

# Resource Recycling

## Our Approach

The Subaru Group considers it very important for manufacturing companies to help realize a society where materials are recycled continuously and the sustainability of business is assured through recycling to maximize resource efficiency.

We will help create a society that recycles with the goals of efficient resource recycling throughout the product life cycle, maintaining zero landfill at production bases in Japan and abroad, and taking the 3Rs – reduce, reuse and recycle – to the next level.

## Achievements and Initiatives

### Raw Materials

SUBARU reuses remnant materials and scrap generated during the production of automobiles as well as end-of-life products that have been collected and other reusables as resources for materials, such as iron, aluminum, and plastics, which account for a large proportion of materials used in making an automobile. Through these efforts, we are promoting closed-loop recycling\*1 to reduce natural resource consumption and waste generation.

\*1 A method by which waste and scrap generated during production along with end-of-life products are recycled as materials for parts of the same quality and then reused to make products of the same kind.

Raw Materials Used in Automobiles in FYE March 2021		Recycling Method
Iron	664,330 tons	Delivered to dealers in the form of iron scrap for reuse
Aluminum	30,468 tons	Re-melted at plants and reused almost entirely
Plastics	23,314 tons	Crushed again at plants and reused partially

### Example: Recycling of aluminum chips

#### ① Aluminum ingots



#### ② Melting



#### ③ Die casting



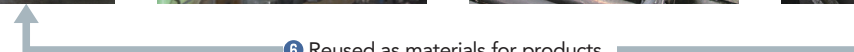
#### ④ Engine cylinder block



#### ⑤ Chips



⑥ Reused as materials for products



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## Production

### ■ Zero Emissions of Waste from Production

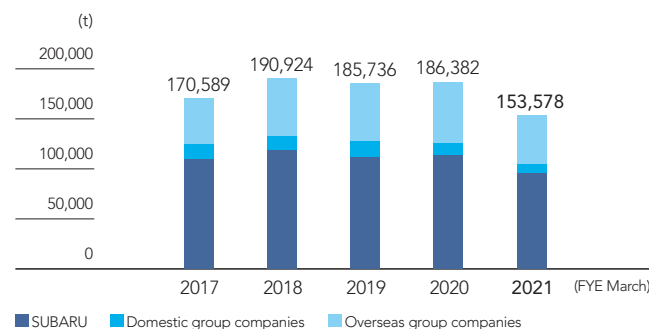
Waste emissions in FYE March 2021 decreased by 32,804 tons due to factors including a decrease in automobile production. As waste is also an important resource, we have maintained zero emissions\*2 of waste since FYE March 2015 through maximum recovery and recycling and proper treatment of waste generated.

\*2 A system in which waste and by-products generated in one industry are utilized as resources by other industries, resulting in no waste discharge. This concept was proposed by the United Nations University in 1994.

### Primary waste products and their recycled products

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

### Waste Generation



Scope:

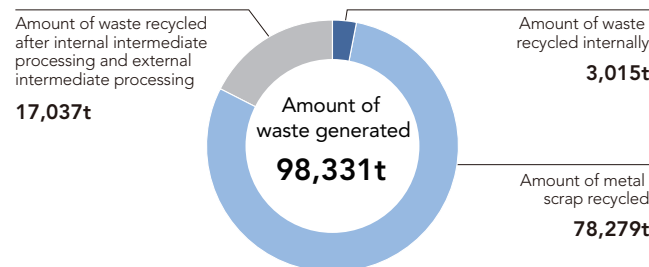
SUBARU: Gunma Plant, Tokyo Office, Utsunomiya Plant, Handa Plant, Handa West Plant  
Group companies in Japan: Yusoki Kogyo K.K., Fuji Machinery Co., Ltd., Ichitan Co., Ltd., Kiryu Industrial Co., Ltd., Subaru Logistics Co., Ltd.

Overseas group companies: Subaru of Indiana Automotive, Inc., Subaru of America, Inc., Subaru Canada, Inc., Subaru Research & Development, Inc.

\* Amount of waste generated includes metal scrap that is sold.

\* We do not export or import waste deemed hazardous under the terms of Annex I, II, III, and IV of the Basel Convention 2.

### Amount of Waste Generated and Processed



Based on aggregation of data from Gunma Plant, Tokyo Office, Utsunomiya Plant

\*Waste is not disposed of in a landfill after external intermediate processing.

## Logistics

### ■ 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 its environmental impact, focusing on the reuse of packaging materials.

The amount of packaging materials reused in FYE March 2021 decreased by 35.1% from the previous year to 661 tons due to production fluctuations at our U.S. factory. Intensity per vehicle was essentially unchanged from FYE March 2020 at 2.4 kg/vehicle.

	2017	2018	2019	2020	2021
	(FYE March)				
Amount reused (t)	652	699	776	1,020	661
Intensity (kg/vehicle)	1.9	2.0	2.1	2.8	2.4

### • Distribution Centers

Subaru of America Inc.'s regional distribution centers use returnable containers to reduce the amount of cardboard and wood used when transporting parts. Distribution centers in New Jersey and neighboring areas achieved 100% use of returnable packaging materials in 2020.

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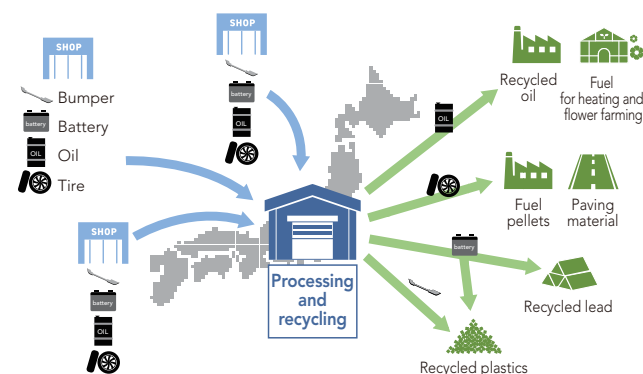
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## Sales

### ■ Zero Emissions of Waste from SUBARU Dealers in Japan

Dealers in Japan are committed to the proper management of waste generated from their business activities and to recycling to achieve zero emissions in Japan. As a result of these efforts, 144,971 used lead-acid batteries (equivalent to 1,915 tons of lead), 5,340 kL of used oil, and 195,111 used tires were collected and recycled during FYE March 2021.

Zero emission initiatives led by dealers, which work most closely with customers, are activities that will contribute more directly to environmental conservation in local communities. The initiatives are expected to help promote proper processing, recycling, and the effective use of resources.



### ■ Recycling of Waste Oil

Waste oil generated at SUBARU dealers in Japan during oil changes is recycled as recycled fuel oil through SUBARU's zero waste emissions scheme. Flower farmers in Yamagata Prefecture grow beautiful poinsettia and cyclamen every year using this recycled fuel oil to heat their greenhouses.

### ■ Proper Processing of End-of-life Vehicles

Under the Act on Recycling, etc. of End-of-Life Vehicles of Japan, car manufacturers are required to fully recover and properly recycle automotive shredder residue (ASR), airbags, and chlorofluorocarbons (CFCs) from their end-of-life automobiles.

SUBARU has been promoting the smooth, proper, and efficient recycling of ASR by establishing, together with 12 other automakers and other companies, the Automobile shredder residue Recycling promotion Team (ART).<sup>\*3</sup> We also ensure proper processing of airbags and CFCs through operations of Japan Auto Recycling Partnership Ltd., established jointly with Japanese automakers and importers.

SUBARU also collaborates with its dealers nationwide by

jointly operating an automotive recycling system aimed at promoting the proper processing and raising the recycling rate of ASR, airbags, and CFCs.

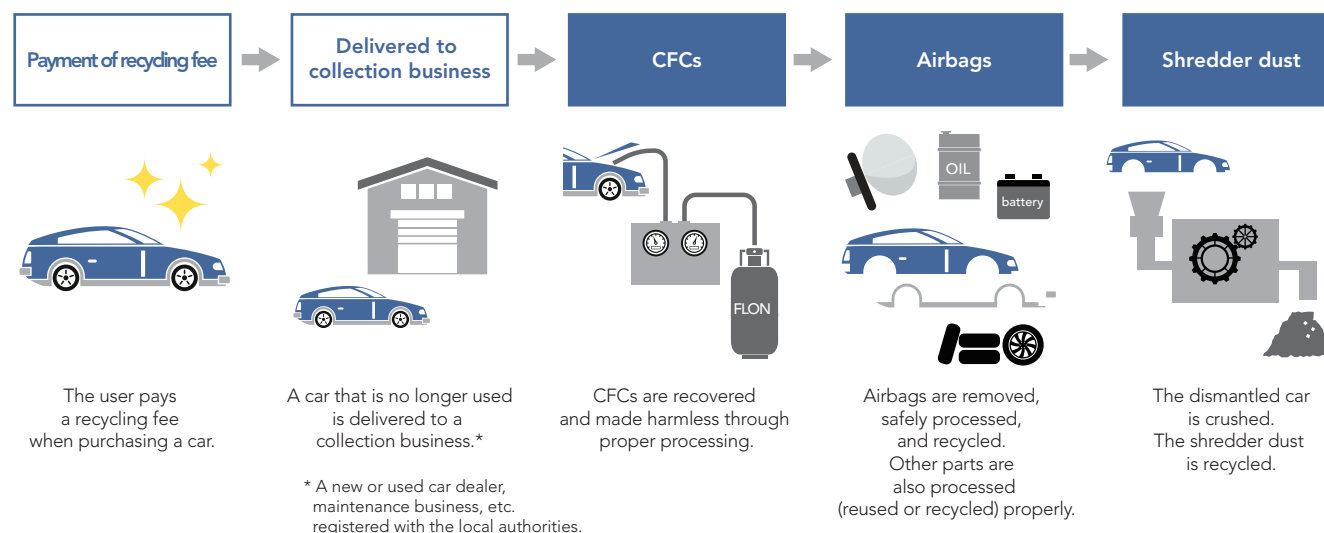
In FYE March 2020, the ASR recycling rate was 96.4%, achieving the legal target of 70% for the fiscal year ended March 2016 and thereafter. The airbag recycling rate was 95.0%, exceeding the legal target of 85%, and all CFCs recovered were processed properly.

<sup>\*3</sup> A team to promote the recycling of automotive shredder residue (ASR), organized by 13 automobile manufacturers in December 2003. The team plans the smooth, proper, and efficient recycling of ASR, a waste product that is classified as one of the Parts Specified for Recycling as defined by the Act on Recycling, etc. of End-of-Life Vehicles and required to be recycled under the law.

[Act on Recycling, etc. of End-of-Life Vehicles \(Japanese version only\)](#)

[Automobile shredder residue Recycling promotion Team \(ART\) \(Japanese version only\)](#)

### Automobile Recycling Process



## Overseas Initiatives

### ■ Collaboration with TerraCycle®

(Subaru of America, Inc.)

Subaru of America, Inc. (SOA) partnered with U.S. recycling firm TerraCycle® to launch the TerraCycle® Zero Waste Box™ program in 2018 to promote the recycling of various waste products. The program is part of the “Subaru Loves the Earth” initiative aimed at improving waste recycling rates.

Under the program, TerraCycle® Zero Waste Boxes™ have been placed on the premises of around 540 SUBARU dealers in the U.S. to collect recyclables. Customers, employees, and community partner organizations are encouraged to deposit snack packages, used paper cups and plastic containers.

We have kept more than 5 million waste items out of landfills since we started this initiative.

### ■ Zero Landfill Waste Joint Initiative in U.S. National Parks

(Subaru of America, Inc.)

Subaru of Indiana Automotive, Inc. (SIA), SUBARU's production base in the U.S., has achieved and maintains zero landfill waste status. SOA has been leveraging SIA's expertise to advance a joint initiative with suppliers, the National Parks Conservation Association, the National Park Service, and others 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). Subaru of America, Inc. received the Silver Halo Award and the Corporate Stewardship Award in 2020 in recognition of zero landfill initiatives in national parks.

The initiative encompasses a range of activities that include placing more than 500 trash bins in the parks, promoting the composting of organic waste, and increasing the number of water

supply stations. These initiatives are leading to the steady reduction of waste left inside the parks. Unfortunately, however, projects in national parks throughout the U.S. were canceled due to the COVID-19 pandemic in 2020. On a positive note, we became the official vehicle sponsor of 2020 garbage clean-up events in green spaces and parks. These events are co-sponsored by the Yosemite Climbing Association (YCA) and The North Face®.

### ■ Employees Education about Waste Separation

(Subaru of China Ltd.)

In May 2020, the labor union of Subaru of China Ltd. sponsored education about waste separation with a quiz delivered via social media, and distributed receptacles for sorting waste.

### ■ Cafeteria Waste Reduction

(Subaru of America, Inc.)

The cafeteria of Subaru of America, Inc. introduced a comprehensive oil management fryer system in 2020, and started reducing the number of waste oil containers and converting used cooking oil to biodiesel fuel.

# Water Resources

## Our Approach

Water is an indispensable resource for the Subaru Group's business activities. The risk of droughts, floods, and other disasters is increasing, however, due to climate change, while global population growth and economic development are increasing demand for water and raising the risk of water shortages and pollution.

To help alleviate these risks, the Subaru Group is committed to the proper management of water consumption, as well as to minimizing the environmental impact of its discharged water. We are also actively engaging in activities to conserve forests that have a water storage function.

## Water Management

The Production & Environment Subcommittee manages the Subaru Group's water usage at each site, and both the total amount and amount used per unit of sales are maintained at a constant level.

The share of each water source in the total freshwater consumption at major locations of the Subaru Group is as follows: industrial water 60%, tap water 30%, and groundwater 10%. As we are well aware of the risks involved in using the valuable resource of fresh water, we carefully monitor water consumption by conducting water risk assessments at major locations. Although the current assessment results show that the water risk is not high, we will continue to regularly assess our water risk levels and work to reduce water consumption in order to ensure a continuous water supply.

### Water Risk Assessment

The Subaru Group uses a third-party expert to implement water risk assessments\* to ensure the sustainable use of water. These assessments estimate, among other things, the water supply and demand risk in the river basins in which the production bases are located, the probability of water-related disasters occurring, and the impact on public health and ecosystems on a five-point scale. These assessments showed that water risk at the Gunma Plant, Utsunomiya Plant, and Subaru of Indiana Automotive, Inc. is generally evaluated as moderate or lower.

### ■ Gunma Plant and Subaru of Indiana Automotive, Inc.

According to an assessment in FYE March 2017, the water supply and demand risk at the Gunma Plant and Subaru of Indiana Automotive, Inc., both of which are automobile manufacturing bases, is moderate. It is expected that the current risk level will be maintained for the mid to long term, even when the impact of climate change is taken into account. No biodiversity conservation areas are identified at the lower reaches of the rivers. The vulnerability to water pollution is low.

### ■ Utsunomiya Plant

According to an assessment in FYE March 2018, the water supply and demand risk at the Utsunomiya Plant, which is our base for aerospace manufacturing, is moderate. This risk level is expected to drop in the future as an increase in the river flow rate and decrease in water demand are likely to take place. The plant is not located in an area at high risk of flood inundation or landslides. No biodiversity conservation areas or habitats for rare aquatic life are identified in the areas within 10 km downstream from the site. Going forward, we will continue to accurately monitor our water risk based on the assessments, ensure optimum water consumption in relation to local water demand, and help conserve the environment along the river.

\* Reference databases

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

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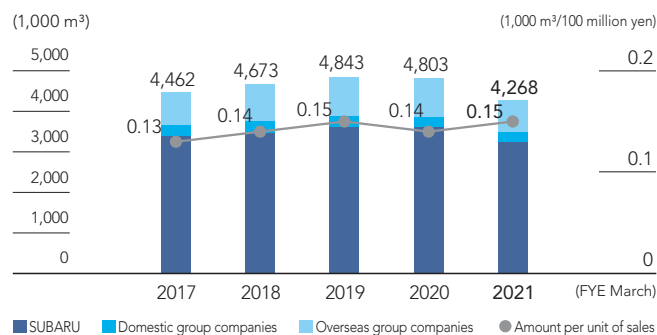
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## Achievements and Initiatives

### Water Consumption

The total amount used is monitored and compiled for each location, and reported and verified at biannual meetings. Necessary measures are then taken as appropriate.

#### Water Consumption



Scope:  
SUBARU: Gunma Plant, Tokyo Office, Utsunomiya Plant, Handa Plant, Handa West Plant  
Group companies in Japan: Yusoki Kogyo K.K., Fuji Machinery Co., Ltd.,  
Ichitan Co., Ltd., Kiryu Industrial Co., Ltd., Subaru Logistics Co., Ltd.  
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Subaru Canada, Inc., Subaru Research & Development, Inc.

#### Breakdown of Water Consumption by Water Source at Major Production Bases (1,000 m³)

Region	Industrial Water	Tap Water	Groundwater	Source of Water Intake
Japan	2,654	309	525	Tone River, Watarase River
North America	0	780	0	Groundwater from the Teays Valley aquifer
Total	2,654	1,089	525	

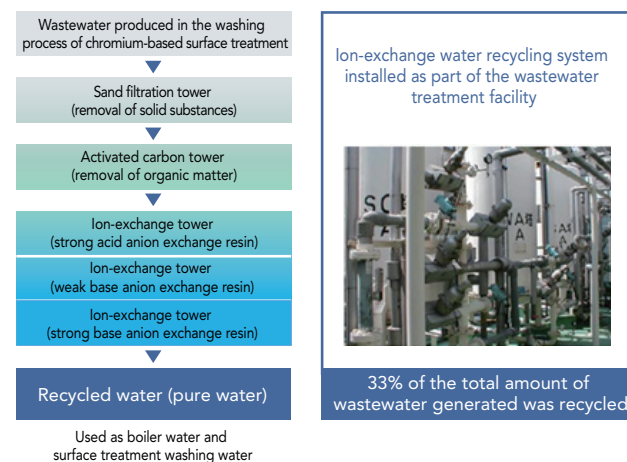
Scope:  
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Yusoki Kogyo K.K., Fuji Machinery Co., Ltd., Ichitan Co., Ltd., Kiryu Industrial Co., Ltd.  
North America: Subaru of Indiana Automotive, Inc.

### Water Reuse

#### ■ Utsunomiya Plant

The Utsunomiya Plant has introduced a surface treatment facility equipped with an ion-exchange water recycling system that converts wastewater into pure water. In FYE March 2021, 30,209 m³ (33%) of the total of 91,438 m³ of water used in the surface treatment facility was recycled and utilized at the plant as washing water for the facility.

#### Representative Surface Treatment Wastewater Processing and Recycling



#### ■ Subaru of Indiana Automotive, Inc.

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. Water is also reused.

### Water Discharge

#### ■ Gunma Plant

The wastewater from the Yajima Plant passes down the Ikoi River and into the Tone River. The water of the Tone River is used to irrigate fields and for fish farming. Households downstream also use the water. We treat wastewater from the Gunma Plant appropriately with the awareness that it touches the lives of many people. In addition, we keep crucian carp and koi carp in the oil-water separation tanks at the Yajima Plant, and release them after confirming that the water quality can sustain fish.

#### ■ Utsunomiya Plant

In the Utsunomiya area, after treating wastewater from surface treatment processes we discharge it into the sewer system, and discharge rainwater and cooling water into the river after checking its quality in the final water quality monitoring tank. In addition, we dispose of wastewater from the painting process in the Handa area as industrial waste, and treat domestic wastewater in septic tanks prior to discharging it into Kinuura Port and the Agui River.

#### Utsunomiya Area Wastewater Treatment Process

