.9	2.0	2.1

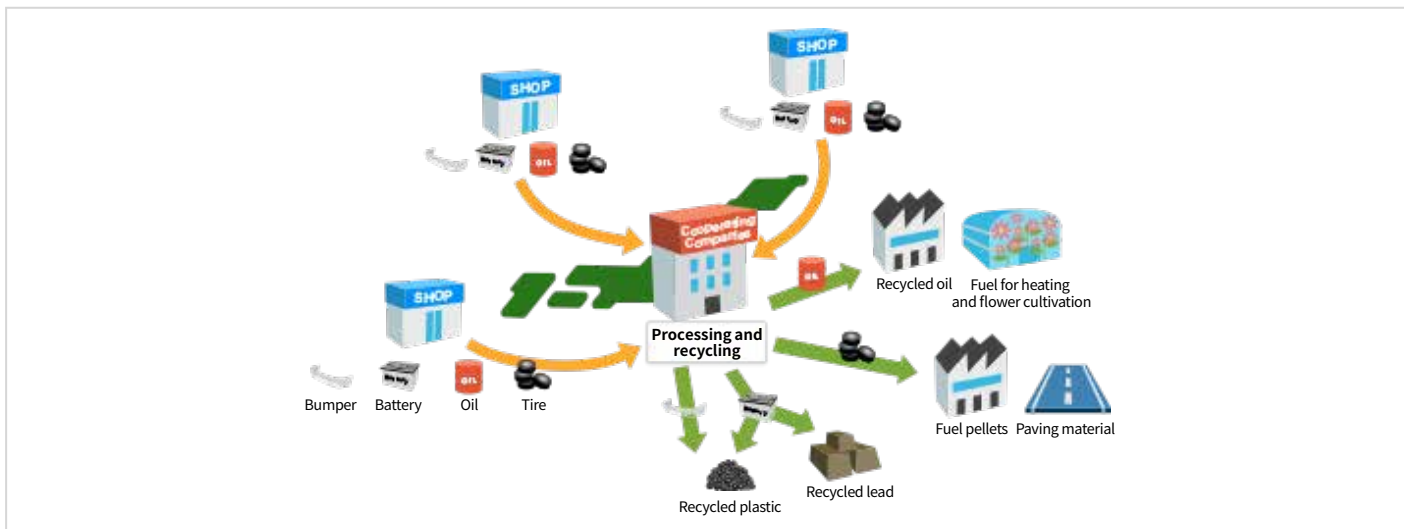
Initiatives in Sales

Zero Emission at Subaru Dealerships in Japan

From April 2012, Subaru domestic dealerships began improving appropriate treatment activities for waste generated from our business activities to promote environmental conservation.

Collaboration and cooperation with companies and industrial organizations are being carried out for resource recycling in addition to a review of conventional treatment methods, leading to zero emission activities targeting resource recycling within Japan. Various activities are being developed, including recycling of used lead-acid batteries, waste oil, used tires, etc. As the result of these activities in FYE2019, 1,511 tons of used lead-acid batteries (117,929 used batteries), 5,494 kiloliters of used oil, and 190,739 used tires were collected and recycled.

We believe that the zero emission activities of Subaru domestic dealerships, who are closest to stakeholders, are environmental conservation activities closer to home. They can also provide an environment with safety and peace of mind, in addition to products, by promoting more effective use and appropriate processing through defining corporate responsibility and recycling resources.



Recycling of Waste Oil

Waste oil generated at Subaru domestic dealerships during oil changes is recycled as recycled fuel oil based on the zero emissions scheme created by Subaru. Every year, farmers in Yamagata Prefecture grow beautiful poinsettia and cyclamen using this recycled fuel oil for heating greenhouses. Subaru distributed these cyclamens to visitors to Subaru events and EcoPro exhibition.



Poinsettia cultivated in horticultural farmers

Recycling of used tires

Used tires changed and collected at Subaru domestic dealerships are crushed and made into rubber chips, which are then reused as fuel at plants such as power plants, paper making companies (pulp), steelworks, etc. In addition to this kind of thermal recycling, we have started to reuse these chips as paving materials.

The used tires made into rubber chips are mixed in asphalt, or applied as an overlay of asphalt pavement. They can be used for parking lots, children's playgrounds, athletic fields, and sidewalks of hospitals/nursery homes, with varied blending ratios of chips depending on the use. We not only recycle the outer layer of the tires, but the entire rubber parts of those tires for pavement materials by sorting each part thoroughly, such as wires, rubber components, etc. We are the first car manufacturer to recycle all the rubber parts of a tire for pavement materials.



Animal Square in Stellar Town

Overseas Initiatives

Subaru of Indiana Automotive, Inc. Continuing Zero Landfill since 2004

Subaru of Indiana Automotive, Inc. (SIA) is the first automobile plant in the United States that achieved zero landfill in 2004, and is still making various improvements to maintain the achievement.



Masking when painting bumpers

In FYE2019, SIA reviewed the width of masking tape used for masking* in the painting process, resulting in a reduction of 2.2 tons of masking tape use.

* Masking: a process to make sure that no paint is applied to areas other than the painted area.

Subaru of America, Inc. Teaming up with TerraCycle® to Improve the Recycling Rate of Hard-to-recycle Waste

As of April 2018, Subaru of America, Inc. (SOA) launched a partnership with TerraCycle®, a recycling company in the United States, and started TerraCycle® Zero Waste™ Box™ program to promote the recycling of various wastes that have been thought of as hard-to-recycle. The program is a part of Subaru Loves the Earth, a project for improving the recycling rate.



Recycling collection boxes placed at a motor sports event

In the program, TerraCycle® Zero Waste™ Boxes™ (recycling collection boxes) are distributed to Subaru dealers in the US and customers, employees and community partners are encouraged to bring wastes which are thought of as hard-to-recycle and end up being landfilled or incinerated. Such wastes include snack wrappers/bags, disposable cups and lids, and creamer capsules. The collected wastes are then turned into products like park benches, picnic tables, and playground materials, and donated to Subaru community partners etc. through TerraCycle®. As of April 2019, SOA also places the recycling collection boxes in rally sports events as well, actively promoting the recycling of wastes.

Less than a year after the program's launch, SOA has achieved the recycling of more than one million pieces of waste through the participation of about 540 Subaru dealers in the United States.

Continuing the Zero Landfill Joint Initiative in the US National Parks

Taking advantage of the zero landfill experience of Subaru of Indiana Automotive, Inc. (SIA), which is the US production base of Subaru vehicles, Subaru of America, Inc. (SOA) has been working on a joint initiative with suppliers, the National Parks Conservation Association, the National Park Service, etc. since 2015 to reduce landfill waste generated from three national parks: Yosemite National Park (California), Denali National Park and Preserve (Alaska), and Grand Teton National Park (Wyoming).

Specific efforts for the initiative include reducing waste in national parks, improving the recycling rate, raising awareness among the park staff, promoting cooperation in local communities, and educating tourists. Since the initiative's launch in 2015, the three national parks have been steadily reducing the amount of waste generation through the efforts like promoting the composting of organic waste, increasing the number of water supply stations as well as placing more than 500 new trash bins in the park. SOA also successfully raised awareness of more than 33,000 visitors to the park by holding events etc.

SOA donated \$2.1 million to the National Park Foundation (NPF) in FYE2019, and since it started supporting NPF in 2013, the total amount of its donations has reached \$68 million. These donations were made under the Subaru's commitment to donate a certain amount of money when a customer purchased or leased a Subaru automobile. Also, at the New York International Auto Show held in April 2019, SOA exhibited at a booth that allows attendees to enjoy a simulated experience of national parks. When the exhibition is over, as most of the booth's materials are recyclable, they will be recycled or donated in addition to being reused at future auto shows and other events.



Subaru of America brings the Beauty of National Park



Our Approach to Water Resources

Water resources are one of the valuable resources indispensable to people's lives, livelihoods and business activities. However, due to the impact of droughts, floods and other natural disasters caused by climate change, as well as increased demand caused by global population growth and economic development, the risk of the shortage and pollution of water resources is predicted to grow in the future.

Water is an indispensable, precious resource to the Subaru Group's business activities. Therefore, the Subaru Group is committed to improving proper use of water as well as appropriately managing and dealing with water in order to reduce the environmental impact of water intake and drainage. At the same time, we are actively engaging in activities to conserve forests that have the function of water resource preservation.

Water Management

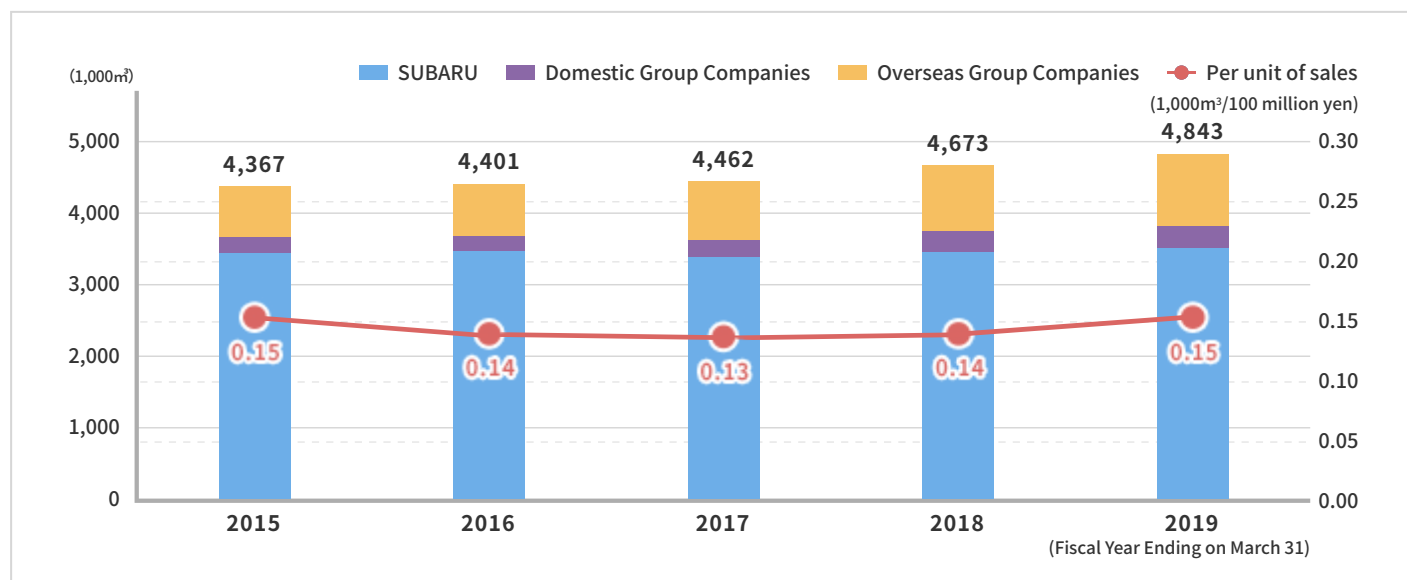
Subaru has established its own voluntary management standards of water quality to be 20% higher than the legal standards. Voluntary inspections and third-party inspections are conducted regularly for continual monitoring.

› [Status of Compliance with Environmental Laws and Regulations in FYE2019](#)

Water Consumption

The total amount of water use and water used per sales revenue are managed by totaling the amount of water for each facility. We report and verify these figures in biannual meetings, taking necessary measures as appropriate.

Water Consumption (Total Amount of Water Use)



Targeted companies/divisions:

Subaru: Gunma Plant, Tokyo Office, Utsunomiya Plant, Handa Plant, Handa West Plant

Domestic Group Companies: Yusoki Kogyo K.K., Fuji Machinery Co., Ltd., Ichitan Co., Ltd., Kiryu Industrial Co., Ltd., Subaru Logistics Co., Ltd., Industrial Products Co., Ltd.

Overseas Group Companies: Subaru of Indiana Automotive, Inc., Subaru of America, Inc., Subaru Canada, Inc., Subaru Research & Development, Inc.

Breakdown of Water Consumption by Water Source at Major Production Bases

(Unit: 1,000m³)

Region	Industrial Water	Tap Water	Source of Water Intake
Japan	3,252	300	Tone River, Watarase River
North America	0	961	Groundwater in the Teays Valley aquifer
Total	3,252	1,261	

Targeted companies/divisions:

Japan: Gunma Plant, Tokyo Office, Utsunomiya Plant, Handa Plant, Handa West Plant, Yusoki Kogyo K.K., Fuji Machinery Co., Ltd., Ichitan Co., Ltd., Kiryu Industrial Co., Ltd., Industrial Products Co., Ltd.

North America: Subaru of Indiana Automotive, Inc.

Water Risk Assessment at Production Bases

Subaru has a third-party expert implement a water risk assessment* related to water intake and discharge in order to use water resources sustainably. In FYE2017, it was conducted at Gunma Plant and Subaru of Indiana Automotive, Inc. (SIA), which are our automobile manufacturing bases. In FYE2018, it was also conducted at Utsunomiya Plant, which is our base for aerospace manufacturing.

The assessment estimated water supply and demand in the river basins where each base is located, and evaluated the possibility of water disaster, the impact on public health and ecosystem, etc. at five levels. We use the evaluation results to set priorities and perform measures.

Gunma Plant and Subaru of Indiana Automotive, Inc.

These sites, which are our bases for automobile manufacturing, currently have a moderate water supply and demand risk and it is expected that the current risk level will be maintained for the mid- to long-term even when taking climate change into consideration. No biodiversity protection areas have been confirmed downstream and a low vulnerability to water pollution has been confirmed.

Utsunomiya Plant

The Utsunomiya Plant, which is our base for aerospace manufacturing, currently has a moderate water supply and demand risk. However, it is predicted that in the future river flow rate increases while the water demand decreases, and thus the water supply and demand risk is expected to improve in the future. Since the site is not in a flood inundation area and a sediment disaster area, a low water disaster risk was confirmed. No biodiversity protection areas and rare aquatic life are confirmed 10 km downstream of the site, and a low ecosystem risk was confirmed.

Going forward, we will review our use and conservation of water resources to meet the local demand based on this assessment.

* Reference database

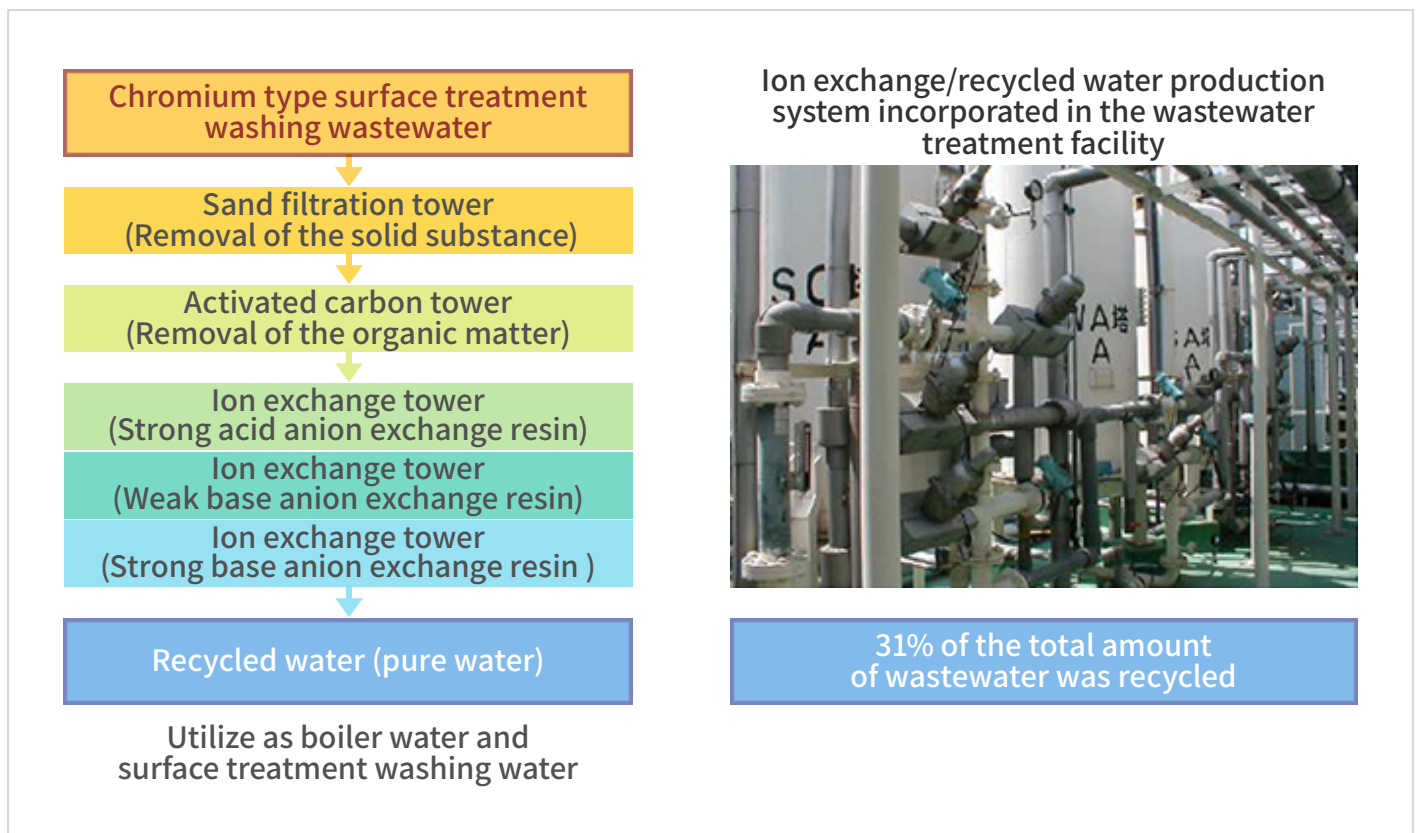
(1)WRI Aqueduct water risk atlas, WWF-DEG Water Risk Filter, PREVIEW Global Risk Data Platform, Climate Change Knowledge Portal, Integrated Biodiversity Assessment Tool, NCD-VfU-GIZ Water Scarcity Valuation Tool (Version 1.0), Costing Nature / Water World, National Land Numerical Information: Possible Inundation Area Data/Sediment Disaster Dangerous Site Data (Only for Gunma Plant and Utsunomiya Plant)

Water Reuse

An Initiative to Reuse Water at A Production Base

Utsunomiya Plant introduced a surface treatment facility incorporating an ion exchange /recycled water production system, and reprocesses wastewater to utilize it as recycled water (pure water). In FYE2019, 42,800 m³ (31%) of the total 140,140 m³ of water used in the surface treatment facility was treated and used as recycled water. Recycled water is utilized in the plant as washing water for the surface treatment facility.

Recycling Treatment of Surface Treatment Wastewater (Image)



Subaru of Indiana Automotive, Inc. (SIA) added filters to its water tanks equipped with electrodeposition apparatus that are used to clean the car body prior to the painting process, and started water reuse. As a result, SIA was able to reduce its water consumption by approximately 1,080 m³ in FYE2019.



Our Approach to Biodiversity

The Subaru Group's business activities could have an impact on biodiversity, which is the source of blessing from nature. In addition, biodiversity is rapidly disappearing on a global scale. Therefore, recognizing the importance of biodiversity conservation, Subaru clearly states in its Subaru Environmental Policies that it aims to coexist with nature and addresses global environmental issues including biodiversity, in all its business activities.

In promoting biodiversity conservation, while referencing external initiatives such as the Guidelines for Private Sector Engagement in Biodiversity and the Declaration of Biodiversity: Guide to Action Policy by Keidanren (Japan Business Federation), an economic organization, we are actively working on biodiversity conservation through participation in the Japan Business and Biodiversity Partnership.

Establishment of Guidelines on Biodiversity

Subaru launched a working group across all its business sites in FYE2015 to study the relationship between our business activities and biodiversity, identify potential risks and priority issues, and then formulate roadmaps. Thus, we have been steadily addressing and promoting the issues across the entire Subaru Group.

Informed by these activities, Subaru instituted the Subaru Guidelines on Biodiversity in April 2019 to serve as the basis of our biodiversity conservation efforts, so that we can continue to engage in business activities that take biodiversity into consideration. In establishing the guidelines, Subaru sought to ensure that they took into account international trends regarding biodiversity and were consistent with the Six Priority Areas for CSR and Subaru's Environmental Policy, as well as ensuring that their effectiveness and continuity can be guaranteed.

Subaru Guidelines on Biodiversity

Our society is supported by biodiversity, which is the source of various blessings from nature. On the other hand, "biodiversity" is rapidly being lost on a global scale. We promote biodiversity preservation through our business activities and contribute to environmental protection of our planet while aiming to coexist with "the earth, the sky and nature".

1. We grasp the impact of business activities on biodiversity and reduce their impact. We also promote initiatives leading to further recovery.
2. We strive to raise awareness of biodiversity.
3. We respect international rules concerning biodiversity.
4. We cooperate with stakeholders and strive for preservation of biodiversity.
5. We proactively disclose information on activities regarding biodiversity.

Established in April 2019

Domestic Initiatives

Subaru Forest Project

Since FYE2018, Subaru has been committed to the Subaru Forest Project, an initiative directly links to biodiversity conservation. Among various corporate activities, this project embodies “coexistence with nature” of Subaru Environmental Policies.

Subaru Forest Bifuka in Hokkaido

In a forest of 115 hectares that is in the Subaru Test & Development Center Bifuka Proving Ground site, Subaru started forest management and conservation activities in June 2017, including tree-planting, forest-thinning and nature conservation programs. We are seeking to carry out these activities in collaboration with local communities such as Bifuka-cho.



Subaru Test & Development Center Bifuka Proving Ground and its surrounding forests

Sponsorship of a Tree-planting Ceremony to Mark Bifuka-cho’s 120th Anniversary of Its Development

Subaru was the corporate sponsor of a tree-planting ceremony to mark the 120th anniversary of Bifuka-cho’s Development in September 2018, with nine people from the company taking part. In his greeting at the opening ceremony, the Mayor of Bifuka-cho said, “I want you to see how big the trees we plant today have grown 10 and even 20 years from now.” The participants planted a total of 1,600 Todo fir (*Abies sachalinensis*) trees—a variety chosen for its suitability to the local climate—on the 0.7 ha site as an expression of their wish to bequeath healthy, abundant forests to the next generation. Participants sweated as they struggled to dig holes for the trees, because the soil was hard, but everyone helped each other out and managed to carefully plant each of the trees. These Todo firs will be ready for felling 50 years after they were planted.



About 280 people participated in the tree-planting ceremony

Donations to Fund Environmental Conservation Activities at Matsuyama Marsh

In February 2019, Subaru signed a three-party partnership agreement on Bifuka-cho's forest environment conservation with the Bifuka-cho municipal government and the Kamikawa General Subprefectural Bureau. Based on this agreement, Subaru will use the corporate hometown tax system to donate three million yen over three years between FYE 2020 and FYE 2022 to fund forest conservation efforts such as wetland boardwalk improvements and guided tours to promote biodiversity in Matsuyama Marsh* through the Hokkaido Government's Matsuyama Marsh Forest Project.

* Located within Bifuka-cho, Matsuyama Marsh is Japan's northernmost high-altitude wetland, situated 797 m above sea level. As Matsuyama Marsh is home to around 200 distinctive plant species, including ferns and mosses, the Ministry of the Environment has selected it as one of Japan's 500 most important wetlands.



View of Matsuyama Marsh

Subaru Friendship Forest Akagi: Gunma Prefectural Forest Park

In April 2018, Subaru obtained the naming rights of a Prefectural Forest Park in Gunma Prefecture, where one of Subaru's automobile production plant is located. The park will be referred to as "Subaru Friendship Forest Akagi" for five years to 2023, and we support conservation and management activities in the prefectural forests. In FYE2019, we supported the maintenance of sign posts within the site and thinning work in forest maintenance.



Maintaining sign posts in the site

Subaru Forest Utsunomiya: Forest Park in Utsunomiya City, Tochigi Prefecture

Part of a municipal forest in a forest park in Utsunomiya City, Tochigi Prefecture, where the Aerospace Company is located, is referred to as "Subaru Forest Utsunomiya". There, Subaru will support forest conservation and management activities in collaboration with Utsunomiya City. In FYE2019, we supported the maintenance of sign posts within the site and thinning work in forest maintenance.



Maintaining sign posts in the site

Related information

> [Social Contribution: Subaru Forest Project](#)

Activities for Preserving Rare Species

In Tokoji Temple in Kitamoto City, Saitama Prefecture, there stands IshitoKabazakura, a cherry tree with the estimated age of 800 years. It is also one of the five major cherry trees in Japan and designated as Japan's natural monument in 1922. Subaru's Saitama Logistics Center in Kitamoto City inherited the descendants of the tree from Kitamoto City in March 2003 and is carefully nurturing them in its site.



The IshitoKabazakura tree brings forth pretty cherry blossoms every spring.

Green Space Initiatives with Careful Consideration to Biodiversity

Utilizing Ikimono Plus^{®*}, a simple evaluation tool for biodiversity, we planted the boundary areas of the north and east sides of the Tokyo Office premises with East Asian beautyberry (*callicarpa japonica*) and bamboo-leaf oak (*quercus myrsinifolia*), both of which grow wild around the Musashino area, in consideration of biodiversity. Through this initiative, we are contributing to creating the Musashino landscape rich in nature.

* Ikimono Plus[®]: A simple evaluation tool for biodiversity jointly developed by 8 major construction companies.



Green space with consideration for biodiversity in nature-rich area around Musashino, Tokyo

Flower Distribution Activities Contributing to Biodiversity Consideration

Gunma Plant promotes biodiversity contribution initiatives as part of activities carried out by Subaru Community Exchange Association.

Flower distribution activities

Three times a year, flower seedlings are distributed to member corporations of the Subaru Community Exchange Association. We changed the seedlings to the varieties that contribute to biodiversity in September 2015, and since then each corporation is promoting greening activities in consideration with biodiversity.



Creating flower beds to contribute to biodiversity

Elementary school flower bed contest

A flower bed contest is held for the elementary schools in Ota City and Oizumi Town. We have donated flower seedlings that contribute to biodiversity to the elementary schools to create flower beds since September 2015.

In FYE2019, 366 students from 14 schools participated in the contest. We believe that the participants were able to have rich experiences such as having fun by raising flowers and making new discoveries through creating flower beds.

Overseas Initiatives

The SUBARU Forest Ecology Conservation Project in China: 31 Forest Star Tours

Subaru of China Ltd. (SOC) established The SUBARU Forest Ecology Conservation Project at the end of 2012 in collaboration with China Wildlife Conservation Society in China National Forestry Administration.

Since 2013, SOC has established 31 Subaru Ecology Conservation Forests in nature reserves in 31 provinces in China, in collaboration with China Wildlife Conservation Society. By 2018, it has carried out “31 Forest Star Tours” events that aim at afforestation and rare species protection for six consecutive years. For those events, SOC has regularly provided vehicles and needed goods. As a result, over 300,000 or so people in total have participated, with touring over 60 nature reserves throughout China making the total traveled distance over 60,000 km. Now, the 31 Forest Star Tours is widely recognized in China.

In China, the “Forests of China Public Interest Platform” (Forests of China) was established under the leadership of the government in 2014, promoting natural environment protection and forest ecology protection at national level. SOC has partnered with Forests of China in 2015 and has cooperated with their ecological conservation activities. Having been appreciated for its activities, SOC together with Forests of China received a “Letter of Appreciation” from the United Nations, and gained international recognition. After being nominated by the China Wildlife Conservation Association of the National Forestry and Grassland Administration, representatives of SOC and about 50 members of Forest of China Organizing Committee visited the Jiangxi Province city of Jingdezhen, where conservation of wild Chinese fringe flower (*Loropetalum chinense*) is taking place. Many specimens of Chinese fringe flower were lost due to deforestation, so members of the delegation learned about the ecosystem and conservation activities focused on the plant.

SOC will continue to perform activities in harmony with the local natural environment and will promote initiatives to conserve biodiversity.



Visit to Jingdezhen to learn about Chinese fringe flower conservation

> [SOC 6th “31 Forest Star Tours” Program](#) 

Subaru of Indiana Automotive, Inc. (SIA) Initiatives Aiming at Coexistence with Nature

Subaru of Indiana Automotive, Inc. (SIA) worked on ecosystem protection by improving the water retention area and surrounding greenery within its premises to make them easy to inhabit for local wildlife. As a result, it was certified by the National Wildlife Foundation (NWF) in 2003 as an area that wildlife lives. This was the first certification as a U.S. automobile production plant.

Wild Canadian wild geese, herons and American bald eagle use the water field installed inside the circulation circuit of the test course on the north side of the factory as feeding and resting grounds and many wild deer inhabit the green area behind the recreation center. SIA still now maintains a factory surrounded by rich nature.



SIA surrounded by rich nature



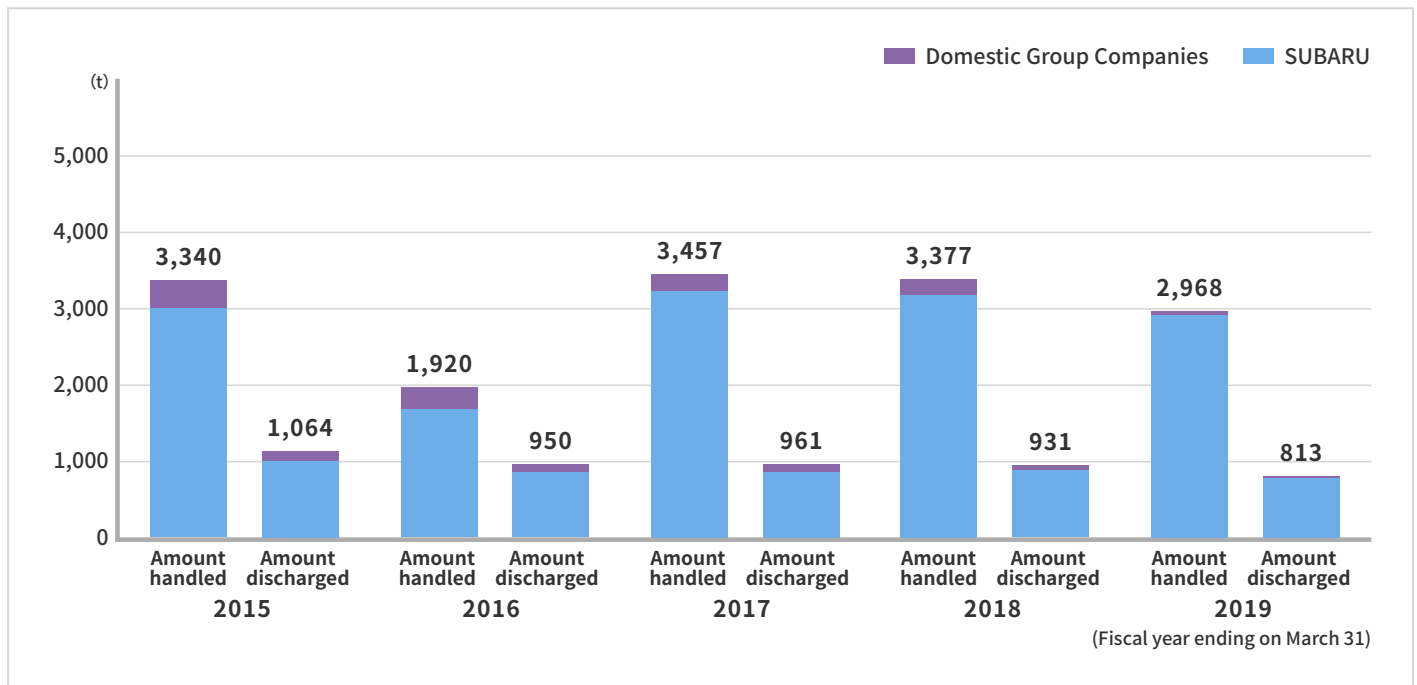
Our Approach to Preventing Pollution

The Subaru Group has “The earth, the sky and nature” are Subaru’s fields of business as its environmental policy and understands that the prevention of pollution of the soil, air, and the like is an important responsibility for the continuation of a sustainable society and our business. Accordingly, we established voluntary action standards above and beyond the legal standards and have dealt appropriately with soil, air, noise, etc.

Reducing Environmentally Hazardous Substances

PRTR Substances Handled and Emitted

PRTR Substances: Japan’s Pollutant Release and Transfer Register (PRTR) Law.

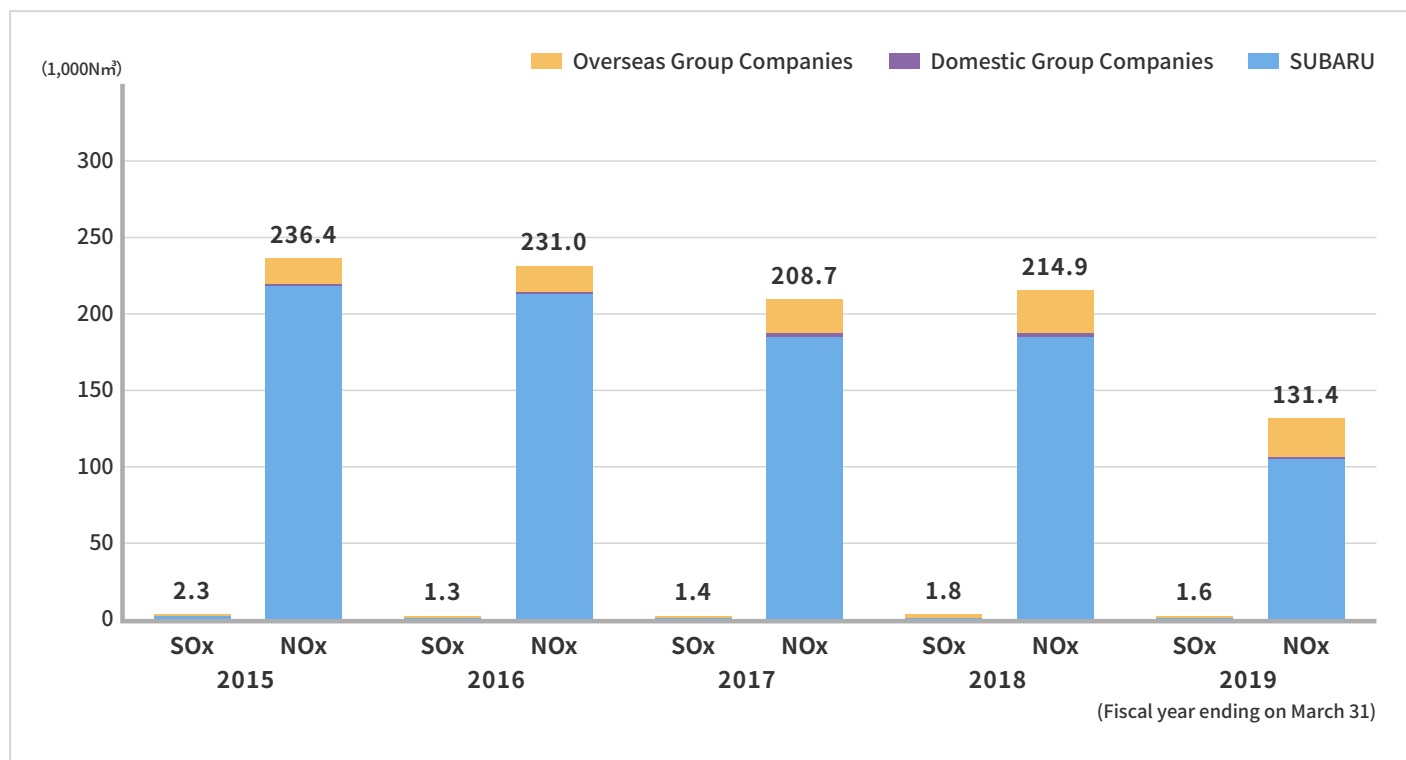


Targeted companies/divisions:

Subaru: Gunma Plant, Tokyo Office, Utsunomiya Plant, Handa Plant, Handa West Plant

Domestic Group Companies: Yusoki Kogyo K.K., Fuji Machinery Co. Ltd., Ichitan Co., Ltd., Kiryu Industrial Co., Ltd., Subaru Logistics Co., Ltd., Industrial Products Co., Ltd.

NOx and SOx Emissions



Targeted companies/divisions:

Subaru: Gunma Plant, Tokyo Office, Utsunomiya Plant, Handa Plant, Handa West Plant

Domestic Group Companies: Yusoki Kogyo K.K., Fuji Machinery Co., Ltd., Ichitan Co., Ltd., Kiryu Industrial Co., Ltd., Subaru Logistics Co., Ltd., Industrial Products Co., Ltd.

Overseas Group Company: Subaru of Indiana Automotive, Inc.

VOC Emissions

The Amount of volatile organic compounds (VOCs) Subaru emitted from the automobile coating process in FYE March 2019 was 45.8g/m², down 42.6% from the FYE March 2001 level.

We realized the reduction in VOC emission was mainly by decreasing the use of cleaning thinners and increasing the recovery of used thinners.

Prevention of Soil and Underground Water Pollution

Subaru has voluntarily performed soil and groundwater tests at our facilities since 1998, and has implemented purification measures and groundwater monitoring as required. Since 2003 when Soil Contamination Countermeasures Act came into effect, we have been filing reports and conducting tests in accordance with the law.

Status of Storage and Management of PCB Wastes

Subaru stores polychlorinated biphenyl (PCB) wastes appropriately according to the law, and plans to complete the disposal by a predetermined time.

Significant Spills

Subaru promptly and appropriately responds in accordance with relevant laws and regulations in the event of significant spill accidents. The number of the accident was zero in FYE March 2019.

Transportation of Hazardous Waste

Subaru had no significant spills and transportation of hazardous wastes specified in the Basel Convention Annex I, II, III, and VIII.

Related information

› [Management of Chemical Substances \(Operation of the IMDS\)](#)



Approach to Environmentally-conscious Procurement

The Subaru Group recognizes that working on improving environmental issues through business activities is an urgent social issue imposed on corporations and that we bear the responsibility to accomplish this, and is working on environmentally-conscious procurement activities throughout the supply chain with the aim of achieving sustainable society. Our environmental policies state that “Our purchasing activities reflect consideration for biodiversity and other aspects of environmental protection.” We promote the procurement of parts, materials, and services from business partners who implement business activities that consider the environment.

Fundamental Procurement Policy

Fundamental Procurement Policy

Subaru has been promoting procurement activities under the following basic policies.

1. Compliance & Green Procurement

We engage in procurement activities in a way to harmonize man, society and the environment and conduct transactions paying due care to observe legal and societal rules and to protect the environment.

2. Establishment of Best Partnership

We establish “WIN-WIN” relationships with suppliers through transactions based on mutual trust under the doctrine of good faith.

3. Fair and Open Way of Selecting Suppliers

In selecting suppliers, the door is wide-open to all firms, domestic and overseas, for fair and equitable business to procure goods and services most excellent from six perspectives: quality, cost, delivery, technical development, management and environment (QCDDME).

Green Procurement

Initiatives at Subaru

Subaru has informed business partners about our environmental policies in order for them to conduct transactions with the understanding of our approach to the environment, while having summarized our expectations for business partners regarding environmental initiatives in the “Subaru Green Procurement Guidelines”. The guidelines primarily request cooperation in the following six areas:

Green Procurement Guidelines

[Expectations for Business Partners]

◆ Expectations for business partners regarding environmental management

1. Compliance with environmental laws and regulations
2. Establishment of environmental management systems (EMS)
3. Submission of environmental manager registration forms
4. Improvement of environmental performance

◆ Expectations regarding parts, materials, and services delivered to our company

5. Management of environmentally hazardous substances
6. Reductions in CO₂ emissions and packaging material in logistics

Compliance to these guidelines is considered a necessary criterion for selecting business partners. In addition, we recommend new business partners to acquire ISO14001*¹. Currently, all of our Tier1*² business partners have already acquired ISO14001 certification. In case our new business partners have difficulty acquiring ISO14001, we review their compliance status by having them submit reports on their voluntary assessment based on environmental guidelines, while supporting them with the acquisition of Eco Action 21*³.

*1 International standard for environmental management systems (EMS) established in September 1996 by the International Organization for Standardization (ISO). ISO14001 is a management system standard to certify that an organization considers the environment and has built a system for continuously reducing environmental impact.

*2 Companies that directly supply parts to car manufacturers. They are primary business partners. Tier2 business partners are companies that supply Tier1 with those parts that make up the Tier1 company parts.

*3 Environmental conservation activity promotion program for small- and medium-size enterprises formulated by the Ministry of the Environment, Japan. It is an environmental management system that addresses three areas: environmental management systems, environmental efforts, and environmental reporting, based on the guidelines.

Related information

> [Subaru Green Procurement Guidelines](#)  PDF/546KB

Management and Reduction of Environmentally Hazardous Substances Contained in Parts

Subaru complies with laws and regulations concerning substances of concern in each country, including the REACH regulation*¹ and ELV Directive*². We perform usage surveys regarding chemical substances contained in parts to our business partners as necessary and continue to perform management of those substances. In addition, we are sequentially switching from materials that are prohibited by laws, regulations, or self-regulations such as industrial norms to alternative materials, and are working to reduce environmentally hazardous substances.

*1 European regulation on chemical substances, requiring all chemical substances to be subject to management or restriction measures commensurate to the risk that they pose to humans and the environment.

*2 The End-of Life Vehicles Directive: European Union (EU) directive brought into force in 2000 to reduce the environmental impact from the scrapping of used vehicles in the EU. It aims to prohibit the use of hazardous substances and promote a reduction in waste products by encouraging the reuse or recycling of used vehicles and their parts.

Procurement with Consideration for Biodiversity

Subaru surveys the usages of the biological resources of leather and plant-derived materials to make sure that there is no negative impact on the ecosystem during the procurement of raw materials. In addition, our main office has switched to regenerated copy paper with 100% recycled paper pulp that does not use any new plant resources and we plan to sequentially switch over at other facilities as well.

Environmental Management System Request to Business Partners

Subaru requests, based on the Green Procurement Guidelines, that business partners formulate an environmental management system with the acquisition of ISO14001 third-party certification at its base. We request the business partners who have difficulty acquiring ISO14001 to acquire Eco Action 21 or to pass our voluntary examination. To those business partners who have passed our voluntary examination, we make inquiries or perform audits as necessary and request them to continue efforts toward early acquisition of third-party certification for environmental management.



Our Approach to Environmental Communication

Subaru values the relations with all our stakeholders, and to become a trustworthy corporation that brings peace of mind to our stakeholders as well as promotes environmental conservation activities, we widely disseminate information in an easy-to-understand manner utilizing various opportunities.

Exhibit at “EcoPro 2018 -Environment and Society of the SDGs Era, and to the Future-”

For three days starting on December 6, 2018, we participated in the EcoPro 2018 held at Tokyo Big Sight.

Our exhibition booth, with the theme of “Coexistence with Nature,” projected on the large screen the images of “SUBARU Forest” in the Bifuka Town, Hokkaido, where we have the Subaru Test & Development Center Bifuka Proving Ground. We also exhibited the Forester, so that visitors can imagine the joy of driving in nature. During the event, over 6,200 people visited the SUBARU booth, which gave us a great opportunity to let many people acknowledge our environmental initiatives. Additionally, as an effort to reduce CO₂ emissions, we participated in J-Credit Scheme for disaster area reconstruction support and committed to offset CO₂ emissions resulting from the exhibition by 12.0 t-CO₂.



Exhibition booth with the image of SUBARU Forest



Carbon Offset Certificate

Communication with Local Residents

Subaru communicates daily with people in the community who live near the factories, dormitories, and corporate housing in order to become a company that is open to the community.

At the Gunma Plant, representatives of the factories visit local government representatives every month to exchange information about circumstances in the area and requests to our factories while introducing Subaru events.

We also hold briefings on the status of the Gunma Plant and our environmental initiatives so that visitors can gain deeper understanding of our efforts to live together with the community. We hold factory visits once a year in order that visitors can further their understanding of our production activities by directly watching Subaru's automobile manufacturing and asking questions.

At the Aerospace Company, we give advance notice so that local residents are made aware of construction involving noise and vibration.

Checking the Perimeter of our Factories for Odor, etc.

At the Gunma Plant, we check the perimeter of the factories on a daily basis because as a rule of thumb, the levels of odor, noise and the like are greatly different between the levels shown by the measuring instruments and how people actually feel. In addition, by setting up the consultation desk and holding a dialogue and factory tours, we closely communicate with neighboring residents, and improve production facilities as appropriate, based on their valuable feedback.

Accepting factory tours

At the Gunma Plant, we invite elementary school children to utilize factory tours for their field trips. In FYE2019, 95,797 people, including the public, visited our factory. Also, in the SUBARU Visitor Center, we exhibit what is being recycled and what comes out of the recycling in the panel on the wall, which helps visitors to learn about recycling of automobiles.

The Utsunomiya Plant has been participating in the "Environmentally Friendly Factory Tours" hosted by Utsunomiya City as part of environmental education since FYE2018, and accepts 50 school children every year. The tour introduces the activities of our environmentally friendly factories, such as promoting recycling, utilizing solar power generation, and manufacturing for low fuel consumption, and encourages children to think about environmental issues.



Area to learn about automobile recycling

Eco-Science Fair and Go Green Event

Since FYE2017, Subaru of Indiana Automotive, Inc. (SIA) has been sponsoring the Eco-Science Fair, which students from elementary to high school conduct research and presentations on the environment. In April 2018, the third year, there were 286 participants. SIA also made a \$ 3,000 donation to the school that did a great job.



SIA booth introducing recycling activities

Related information

> [Social contribution initiatives](#)



Environmental Data Performance*

(Fiscal year ended March 31, 2019)

In addition to complying with the laws and regulations, Subaru also manages voluntary standards that are 20% higher than the legal regulation values.

We have complied with all the regulation values of the legal standards.

* Data are measured values of major regulated substances/facilities in each plant and office.

Atmosphere

(Air Pollution Control Act, Prefectural Regulations)

Automotive Business

Gunma Plant

Main Plant

Substance	Equipment/facility	Unit	Regulation	Voluntary standard	Maximum	Average
NOx	Paint drying oven	ppm	230	184	51	33
Particulate matter	Paint drying oven	g/Nm ³	0.2	0.16	0.005	0.002
VOC	Paint booth, etc.	ppm-C	700	-	602	218

Yajima Plant

Substance	Equipment/facility	Unit	Regulation	Voluntary standard	Maximum	Average
NOx	Paint drying oven	ppm	230	184	63	36
Particulate matter	Paint drying oven	g/Nm ³	0.2	0.16	0.004	0.002
VOC	Paint booth, etc.	ppm-C	700	-	345	81
VOC	Paint booth, etc.	ppm-C	400	-	298	56

Oizumi Plant

Substance	Equipment/facility	Unit	Regulation	Voluntary standard	Maximum	Average
NOx	Aluminum melting oven	ppm	180	144	68	36
Particulate matter	Aluminum melting oven	g/Nm ³	0.3	0.24	0.110	0.048

Ota North Plant

There is no applicable equipment/facility.

Tokyo Office

There is no applicable equipment/facility.

Aerospace Company

Utsunomiya Plant

Main Plant

Substance	Equipment/facility	Unit	Regulation	Voluntary standard	Maximum	Average
NOx	Cogeneration	ppm	600	480	181	181
NOx	Drying oven	g/Nm ³	170	136	<100	<100
Particulate matter	Drying oven	ppm-C	0.2	0.16	<0.01	<0.01

South Plant and 2nd South Plant

There is no applicable equipment/facility.

Handa Plant

Substance	Equipment/facility	Unit	Regulation	Voluntary standard	Maximum	Average
SOx	2 ton boiler	ppm	1.5	1.2	<0.02	<0.02
NOx	2 ton boiler	ppm	180	144	34	23
Particulate matter	2 ton boiler	g/Nm ³	0.1	0.08	<0.002	<0.002

Handa West Plant

Substance	Equipment/facility	Unit	Regulation	Voluntary standard	Maximum	Average
SOx	2 ton boiler	ppm	1.5	1.2	<0.002	<0.002
NOx	2 ton boiler	ppm	180	144	37	29
Particulate matter	2 ton boiler	g/Nm ³	0.1	0.08	<0.002	<0.002

Water Quality

(Water Pollution Prevention Act, Sewerage Act, Prefectural/Municipal Regulations)

Automotive Business

Gunma Plant

Main Plant

Item	Unit	Regulation (Prefectural regulations)	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5.8~8.6	6.1~8.3	7.4	7.3	7.4
Biochemical oxygen demand (BOD)	mg/ℓ	25	20	16.3	1.9	7.3
Suspended solids (SS)	mg/ℓ	50	40	3.6	1.2	2.6
n-hexane extract content (Mineral oil content)	mg/ℓ	5	4	<1.0	<1.0	<1.0
n-hexane extract content (Animal and plant oils and fats content)	mg/ℓ	30	24	<1.0	<1.0	<1.0
Fluorine and its compounds	mg/ℓ	8	6.4	1.3	<0.2	0.7
Zinc content	mg/ℓ	2	1.6	0.501	0.015	0.162
Soluble iron content	mg/ℓ	10	8	<0.1	<0.1	<0.1
Soluble manganese content	mg/ℓ	10	8	<0.1	<0.1	<0.1
Phosphorus content	mg/ℓ	16(8)	6.4	2.9	0.1	1.5
Nitrogen content	mg/ℓ	120(60)	48	20.5	2.9	10.8

[Effluent is discharged into public rivers. Measurement was conducted at two drainage outlets (New No.2 and No.5 waterways). Values for total phosphorus content and total nitrogen content are daily averages.]

Yajima Plant

Item	Unit	Regulation (Prefectural regulations)	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5.8~8.6	6.1~8.3	7.4	7.1	7.3
Biochemical oxygen demand (BOD)	mg/ℓ	25	20	14.1	3.4	7.5
Suspended solids (SS)	mg/ℓ	50	40	7.2	2.0	4.1
n-hexane extract content (Mineral oil content)	mg/ℓ	5	4	<1.0	<1.0	<1.0
n-hexane extract content (Animal and plant oils and fats content)	mg/ℓ	30	24	2.6	<1.0	1.3
Fluorine and its compounds	mg/ℓ	8	6.4	2.3	0.9	1.6
Zinc content	mg/ℓ	2	1.6	0.9	0.653	0.786
Soluble iron content	mg/ℓ	10	8	0.2	<0.1	0.1
Soluble manganese content	mg/ℓ	10	8	0.2	<0.1	0.1
Phosphorus content	mg/ℓ	16(8)	6.4	0.4	0.2	0.3
Nitrogen content	mg/ℓ	120(60)	48	6.3	4.6	5.5

[Effluent is discharged into public rivers. Values for total phosphorus content and total nitrogen content are daily averages.]

Oizumi Plant

Item	Unit	Regulation (Prefectural regulations)	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5.8~8.6	6.1~8.3	8.0	7.1	7.4
Biochemical oxygen demand (BOD)	mg/ℓ	10	8	4.5	<1.0	2.3
Suspended solids (SS)	mg/ℓ	10	8	8.0	<1.0	2.9
n-hexane extract content (Mineral oil content)	mg/ℓ	3	2.4	<1.0	<1.0	<1.0
n-hexane extract content (Animal and plant oils and fats content)	mg/ℓ	30	24	<1.0	<1.0	<1.0
Fluorine and its compounds	mg/ℓ	8	6.4	<0.2	<0.2	<0.2
Zinc content	mg/ℓ	2	1.6	0.156	0.061	0.120
Soluble iron content	mg/ℓ	5	4	0.2	<1.0	1.0
Soluble manganese content	mg/ℓ	5	4	<1.0	<1.0	<1.0
Phosphorus content	mg/ℓ	16(8)	6.4	0.1	<0.1	0.1
Nitrogen content	mg/ℓ	120(60)	48	14.3	8.8	12.0

[Effluent is discharged into public rivers. Values for total phosphorus content and total nitrogen content are daily averages.]

Ota North Plant

Item	Unit	Regulation (Prefectural regulations)	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5.8~8.6	6.1~8.3	7.7	7.6	7.7
Biochemical oxygen demand (BOD)	mg/ℓ	25	20	<1.0	<1.0	<1.0
Suspended solids (SS)	mg/ℓ	50	40	5.2	<1.0	3.1
n-hexane extract content (Mineral oil content)	mg/ℓ	5	4	<1.0	<1.0	<1.0
n-hexane extract content (Animal and plant oils and fats content)	mg/ℓ	30	24	<1.0	<1.0	<1.0
Fluorine and its compounds	mg/ℓ	8	6.4	<0.2	<0.2	<0.2
Zinc content	mg/ℓ	2	1.6	0.043	0.026	0.036
Soluble iron content	mg/ℓ	10	8	0.2	<0.1	0.2
Soluble manganese content	mg/ℓ	10	8	0.2	<0.1	0.2
Phosphorus content	mg/ℓ	16(8)	6.4	<0.1	<0.1	<0.1
Nitrogen content	mg/ℓ	120(60)	48	1.3	1.2	1.3

[Effluent is discharged into public rivers. Values for total phosphorus content and total nitrogen content are daily averages.]

Tokyo Office

Item	Unit	Regulation*	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5~9	5.4~8.6	8.4	7.1	8.2
Biochemical oxygen demand (BOD)	mg/ℓ	600	480	410	46	147
Suspended solids (SS)	mg/ℓ	600	480	440	39	125
n-hexane extract content (Mineral oil content)	mg/ℓ	5	4	<4	<4	<4
n-hexane extract content (Animal and plant oils and fats content)	mg/ℓ	30	24	17	<4	6
Total phosphorus	mg/ℓ	16	12.8	6	1	4
Total nitrogen	mg/ℓ	120	96	54	10	30
Soluble manganese	mg/ℓ	10	8	0	0	0
Cyanogen	mg/ℓ	1	0.8	<0.01	<0.01	<0.01

[Effluent is discharged into public sewer.]

* Water Pollution Prevention Act and Mitaka City Sewer Regulation.

Aerospace Company

Utsunomiya Plant

Main Plant

Item	Unit	Regulation	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5~9	5.4~8.6	7.7	6.8	7.2
Suspended solids (SS)	mg/ℓ	600	480	303	<1.0	35
Biochemical oxygen demand (BOD)	mg/ℓ	600	480	325	0.6	54
n-hexane extract content (Mineral oil content)	mg/ℓ	5	4	<1.0	<1.0	<1.0
n-hexane extract content (Animal and plant oils and fats content)	mg/ℓ	30	24	23.8	<1.0	12.5
Fluorine compounds	mg/ℓ	8	6.4	0.9	<0.2	0.3
Cyanogen	mg/ℓ	1	0.8	<0.1	<0.1	<0.1
Cadmium	mg/ℓ	0.03	0.024	0.008	<0.003	0.004
Total chromium	mg/ℓ	2	1.6	0.25	<0.01	0.01
Hexavalent chromium	mg/ℓ	0.1	0.08	<0.02	<0.02	<0.02

[Effluent is discharged into public sewer.]

Main Plant

Item	Unit	Regulation	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5.8~8.6	6.0~8.3	8.1	7.0	7.4
Suspended solids (SS)	mg/ℓ	50	40	<1.0	<1.0	<1.0
Biochemical oxygen demand (BOD)	mg/ℓ	30	24	3.8	<0.5	1.3
n-hexane extract content (Mineral oil content)	mg/ℓ	5	4	<1.0	<1.0	<1.0
n-hexane extract content (Animal and plant oils and fats content)	mg/ℓ	30	24	<1.0	<1.0	<1.0
Cyanogen	mg/ℓ	1	0.8	<0.1	<0.1	<0.1
Cadmium	mg/ℓ	0.03	0.024	<0.003	<0.003	<0.003
Total chromium	mg/ℓ	2	1.6	<0.01	<0.01	<0.01
Hexavalent chromium	mg/ℓ	0.5	0.4	<0.02	<0.02	<0.02

[Effluent is discharged into public rivers.]

South Plant

Item	Unit	Regulation	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5~9	5.4~8.6	8	6.9	7.3
Suspended solids (SS)	mg/ℓ	600	480	123	4.4	40
Biochemical oxygen demand (BOD)	mg/ℓ	600	480	310	2.2	100
n-hexane extract content (Mineral oil content)	mg/ℓ	5	4	<1.0	<1.0	<1.0
n-hexane extract content (Animal and plant oils and fats content)	mg/ℓ	30	24	21.3	<1.0	6.7
Cyanogen	mg/ℓ	1	0.8	<0.1	<0.1	<0.1
Cadmium	mg/ℓ	0.03	0.024	<0.003	<0.003	<0.003
Total chromium	mg/ℓ	2	1.6	<0.01	<0.01	<0.01
Hexavalent chromium	mg/ℓ	0.1	0.08	<0.02	<0.02	<0.02

[Effluent is discharged into public sewer.]

South Plant

Item	Unit	Regulation	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5.8~8.6	6.0~8.3	7.8	6.9	7.2
Suspended solids (SS)	mg/ℓ	50	40	2	<1.0	1.0
Biochemical oxygen demand (BOD)	mg/ℓ	30	24	21.9	<0.5	2.3
n-hexane extract content (Mineral oil content)	mg/ℓ	5	4	<1.0	<1.0	<1.0
Cyanogen	mg/ℓ	1	0.8	<0.1	<0.1	<0.1
Cadmium	mg/ℓ	0.03	0.024	<0.003	<0.003	<0.003
Total chromium	mg/ℓ	2	1.6	<0.01	<0.01	<0.01
Hexavalent chromium	mg/ℓ	0.5	0.4	<0.02	<0.02	<0.02

[Effluent is discharged into public rivers.]

2nd South Plant

Item	Unit	Regulation	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5~9	5.4~8.6	8.6	6.9	7.4
Suspended solids (SS)	mg/ℓ	600	480	164	<1.0	35
Biochemical oxygen demand (BOD)	mg/ℓ	600	480	189	1.3	41
n-hexane extract content (Mineral oil content)	mg/ℓ	5	4	<1.0	<1.0	<1.0
n-hexane extract content (Animal and plant oils and fats content)	mg/ℓ	30	24	22.5	<1.0	4.3
Fluorine compounds	mg/ℓ	8	6.4	1.3	<0.2	0.4
Cyanogen	mg/ℓ	1	0.8	<0.1	<0.1	<0.1
Cadmium	mg/ℓ	0.03	0.024	<0.003	<0.003	<0.003
Total chromium	mg/ℓ	2	1.6	0.7	<0.01	0.24
Hexavalent chromium	mg/ℓ	0.1	0.08	<0.02	<0.02	<0.02

[Effluent is discharged into public sewer.]

2nd South Plant

Item	Unit	Regulation	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5.8~8.6	6.0~8.3	7.8	6.3	7.1
Suspended solids (SS)	mg/ℓ	50	40	<1.0	<1.0	<1.0
Biochemical oxygen demand (BOD)	mg/ℓ	30	24	4.1	0.6	2.0
n-hexane extract content (Mineral oil content)	mg/ℓ	5	4	<1.0	<1.0	<1.0
Cyanogen	mg/ℓ	1	0.8	<0.1	<0.1	<0.1
Cadmium	mg/ℓ	0.03	0.024	<0.003	<0.003	<0.003
Total chromium	mg/ℓ	2	1.6	<0.01	<0.01	<0.01
Hexavalent chromium	mg/ℓ	0.5	0.4	<0.02	<0.02	<0.02

[Effluent is discharged into public rivers.]

Handa Plant

Item	Unit	Regulation	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5~9	6~8	8.0	6.9	7.4
Suspended solids (SS)	mg/ℓ	25	20	3.0	<1.0	1.2
Biochemical oxygen demand (BOD)	mg/ℓ	25	20	17.0	0.5	3.5
Chemical oxygen demand (COD)	mg/ℓ	25	20	14.0	1.6	6.0
n-hexane extract content (Mineral oil content)	mg/ℓ	5	1.6	<0.5	<0.5	<0.5
Cyanogen	mg/ℓ	1	0.8	<0.1	<0.1	<0.1
Cadmium	mg/ℓ	0.03	0.024	<0.005	<0.005	<0.005
Total chromium	mg/ℓ	2	1.6	<0.04	<0.04	<0.04
Hexavalent chromium	mg/ℓ	0.5	0.4	<0.04	<0.04	<0.04

Handa West Plant

Item	Unit	Regulation	Voluntary standard	Maximum	Minimum	Average
Concentration of hydrogen ion (pH)	-	5.8~8.6	6.0~8.4	7.2	6.8	7.0
Suspended solids (SS)	mg/ℓ	30	15	5.0	3.0	3.8
Biochemical oxygen demand (BOD)	mg/ℓ	25	15	12.0	6.2	8.7
Chemical oxygen demand (COD)	mg/ℓ	20	15	11.0	6.9	8.6
n-hexane extract content (Mineral oil content)	mg/ℓ	5	2	<0.5	<0.5	<0.5
Cyanogen	mg/ℓ	1	0.8	<0.1	<0.1	<0.1
Cadmium	mg/ℓ	0.03	0.024	<0.005	<0.005	<0.005
Total chromium	mg/ℓ	0.2	0.16	<0.04	<0.04	<0.04
Hexavalent chromium	mg/ℓ	0.5	0.4	<0.04	<0.04	<0.04

Noise

(Noise Regulation Act, Prefectural Regulations and Agreements)

Automotive Business

Gunma Plant

Measurement Location	Unit	Regulation* (Night)	Voluntary standard	Measurement sites	Measured value
Main Plant	dB(A)	55	54	20	40~54
Yajima Plant	dB(A)	55	54	20	43~49
Oizumi Plant	dB(A)	55	50	20	40~53

* Gunma prefectural regulations, and Ota-Oizumi pollution prevention agreements.

Utsunomiya Plant

Measurement Location	Unit	Regulation	Voluntary standard	Measurement sites	Maximum
Main Plant	dB(A)	70	68	8	64
South Plant	dB(A)	65	63	4	49
2nd South Plant	dB(A)	65	63	3	61

Handa Plant、Handa West Plant

Measurement Location	Unit	Regulation	Voluntary standard	Measurement sites	Maximum
Handa Plant	dB(A)	65	63	3	61
Handa West Plant	dB(A)	65	63	6	63

Kisarazu Office

Measurement Location	Unit	Regulation	Voluntary standard	Measurement sites	Maximum
Kisarazu Office	dB(A)	60	58	2	54

Vibration

(Vibration Regulation Act, Prefectural Regulations and Agreements)

Gunma Plant

Measurement Location	Unit	Regulation (Night)	Voluntary standard	Measurement sites	Measured value
Main Plant	dB(A)	65	64	20	17.1~40.8
Yajima Plant	dB(A)	65	64	20	25.3~42.4
Oizumi Plant	dB(A)	60	59	20	19.9~36.1

Utsunomiya Plant

Measurement Location	Unit	Regulation	Voluntary standard	Measurement sites	Maximum
Main Plant	dB(Z)	70	68	8	35
South Plant	dB(Z)	65	63	2	<30
2nd South Plant	dB(Z)	65	63	3	34

Handa Plant、Handa West Plant

Measurement Location	Unit	Regulation	Voluntary standard	Measurement sites	Maximum
Handa Plant	dB(Z)	70	68	3	43
Handa West Plant	dB(Z)	70	68	5	63

Kisarazu Office

Measurement Location	Unit	Regulation	Voluntary standard	Measurement sites	Maximum
Kisarazu Office	dB(Z)	60	58	2	34

Odor

(Offensive Odor Control Act)

Automotive Business

Gunma Plant

[Odor index]

Measurement Location	Regulation	Voluntary standard	Measurement sites	Measured value
Main Plant	21	20	6	<10
Yajima Plant	21	20	8	<10
Oizumi Plant	21	20	6	<10

PRTR Substances Handled and Emitted

PRTR Substances: Japan's Pollutant Release and Transfer Register (PRTR) Law.

Automotive Business

Gunma Plant (Main Plant, Yajima Plant, Oizumi Plant, Subaru Test & Development Center at Sano)

[Unit: kg/year (except for dioxins), dioxins: mg-TEQ/year]

Chemical substance	Amount handled	Atmospheric emissions	Water emissions (Public waters)	Amount moved (Sewage)	Amount moved	Amount consumed	Amount removed through processing	Amount recycled
Water soluble zinc compounds	86,414	0	1,407	0	0	85,007	0	0
Ethylbenzene	418,657	226,978	0	0	0	42,707	30,764	118,209
Xylene	614,315	263,912	0	0	0	168,613	103,382	78,409
1,2,4-Trimethylbenzene	221,276	12,026	0	0	0	199,797	6,364	3,088
1,3,5-Trimethylbenzene	33,864	21,198	0	0	0	2,048	4,677	5,941
Toluene	730,195	241,637	0	0	0	335,961	99,556	53,041
Naphthalene	10,814	7,219	0	0	0	0	2,887	708
Nickel compounds	5,519	0	146	0	3,282	2,091	0	0
Bis (2-ethylhexyl) phthalate	7,318	0	0	0	150	7,168	0	0
Hydrogen fluoride and its water-soluble salts	4,220	0	3,840	0	0	380	0	0
N-hexane	114,902	425	0	0	0	114,477	0	0
Benzene	20,428	77	0	0	0	20,351	0	0
Formaldehyde	13,669	7,628	0	0	1,341	0	2,852	1,849
Manganese and compounds	8,754	0	221	0	3,909	4,624	0	0
Dioxins Unit: mg-TEQ/year	-	0.0050	0	0	0.000	-	-	-
Cumene	12,381	8,110	0	0	0	0	1,760	2,511
Methylnaphthalene	14,821	74	0	0	0	14,747	0	0
Polyoxyethylene alkyl ether(C12-15)	1,888	0	51	0	893	944	0	0
Total	2,319,435	789,283	5,665	0	9,576	998,915	252,241	263,754
		794,949						

[Unit: kg/year]

Chemical substance	Amount handled	Atmospheric emissions	Water emissions (Public waters)	Amount moved (Sewage)	Amount moved	Amount consumed	Amount removed through processing	Amount recycled
Ethylbenzene	13,759	0.14	0	0	0	13,759	0	0
Ethylene glycol	2,184	0.00	0	0	0	2,184	0	0
Xylene	60,804	0.56	0	0	0	60,803	0	0
1,3,5-Trimethylbenzene	12,861	0.02	0	0	0	12,861	0	0
Toluene	234,517	7.07	0	0	0	234,510	0	0
1,2,4-Trimethylbenzene	46,288	0.16	0	0	0	46,288	0	0
Benzene	7,653	0.87	0	0	0	7,652	0	0
n-Hexane	24,169	6.21	0	0	0	24,163	0	0
Total	402,235	15.03	0	0	0	402,220	0	0
		15.03						

Aerospace Company

[Unit: kg/year]

Chemical substance	Amount handled	Atmospheric emissions	Water emissions (Public waters)	Amount moved (Sewage)	Amount moved	Amount consumed	Amount removed through processing	Amount recycled
Toluene	21,991	11,895	0	0	3,365	6,731	0	0
Xylene	7,547	4,102	0	0	1,570	0	0	0
Manganese	1,463	0	0	0	585	878	0	0
Hexavalent chromium	532	0	0	0	130	274	128	0
Total	31,533	15,997	0	0	5,650	7,883	128	0