Environment

Environmental Management

Basic Approach

The Isuzu Group actively strives to consider environmental conservation in all business segments, aiming to achieve Sustainability No.1, one of the Missions outlined in ISUZU ID.
Additionally, through the development and operation of an environmental management structure, we work to reduce environmental impact in all aspects and are committed to achieving the Isuzu Environmental Vision 2050 and contributing to the realization of a sustainable society.

Isuzu Group's Charter on the Global Environment

All Isuzu Group members use the Charter as a guideline when pursuing environment activities.

Basic Policy

- **Realization of a prosperous and sustainable society**

  We the members of the Isuzu Group regard it as an important business challenge to preserve the global environment so that our planet remains prosperous and sustainable and can be passed on to future generations. In this regard, we pursue our business activities in all areas with an awareness of environmental conservation.

- **Reduced environmental burden for all business operations**

  The Isuzu Group recognizes our responsibility in supporting transportation, offers enhanced products and services to our global customers through close cooperation with all Group companies, and develops and operates our environmental management system to reduce the environmental burden of all of our business areas.

Action Guidelines

- **1 Create a sustainable society**

  We coordinate our business operations and environmental initiatives, thereby offering environmentally-aware, high-value-added products and services to society.

- **2 Comply with environmental laws and minimize the environmental load**

  In an effort to minimize the impact on the environment from our business operations, we ensure that we comply with environmental laws and engage in key environmental issues in all of our business areas from development to production, distribution, sales and servicing, addressing climate change, resource recycling, prevention of environmental risks from hazardous substances, environmental measures and conservation of biodiversity.

- **3 Promote environmental technology**

  We promote the development of technology to reduce the environmental load applied throughout the product lifecycle.

- **4 Maintain proactive social communication**

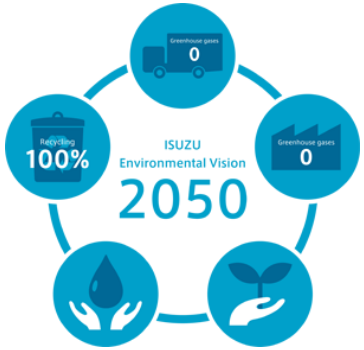
  We maintain a positive attitude toward the disclosure of product, service, and business activity information on the environment, promoting good communication with members of society and communities, and work toward realizing a prosperous society.

- **5 Foster environmental awareness as corporate citizen**

  We engage in perpetual efforts to foster environmental awareness in each Group member as a corporate citizen operating in a local community, encouraging them to learn about and act toward environmental conservation.

Isuzu Environmental Vision 2050

In order for society to be prosperous and sustainable in 2050, and for Isuzu to continue to support transportation, in March 2020 the Isuzu Group formulated our Isuzu Environmental Vision 2050.
The Environmental Vision represents the Isuzu Group's desired future state, established through a scenario analysis of 2050 based on climate-related and socio-economic scenarios.
The Environmental Vision identifies four key environmental challenges, and by collaborating with stakeholders to advance these initiatives, we aim to achieve five Aspirations.



Environmental Management

2030 Environmental Roadmap

To achieve the Environmental Vision, we established the 2030 Environmental Roadmap (hereinafter referred to as the roadmap) in 2022. This roadmap outlines the goals (2030 Challenge) and specific action plans (Global Action) to be pursued by 2030 as intermediate stepping stones.
This roadmap represents Isuzu's collective commitment to realizing the Environmental Vision, formulated through discussions with our stakeholders, as of 2022. Technological advancements and societal changes may significantly alter the situation in the future. While flexibly adapting to various changes, Isuzu will promote Green Transformation (GX) across all of its business activities to achieve the Aspirations in the Isuzu Environmental Vision.

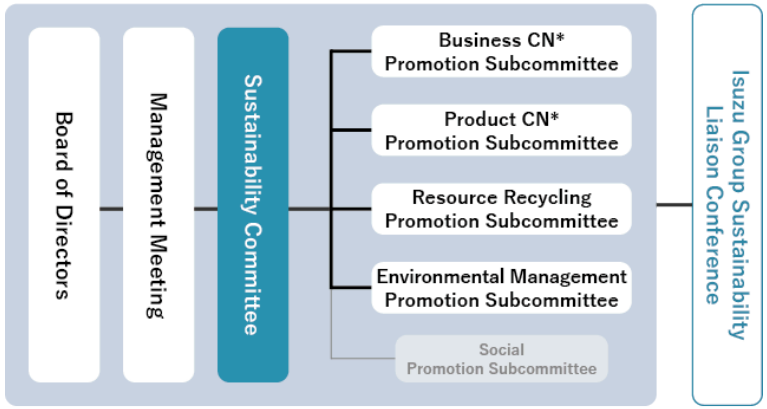
Isuzu Environmental Vision 2050 and 2030 Environmental Roadmap

Isuzu Environmental Vision 2050	2030 Environmental Roadmap	
Aspiration	Goals	Global Action
Zero GHG emissions from operations	• Halve CO_2 emissions* from 2013 levels by 2030 * Scope1+Scope2	• Reduce total energy use • Install and expand clean energy use • Leverage innovative technologies
Zero GHG emissions across product life cycles	• Build a carbon-neutral vehicle lineup that meets diverse needs	• Identify necessary technologies by 2025 • Increase the number of mass-production models by 2030 while promoting practical implementation of carbon-neutral vehicles
100% recycling of waste and end-of-use vehicles	• Advance a circular economy	• Thoroughly manage outputs* of all operating sites • Increase resource efficiency • Transition to circular business model * Outputs refers to waste, emissions and wastewater here.
Safe, reliable operations and products	• Strengthen environmental management and supplier engagement	• Build Group-wide environmental management system • Build a sustainable supply chain • Identify and promote adaptation to environmental/nature risks in operations
Conserve native biodiversity in local communities	• Promote conservation of native local biodiversity	• Partner with local communities to advance conservation • Communicate our conservation efforts actively • Raise awareness and train employees to be environmental stewards

Isuzu Environmental Vision 2050

Management Structure

The Isuzu Group has established a Sustainability Committee chaired by a director, with permanent membership composed of executives responsible for each area, in order to promote sustainability throughout the Group.
Regarding the environment, Four Environmental Bodies have been established under the Sustainability Committee, with consolidated subsidiaries from each segment as members. These bodies work to address various environmental challenges. The activities of each bodies are reported to the Board of Directors and the Management Meeting through the Sustainability Committee.
In FY2024, we established the Group Environmental Meeting under the Isuzu Group Sustainability Liaison Conference, targeting consolidated subsidiaries. In this meeting, subsidiaries are grouped based on factors such as region and business type, and activities are promoted across the entire Isuzu Group.



* CN: Carbon Neutral

Four Environmental Bodies

Business CN Promotion Subcommittee	Focusing mainly on production activities, which are the Group's main source of CO_2 emissions, the subcommittee promotes cross-divisional activities to achieve the 2050 carbon neutral goal, aiming to achieve carbon neutrality in the Isuzu Group's business activities.
Product CN Promotion Subcommittee	The subcommittee promotes various activities that contribute to the carbon neutrality of products, including decarbonization technologies and energy, aiming to achieve well-to-wheel carbon neutrality.
Resource Recycling Promotion Subcommittee	The subcommittee promotes waste controls and recycling activities in all Isuzu's business activities including products and services, toward achieving 100% recycling of resources.
Environmental Management Promotion Subcommittee	The subcommittee promotes environmental activities in coordination with Group companies, centered mainly on environmental management measures such as ISO 14001 certification acquisition, environmental risk management, and biodiversity preservation.

Climate Change Measures

Basic Approach

Many different natural disasters, linked to climate change, are significantly affecting our society and addressing climate change has become a globally recognized urgent and top-critical issue. Based on this awareness, carbon-neutral strategies are rapidly being introduced in Japan and many other countries. The move toward a decarbonized society is gaining momentum worldwide. The Isuzu Group has set the goals of 'Zero GHG emissions from operations' and 'Zero GHG emissions across the product lifecycle' as Aspirations in the Isuzu Environmental Vision 2050. We view addressing climate change as an opportunity for further growth for the Isuzu Group and are advancing various initiatives to achieve these goals. Additionally, Isuzu expressed its support for the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) in 2021 and is advancing the development of business strategies to address climate change through scenario analysis.

Isuzu Environmental Vision 2050	2030 Environmental Roadmap	
Aspiration	2030 Challenge	Global Action
Zero GHG emissions from operations	• Halve CO_2 emissions* from 2013 levels by 2030 * Scope1+Scope2	• Reduce total energy use • Install and expand clean energy use • Leverage innovative technologies
Zero GHG emissions across product life cycles	• Build a carbon-neutral vehicle lineup that meets diverse needs	• Identify necessary technologies by 2025 • Increase the number of mass-production models by 2030 while promoting practical implementation of carbon-neutral vehicles

Disclosure based on the TCFD framework

Governance

To promote sustainability throughout the entire Group, Isuzu has established the Sustainability Committee, which is chaired by a director and comprises officers responsible for each of our business domains as well as other senior management personnel serving as standing members.
The Sustainability Committee meets regularly (at least four times a year) to deliberate and make decisions on a wide variety of matters pertaining to sustainability, such as risks associated with climate change and the Company's response to human rights and diversity issues. Depending on the level of importance of matters discussed, the contents of the deliberations are reported to the Management Meeting and the Board of Directors as necessary.
Specialized environmental and social subcommittees, each chaired by a relevant standing committee member, have also been established under the umbrella of the Sustainability Committee, wherein detailed discussions are held on individual issues.
In particular, with regard to efforts to achieve carbon neutrality, we have established a system for examining specific response policies and activities and implementing them in practice through the Business Carbon Neutral Promotion Subcommittee, which promotes activities to achieve carbon neutrality in business activities with a focus on production, and the Product Carbon Neutral Promotion Subcommittee, which promotes various activities that contribute to the carbon neutrality of products through decarbonization technologies and decarbonized energy.

› Sustainability Promotion System
› Environmental Management Structure

Risk Management

Overall risks related to climate change are managed under a Groupwide risk management system led by the Group Chief Risk Management Officer (CRMO). The Sustainability Committee identifies and assesses specific climate change risks and manages the progress of countermeasures based on each risk's potential impact on the Company's businesses.

› Risk Management Structure

Metrics and Targets

The Company has established Isuzu Environmental Vision 2050 with the aim of realizing zero greenhouse gas (GHG) emissions throughout the lifecycles of its products by 2050. To this end, we have set a target—as outlined in the 2030 Environmental Roadmap—to reduce the Group's Scope 1 and 2 GHG emissions by 50% from FY2014 levels by 2030.
Furthermore, we endorse the Paris Agreement's aim to limit the global temperature increase to 1.5°C, and we are working to set science-based targets to achieve this goal. As part of this pursuit, we have submitted a letter of commitment to the Science Based Targets initiative in 2022 and will continue our efforts to realize a decarbonized society.

Climate Change Measures

Strategy

Isuzu conducted a scenario analysis under the long-term environmental scenarios of a 1.5°C and 4°C rise in temperature compared with pre-industrial revolution levels, and identified the risks and opportunities that climate change poses to the Isuzu Group's business activities and products. Measures to address these risks include compliance with strengthened environmental regulations and the development of new technologies. At the same time, society expects the creation of innovations that contribute to a decarbonized society, and Isuzu recognizes that responding appropriately will lead to new business opportunities.
The Group is working to develop multi-pathway carbon-neutral solutions and reduce direct GHG emissions from our business activities, aiming to become carbon neutral by 2050. Through these efforts, we aim to reduce risks and capitalize on opportunities.

› Initiatives

Scenario Analysis

Long-term Environmental Scenarios

4°C Scenario (RCP8.5*1, SSP3*2)

- Society's dependence on fossil fuels continues, climate change progresses, and natural disasters increase.
- There is a scramble for fossil fuels and anti-globalization advances due to increasing inequality, leading to the dysfunction of international governance.
- Economic stagnation due to vulnerability to disasters is anticipated.

1.5°C Scenario (RCP2.6*1, SSP1*2 2DS*3)

- A carbon neutral society in which social and industrial structures have changed dramatically due to stricter regulations and technological innovation.
- The Isuzu Group's product lineup is expected to undergo major changes depending on the application, and there will be major changes in business activities.

Products

<Vehicles>

- The development and provision of next-generation powertrains continues for light commercial vehicles that support short distance, low-volume transportation, such as electric vehicles
- New trends such as electrification emerge for medium- and heavy-duty commercial vehicles
- Internal combustion engines continue to play a major role in vehicles that support long-distance, high-volume transportation, such as medium- and heavy-duty commercial vehicles

<Powertrain>

- The use of sustainable, decarbonized clean energies
- A need arises to develop and market energy loss-free powertrains with unprecedented fuel-efficiency, as well as products equipped with such powertrains

Service

- Automated driving, platooning, and full trailer trucks currently undergoing demonstration tests become commonplace
- More efficient transportation methods are routinely used

Business Activities

- The Company switches to decarbonized clean energy in production and other business activities
- The Company minimizes resource input volumes and strictly enforces the efficient use of waste with a view to achieving carbon neutrality

*1 Climate scenario created by the United Nations Intergovernmental Panel on Climate Change (IPCC)
*2 Socioeconomic scenario created by the United Nations IPCC
*3 Socioeconomic scenario created by the International Energy Agency (IEA)

Climate Change Measures

Risks and Opportunities

Category		Risks	Opportunities	Countermeasures	Level of Impact on Operations
Risks and opportunities associated with transition to a decarbonized society	Government policy regulations	• Decrease in market share due to delayed response to increasingly strict environmental regulations	• Increase in demand for zero-emission vehicles	• Promote initiatives to establish a full lineup of products compatible with carbon neutralization	High
	Technology	• Increase in development and production costs to enable the compatibility of a wide range of powertrains in electric, fuel-cell, and other vehicles	• Expansion of open innovation • Widespread adoption of affordable clean energy	• Implement efficient joint development projects that leverage alliances • Reduce carbon emissions from operations and curb costs by switching to affordable clean energy	High
		• Decrease in brand power due to inability to respond to various needs in the logistics infrastructure	• Increase in need for automated driving and platooning systems as well as full trailer trucks	• Generate innovative logistics processes that contribute to carbon neutralization through co-creation activities with customers	High
	Market	• Shrinking of the market for internal combustion engine vehicles that use fossil fuels	—	• Leverage existing internal combustion engine technologies and infrastructure in the use of next-generation, carbon-neutral fuels	High
	Reputation	• Increase in energy costs and in reputational risks due to delays in the introduction of GHG reduction measures and renewable energy in our business operations overall	• Early introduction of renewable energy to reduce costs and boost our corporate image	• Expansion of introduction of renewable energy • Continued encouragement of energy-saving activities to reduce energy costs	Moderate
Material risks and opportunities that arise from increased natural disasters, depleted water supplies, and other such events		• Impact on operations from increased flooding, typhoons, and other extreme weather events	• Increase in demand for disaster response vehicles • Increase in need for robust infrastructure services at times of disaster	• Provide disaster response vehicles • Provide restoration services for waterdamaged vehicles • Reinforce corporate structure though expansion of business continuity plan	High

Initiatives

Products and Services

To achieve zero greenhouse gas (GHG) emissions across the entire lifecycle of Isuzu Group products by 2050, the Isuzu Group aims to make all new vehicle lineups sold worldwide carbon-neutral by transitioning from fossil-derived energy to carbon-neutral energy sources. In 2023, Isuzu advanced the development of electric vehicles with an eye towards mass production and launched the new production model of the BEV (Battery Electric Vehicle) N-Series. Additionally, for FCVs (Fuel Cell Vehicles), we are conducting demonstration experiments for social implementation and preparing for market introduction.
On the other hand, commercial vehicles used in various market conditions may still require internal combustion engines. Additionally, Isuzu Group's products are used worldwide, and in some countries or regions, electrification may be challenging. Therefore, Isuzu Group continues to advance the development of internal combustion engines that are compatible with carbon-neutral fuels*.

* Carbon-neutral fuels, including biofuels and synthetic fuels derived from renewable energy, are referred to as CN fuels.

Development and Diffusion of Next-generations Vehicles

Light-duty EV Truck

In March 2023, the new N-Series underwent a full model change, and BEV has been added to the product lineup.

In January 2024, addressing the current issue of chronic driver shortages, we began selling the ELFmio EV, a light-duty BEV truck with a gross vehicle weight of under 3.5 tons, which can be driven with a noncommercial driver's license.

Additionally, we are advancing the development of special-purpose vehicles equipped with an electric PTO.

› Light Electric Truck

Climate Change Measures

Heavy-duty FCV Truck

Since 2020, we have been collaborating with Honda R&D Co., Ltd., and began public road testing in December 2023.

Through this demonstration experiment, which will continue until September 2024, we will work on collecting data, accumulating insights, and identifying technical challenges in preparation for market introduction in 2027.

We will continue development efforts to contribute to the Japanese government's goal of introducing 5,000 electric heavy-duty commercial vehicles by 2030.

> Heavy-duty FCV Truck

Light-duty FCV Truck

In 2021, we launched a joint project called Commercial Japan Partnership Technologies (CJPT). Through this project, we will cooperate in efforts for the social implementation of hydrogen technology in Fukushima Prefecture. In 2023, we also participated in projects in Tokyo Metropolis. We will continue to provide vehicles to promote social implementation in other cities in the future.

> CJPT

BEV Flat-floor Route Bus

In May 2024, we launched Japan's first fully flat BEV route and shuttle bus, the ERGA EV.

Isuzu believes that for route buses, which often travel on predetermined routes, BEVs are one of the most promising options as a carbon-neutral power source.

In anticipation of the upcoming 2025 World Exposition in Japan (hereafter, Osaka-Kansai Expo), which will serve as a global showcase, there is growing interest in domestically produced, advanced BEV route bus. Leveraging its long-standing experience in product development, Isuzu has developed a BEV route bus designed with consideration for passengers, drivers, and road conditions.

> BEV flat-floor route bus

North American Medium-Duty Battery Electric Trucks

To contribute to GHG reduction in North America, Isuzu announced its plan to launch medium-duty battery electric trucks equipped with Accelera by Cummins powertrains, aiming for a 2026 release.

Leveraging the strengths of both Cummins Inc. and Isuzu, we will support our customers in achieving zero emissions.

> Launch of Medium-duty Electric Prototype Trucks in North America

Provision of the total solutions program for BEV introduction and operational support, EVision

In 2022, Isuzu began offering EVision, a total solutions program for the introduction and operational support of BEVs, in conjunction with the market launch of the mass-produced BEV, the ELF EV.
EVision is a solution program designed to support customers in evaluating the introduction of commercial EVs, resolving implementation challenges, quantifying effects, and proposing further improvements to achieve carbon neutrality.

> EVision

EVision Cycle Concept (Commercial Vehicle Battery Swapping EV Concept)

As a new option for achieving carbon neutrality, Isuzu is developing and exploring battery swapping solutions. By separating the operation of the vehicle and the battery, this approach is expected to address various societal challenges. We are advancing the development of vehicles and battery stations with the goal of conducting demonstration experiments by FY2026.

Promotion and Adaptation of Carbon-neutral Fuels

Isuzu established a dedicated department to promote the use of carbon-neutral (CN) fuels in 2021. In April 2023, this department was expanded into a division responsible for overseeing and advancing the Isuzu Group's CN strategy. The Company is actively working on the proliferation and adaptation of CN fuels, including evaluating the impact of CN fuel use on vehicle performance and durability. These initiatives are aimed at advancing the societal implementation of CN fuels.

As a specific example, Isuzu, together with Itochu Corporation, Itochu Enex Co., Ltd., Kajima Corporation, Konoike Construction Co., Ltd., Shimizu Corporation, and Takenaka Corporation, applied for and was selected in Osaka Prefecture's Carbon Neutral Technology Development and Verification Project 2023 (Japanese only). In preparation for the 2025 Osaka-Kansai Expo, we are procuring fuel from Neste, the world's largest producer of renewable fuel*, and advancing demonstration projects for decarbonization in the construction and transportation sectors using this fuel.
Additionally, to accelerate the adoption of CN fuels, we will engage with CN fuel producers to address fuel quality issues and propose improvements. We will also actively participate in creating systems that do not require additional investments in distribution processes, such as supply and sales.

* A fuel produced from used cooking oil, waste animal and plant oils, and other materials, which has lower GHG emissions compared to petroleum-derived diesel when assessed on a lifecycle basis.

Climate Change Measures

Business Activities

To achieve zero direct GHG emissions from business activities by 2050, the Isuzu Group is working on reducing overall energy consumption and expanding the use of renewable energy.

Reduction of Total Energy Consumption

We are continuing to implement energy-saving activities, including streamlining processes, reviewing and optimizing the operation of equipment, and visualizing energy consumption.
By reassessing our conventional operating methods and applying successful initiatives across the Group, we are contributing to a reduction in total energy consumption throughout Isuzu's business activities.
The Isuzu Group supports climate-related regulations in various countries, including domestic laws such as the Energy Conservation Law*1 and the Global Warming Prevention Law*2, and addresses energy reduction through various reports to administrative agencies based on these laws and policies.

*1 The Energy Conservation Law, which relates to the rationalization of energy use and the shift to non-fossil energy
*2 The Act on Promotion of Global Warming Countermeasures

Expansion of Environmentally Conscious Sales Bases

When establishing or renovating sales bases, we are advancing the reduction of energy use by adopting LED lighting, skylights, and renewable energy systems. Additionally, during the establishment of new sites, we are promoting the expansion of environmentally conscious bases by adopting more environmentally friendly wastewater treatment equipment to prevent environmental pollution from wastewater generated during vehicle maintenance and washing.

Isuzu Motor Kinki Co., Ltd. Suminoe Service Center

Isuzu Motors Kyushu Limited Saga Service Center

Isuzu Motors Chubu Co., Ltd. Iida Service Center

Toyama Isuzu co.,ltd Toyama Sales Office

Creating Clean Energy

To generate clean energy, in Japan, we installed a 1,156 kW solar power generation facility at the Tochigi Plant in FY2023, bringing the total solar panel capacity at both the Fujisawa and Tochigi plants to 1,389 kW.
Additionally, Isuzu Group companies in Thailand are also promoting the installation of large-scale photovoltaic power generation systems. In and after FY2019, Isuzu Motors Co., (Thailand) Ltd., Isuzu Engine Manufacturing Co., (Thailand) Ltd., and Isuzu Logistics (Thailand) Co., Ltd. installed solar panel systems capable of a total output of 3,460 kW.
In the future, the Isuzu Group plans to continue actively introducing energy-saving equipment and expanding the installation of clean energy generation systems, including solar power facilities.

Solar Power Generation Facility at the Tochigi Plant

Climate Change Measures

Switching to Clean Energy

We are also progressively transitioning to clean energy for the energy used at our business sites.
Since FY2020, Isuzu has been using the Aqua Premium electricity rate plan from TEPCO Energy Partner, Inc., which applies 100% hydroelectric power to a portion of the electricity purchased. Through this plan TEPCO Energy Partner, Inc. sells the CO_2-emission-free electricity that it generates hydroelectrically, offering an option for customers who want a portion of the electricity they purchase to be carbon-free.
Additionally, starting in FY2023, Isuzu began purchasing electricity with non-fossil certificates and has been expanding its purchase of electricity derived from renewable energy sources.
Starting from FY2023, Isuzu's Yokohama headquarters switched all of its electricity usage to power certified by non-fossil certificates. As a result, all electricity used by Isuzu Group offices located in the same building now comes from renewable energy sources. Through these efforts, approximately 25% of Isuzu's electricity consumption was decarbonized in FY2024.
As for fuels, clean energy technologies such as electricity have not been established yet. In response to the current situation, Isuzu has been using carbon-neutral LNG as part of the fuel at its factories since FY2022.
Carbon-neutral LNG is liquefied natural gas that offsets the greenhouse gases emitted during the entire process from natural gas extraction to combustion using CO_2 credits (carbon offsets), thus being considered as not generating net CO_2 emissions on a global scale even when burned. The CO_2 credits are voluntary credits issued by internationally reputable organizations, and are the result of projects that meet the procurement requirements, quality standards, and other criteria of the adoption destination, ensuring that they have no significant adverse effects on the region or ecosystems.
To widely inform users of natural gas vehicles about these initiatives, Isuzu supplies carbon-neutral LNG to the natural gas station located at the Fujisawa Plant. All natural gas supplied at this station is derived from carbon-neutral LNG.

Natural Gas Station at the Fujisawa Plant

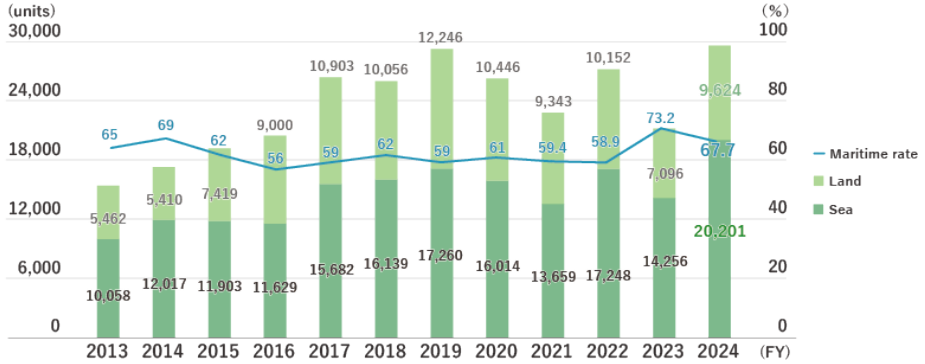
Reducing CO_2 Emissions in Logistics Processes

Isuzu aims to reduce CO_2 emissions in its logistics processes by 1% annually and is implementing measures to achieve this goal.

Main initiatives

- Reviewing transportation methods
- Promoting fuel-efficient driving during transportation
- Increasing marine transportation (modal shift) through the development of new shipping routes
- Strict management of truck transport according to cargo volume
- Expanding the use of returnable racks that can be folded during return
- Expanding trailer transport and improving cargo fill rates within containers
- Increasing the use of container round trips

Modal shift for product vehicle transportation



Climate Change Measures

Review of Transportation Methods

In 2020, Isuzu established a new overseas shipping hub called the Global Center near the Tochigi Plant. Simultaneously, the Company carried out a reorganization of the Tochigi area facilities, resulting in a significant reduction in warehouse-to-warehouse transportation due to the consolidation of external warehouses and a substantial improvement in transportation efficiency. Previously, truck transport was used for parts delivery between adjacent parts centers; however, a new logistics route was created by installing an overpass between warehouses. By switching from truck transport to unmanned tow vehicles, the company reduced the fuel used by trucks and decreased CO_2 emissions.

Additionally, the Isuzu Group is continuously reviewing and optimizing the transportation routes for products and parts, and is working to reduce CO_2 emissions associated with transportation by engaging in joint transportation within the Group.

Overpass installed between warehouses

Transportation between warehouses carried out with unmanned tow vehicles

Increasing Container Round Use

Isuzu is implementing carbon-neutral activities across the entire logistics sector and is currently working on the Container Round Use (CRU) system, which reuses empty containers from imports as export containers after unloading.
Previously, empty export containers for KD parts packed at the Tochigi Plant were retrieved from Yokohama Port. However, now, the Company picks up import containers unloaded by other companies at a depot in an inland area near the Tochigi Plant, as designated by the shipping company, and reuses them as export containers for KD parts at the Tochigi Plant. In the Fujisawa area, Isuzu collaborates with other companies to implement Container Round Use (CRU) by bringing empty containers, after unloading, to Isuzu Group warehouses near the Fujisawa Plant instead of returning them to Yokohama Port. These containers are then reused for the export of KD parts. This initiative has enabled stable logistics and reduced fuel consumption during transportation, leading to a decrease in CO_2 emissions.

Introduction of Biomass Materials

The Isuzu Group has introduced biomass materials containing sugarcane-derived bio-based 'Green Polyethylene (Braskem)' to the packaging materials for KD shipments to overseas assembly plants. The main raw material of this biomass material is sugarcane, which absorbs CO_2 through photosynthesis during its growth, resulting in CO_2 being offset during disposal and incineration.
Since FY2018, we have switched approximately 9 million A4-size polyethylene bags, the most commonly used type, from petroleum-based to biomass materials, reducing CO_2 emissions by approximately 7%. Subsequently, we expanded the use of biomass materials to other sizes of polyethylene bags, and by FY2024, all 10 sizes of polyethylene bags have been switched to biomass materials.
Additionally, starting from FY2023, we have switched all 16 sizes of bubble wrap cushioning materials to biomass materials containing approximately 15% bio-based content, resulting in a reduction of approximately 5% in CO_2 emissions.
Through these initiatives, we have reduced CO_2 emissions by approximately 120 tons per year.

Holding Fuel Efficient and Safe Driving Seminars

Considering the lifecycle of Isuzu products, the majority of CO_2 emissions comes from product (vehicle) use.
The Isuzu has been holding seminars on fuel-efficient and safe driving in Japan and overseas since 1995, to provide Isuzu vehicles' buyers with tips on fuel-efficient driving in accordance with the performance of their vehicles.

Seminar Participation over the Past 3 Years

	Number of times	Number of participants
FY2024	76	999
FY2023	65	885
FY2022	60	1,128

Fuel-efficient and safe driving seminar

Climate Change Measures

Efforts with Our Business Partners

Isuzu conducts procurement activities based on the Isuzu Group Supplier Sustainability Guideline and requests our business partners to follow this guideline as well, including signing an agreement to confirm compliance. Additionally, we have established the Isuzu Green Procurement Guideline, which outline environmental requests by industry sector, to strengthen environmental management across the entire value chain in collaboration with our partners.

Since FY2023, we have participated in the CDP Supply Chain Program, advancing efforts related to climate change and GHG emissions tracking, and further strengthening our collaboration with our business partners.

Initiatives with Yokohama City

In October 2023, Isuzu signed a Collaboration Agreement for Achieving Carbon Neutrality in the Commercial Vehicle Sector in Yokohama City with Yokohama City. The agreement aims to promote the adoption of carbon-neutral vehicles in the commercial vehicle sector within Yokohama City and to collaborate on initiatives to enhance transportation efficiency contributing to decarbonization.
As part of this initiative, starting December 21, 2023, Isuzu will participate in a demonstration project of the first public road charging station in Japan for BEV trucks. This project focuses on collaborative activities to establish an efficient network of charging stations and aims to create a regional model case.

Signed a collaboration agreement with Yokohama City

Commencement ceremony of the demonstration project

- Yokohama City and Isuzu Motors have signed a collaboration agreement
- Participated in the demonstration project of Japan's first public road charging station for BEV trucks in Yokohama City

Resource Recycling Promotion

Basic Approach

The transition to a sustainable society requires a shift from the linear economic system, which emerged from a mass production and mass consumption-based economic model, to a circular economic system. The Isuzu Group has set a goal of achieving a 100% recycling of waste and end-of-use vehicles as part of the Aspiration in the Isuzu Environmental Vision 2050. We are advancing initiatives to realize a circular economy by focusing on resource conservation, reuse, and circulation throughout our business operations to maximize added value.

Isuzu Environmental Vision 2050	2030 Environmental Roadmap	
Aspiration	2030 Challenge	Global action
100% recycling of waste and end-of-use vehicles	• Advance a circular economy	• Thoroughly manage outputs* of all operating sites • Increase resource efficiency • Transition to circular business model * Outputs refers to waste, emissions and wastewater here.

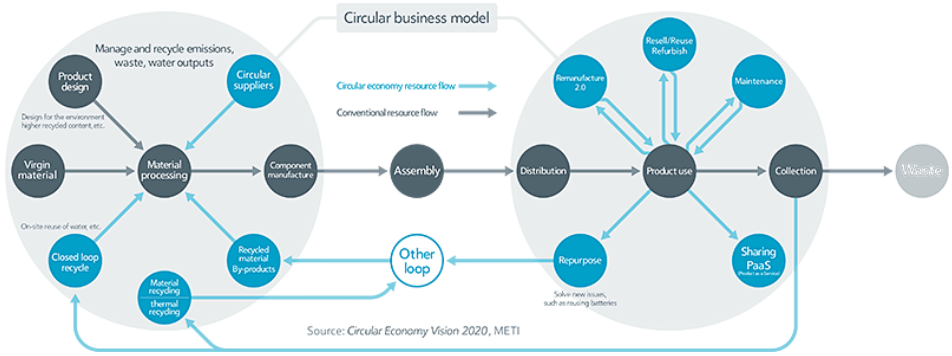


Image of the Transition to a Circular Economy

Initiatives

Promote Effective Resource Use

Reduced Packaging Materials: Expansion of the Introduction of Returnable Racks

As part of Isuzu Group's efforts to reduce environmental impact throughout logistics, we are promoting the expansion of environmentally friendly packaging materials, taking into account the entire process from packaging and shipping within the group to disposal at overseas factories. In particular, since 2017, we have been advancing the introduction of reusable returnable racks, gradually expanding their use in the transportation of parts both in Japan and at overseas plants. The expansion of returnable racks has enabled us to reduce the use of one-way racks for packaging knockdown parts, which previously became waste at overseas assembly plants.

Returnable racks

Resource Recycling Promotion

Starting in FY2022, the previously wooden, one-way cab racks were switched to iron-made returnable racks. This eliminated the need for tasks such as removing nails during wood disassembly at the time of disposal, thereby improving safety during operations.

Additionally, to make use of the upper space that arises when loading completed cabs into containers, we developed returnable parts racks that fit under the cab racks. This improved container fill rates through stacking. By loading large parts such as axles and parts that were previously shipped using other containers onto these returnable parts racks, we have been able to reduce the use of approximately 300 40-foot containers annually, contributing not only to resource conservation but also to the reduction of greenhouse gas (GHG) emissions during transportation.

In FY2020, we also developed lightweight returnable racks that reduced individual rack weight by 33% compared to conventional ones, as well as two types of racks of varying heights to increase container fill rates. By FY2024, the deployment of these racks to major destination countries was completed.

Cab Returnable Rack (orange) + Parts Returnable Rack (blue)

Effective Utilization of Water Resources

Isuzu's business activities entail the consumption of a large quantity of water in vehicle manufacturing, plant maintenance, effluent treatment and many other situations.
As part of our initiatives to conserve limited water resources, we are focusing on reusing process water and wastewater, as well as reducing water usage.

Initiatives Towards a Circular Economy

Maintenance Leases Utilizing Remanufactured Units

Isuzu provides maintenance lease services for reconditioned large trucks, referred to as GIGA type-Re, using Isuzu's remanufacturing[*1] technology. This technology restores reusable engines, transmissions, and other components to like-new functionality after short-term, high-performance leasing.

The restoration process uses the advanced genuine maintenance tool PREISM to assess the vehicle's condition and detect data on parts that need replacement.

By reusing parts, we not only contribute to resource circulation but also achieve a reduction in CO_2 emissions during manufacturing by approximately 76 tons per vehicle compared to new vehicles[*2]. This initiative supports our goal of reducing greenhouse gas (GHG) emissions.

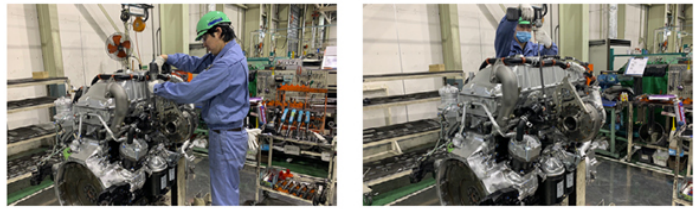
As of June 2024, Isuzu has provided 20 units of GIGA type-Re to customers for use.

Additionally, we are working towards expanding the offering to include medium-duty trucks in response to customer requests, with the goal of making this expansion during FY2025.

*1 The term 'remanufacture' refers to products that are like-new having been analyzed and had parts replaced etc. following the collection of used products.
*2 Calculated based on a heavy-duty GIGA truck that has traveled 1 million kilometers over five years.

Promotion of Rebuilt Products

The Isuzu Group is engaged in rebuilding used engines and parts by disassembling, cleaning, inspecting, and replacing worn parts with new ones before reassembling them.
We sell remanufactured products that meet the same inspection standards as new parts from the production line under the Isuzu genuine recycled parts brand E-PARTS.
Isuzu Engine Manufacturing Hokkaido Co., Ltd. rebuilds engines and parts to reduce resource input and manufacturing energy. In the future, we will establish evaluation standards for parts recycling technologies and recycled parts, improve the parts recycling rate, and promote and expand rebuilding to further reduce resource and energy input.



Rebuilt Engine Reassembly

Resource Recycling Promotion

Promoting Recycling

Compliance with the Automotive Recycling Law

The Isuzu Group is committed to reducing the total amount of waste generated by its business activities and promoting the effective use of waste to minimize and control emissions, including valuable materials.

We handle end-of-use vehicles according to regulations in each country, and in Japan, we promote recycling under the Act on Recycling, etc. of End-of-Life Automobiles. This includes recycling the three designated items (ASR*, airbags, and chlorofluorocarbons).

For the recycling of ASR, we operate the Automobile Shredder Residue Recycling Promotion Team (ART) in collaboration with 12 other automobile manufacturers to ensure proper handling of ASR.

* Automobile Shredder Residue

> Initiatives Concerning the Act on Recycling, etc. of End-of-Life Automobiles (Japanese Only)

Environmental Risk Prevention Measures

Basic Approach

The Isuzu Group has set the Aspiration of pursuing safe and reliable operations and products as part of the Isuzu Environmental Vision 2050. By strengthening our environmental management foundation and supplier engagement, we will work to prevent environmental risks.

Isuzu Environmental Vision 2050	2030 Environmental Roadmap	
Aspiration	2030 Challenge	Global action
Safe, reliable operations and products	• Strengthen environmental management and supplier engagement	• Build Group-wide environmental management system • Build a sustainable supply chain • Identify and promote adaptation to environmental/ nature risks in operations

Initiatives

Promoting Water Resource Conservation

Understanding and Responding to Water Related Risks

In recent years, climate change is increasing concern about the ability to secure water resources and about water-related risks such as flooding. Since FY2016, Isuzu has been using AQUEDUCT, a global water risk evaluation tool, to conduct surveys on water risks.
The survey confirmed that while Isuzu uses groundwater and tap water, there are no urgent issues related to water usage itself.

However, it also revealed that geographic conditions could lead to operational risks and impacts on the supply chain due to flooding, drought, or water source depletion caused by extreme weather conditions such as heavy rainfall.

In light of these findings, we are advancing efforts to address water risks, taking into account operational and business risks, by reducing water resource consumption and mitigating these risks.

Building a Society Free of Water Stress

The Isuzu Group contributes to building a society free of water stress, where all people can have access to safe water without concern.

Isuzu Gives Water...for Life

Twenty-one Isuzu Group companies in Thailand are collaborating with Thailand's Department of Groundwater Resources and regional authorities on the Isuzu Gives Water...for Life project, which contributes to building a water-stress-free society.
The goals of the project are to install water treatment systems and provide access to drinkable water at schools in outlying areas of Thailand struggling with polluted water. Through the project, teachers and students learn how to manage and maintain the system so they are able to sustainably secure access to drinking water. Launched in 2013, the project will have held 43 events by November 2023.



Isuzu Gives Water...for Life Project

Environmental Risk Prevention Measures

Thorough Chemical Substance Management

We take thorough measures to minimize the environmental risks associated with chemical substances used in our business activities and products. No chemical substance-related accidents occurred in FY2024.

Management of Chemicals Used in Business Activities

To reduce environmental risks and ensure employee safety associated with chemicals used in our business activities (such as paints and lubricants), we have established internal regulations that require advance applications for the use of new chemicals. These applications are reviewed based on laws such as the Chemical Substances Control Law[*1], the Industrial Safety and Health Act, and the Poisonous and Deleterious Substances Control Act to determine the appropriateness of the chemicals' use. Based on the results of these pre-screenings, necessary measures are implemented before using the chemicals.
In FY2024, we conducted pre-screening for 210 chemicals.
Additionally, we have created a database for the chemicals used at our business sites, which includes information on their chemical composition and usage amounts. We continuously register new information from advance applications and update the database accordingly to strengthen management. This database helps us properly report to the Pollutant Release and Transfer Register (PRTR)[*2] under the Chemical Management[*3], and ensures we stay compliant with amendments to environmental regulations including the Chemical Substances Control Law, the Industrial Safety and Health Act, and the Poisonous and Deleterious Substances Control Act. Furthermore, by referring to this database, we are actively working to reduce the use of harmful chemicals by shifting to environmentally friendly chemicals and revising our processes.

*1 Chemical Substances Control Law: A law concerning the examination and regulation of chemical substances and their manufacture.
*2 PRTR Law: A law concerning the Promotion of the Management of Chemical Substances.
*3 Chemical Management: Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (Law concerning Pollutant Release and Transfer Register / PRTR)

Management of chemicals contained in products

We take into consideration the chemicals contained in raw materials and components in the design and development stages and comply with the chemical regulations of various countries, including Japan's domestic laws, as well as the European REACH regulations, ELV directive, and the United States' TSCA. Isuzu has specified the chemicals that are prohibited or managed by Isuzu as part of the Isuzu Technical Standards considering national regulatory trends. These standards are applied to the raw materials and components used in our products.
We use the International Material Data System (IMDS), a global product substance information communication system for the automotive industry, to manage information about the chemicals contained in parts. We collect information from our business partners through IMDS and manage it in our internal system. We aggregate the data as needed, conduct checks for regulatory compliance, and make the necessary notifications and reports. Additionally, we utilize the data to reduce the use of chemicals that become subject to new regulations.

Reducing VOC Emissions

Isuzu is committed to reducing volatile organic compound (VOC) emissions in line with the voluntary initiatives promoted by the Japan Automobile Manufacturers Association. We work to decrease VOC emissions released from our facilities by implementing measures such as recovering VOCs and reviewing our painting processes.

Ozone Depleting Substances Emission Control

In accordance with the 2015 Act on Rational Use and Proper Management of Fluorocarbons, Isuzu implements proper management across all its sites, including reinforcing inspections of refrigerants in fluorocarbon-using equipment such as commercial refrigeration and air conditioning systems. Additionally, during equipment upgrades, we promote the introduction of non-fluorocarbon equipment to advance the control of ozone-depleting substance emissions.

In FY2024, the amount of fluorocarbon leakage was below the statutory reporting threshold of 1,000 tons-CO_2/year.
This commitment has been recognized, and in the 3rd JRECO Fluorocarbon Measures Rating, Isuzu was selected as one of the top 76 companies (5% of surveyed companies) rated A, the highest rank, for FY2024. This is the second consecutive year that Isuzu has been honored with this top rating, following FY2023. Moving forward, Isuzu will continue to promote initiatives to reduce fluorocarbon leakage through appropriate refrigerant management, thorough equipment inspections, and the adoption of non-fluorocarbon refrigerants.

3rd JRECO Fluorocarbon Measures Rating Awards Ceremony

Environmental Risk Prevention Measures

Soil Contamination Management

To prevent health hazards caused by soil contamination, Isuzu conducts soil contamination surveys in accordance with the Soil Contamination Countermeasures Law and local regulations when undertaking construction projects of a certain scale or new building developments.

In FY2024, during renovation work on existing buildings in the Fujisawa area, lead levels exceeding the management standards were detected in the soil. Consequently, soil remediation work is scheduled for during 2024, in compliance with legal requirements. (Lead concentration: 180 mg/kg; Legal standard: 150 mg/kg; Note: There is no groundwater contamination.)

Isuzu will continue to thoroughly investigate contamination conditions and take appropriate measures in all construction activities.

Management of Air Pollutants and Wastewater

At Isuzu's factories, proper management of facilities that emit smoke, such as boilers, is ensured. We verify that air pollutants in exhaust gases, including NOx (nitrogen oxides) and SOx (sulfur oxides), are within regulatory limits.

Additionally, factory wastewater is treated by processing equipment before being discharged into sewers or public water bodies. The discharged water is regularly analyzed to confirm that it meets regulatory standards.

Management Across the Supply Chain

Isuzu requests that our business partners submit Environmental Management Self-Evaluation Reports, which include details on chemicals management. Through these reports, we confirm and exchange information on our partners' management systems and efforts. Our goal is to enhance chemicals management throughout the entire supply chain.

Biodiversity Conservation

Basic Approach

Isuzu Group's business activities both depend on the natural world, which nurtures biodiversity, and also have various impacts on it. Therefore, Isuzu Group has developed its Biodiversity Policy, referring to guidelines such as the Ministry of the Environment's Guidelines for Private Sector Engagement in Biodiversity and the Keidanren Declaration for Biodiversity. We are committed to promoting actions that harmonize biodiversity with our business activities to achieve a sustainable society.
To achieve the Aspiration of conserving native biodiversity outlined in the Isuzu Environmental Vision 2050, we will work in collaboration with NGOs and other stakeholders to conserve the native biodiversity in the areas surrounding Isuzu Group operations. Additionally, Isuzu has supported the Keidanren Declaration for Biodiversity since January 2020.

Isuzu Environmental Vision 2050	2030 Environmental Roadmap	
Aspiration	2030 Challenge	Global action
Conserve native biodiversity in local communities	• Promote conservation of native local biodiversity	• Partner with local communities to advance conservation • Communicate our conservation efforts actively • Raise awareness and train employees to be environmental stewards

Isuzu Group Policy on Biodiversity (Formulated in 2018)

Basic Vision

We, the Isuzu Group, understand the relationship all of our business activities have with the ecosystem.
We support action that helps achieve a sustainable society through a harmony of business activities and biodiversity.

Action Guidelines

- Each employee learns and has an understanding that our business activities are enabled by biodiversity and at the same time, are affecting it.
- We engage in activities that reduce our impact on biodiversity and protect it in all of our business activities.
- We protect biodiversity from a global perspective, taking into account the diversity of local communities.
- We promote cooperation and collaboration with our stakeholders in order to improve our conservation activities.
- We contribute to local communities, placing valuing on communication and cooperation with stakeholders through disclosing information on activities and other initiatives.

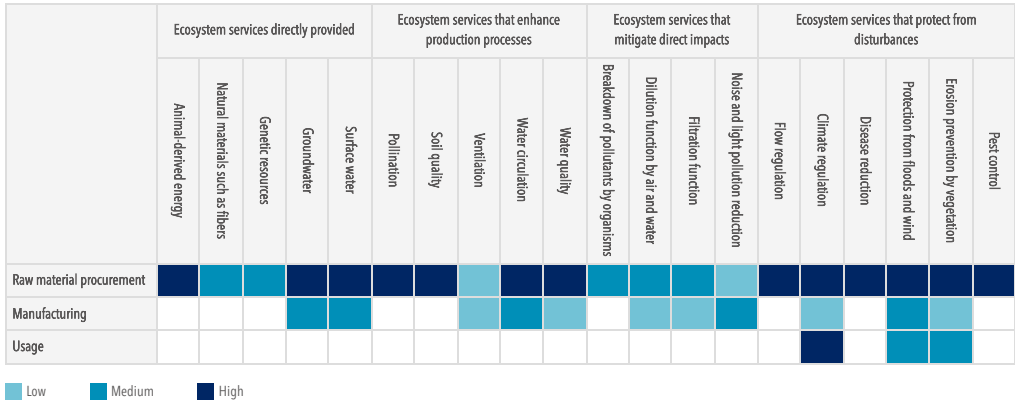
Initiatives

Assessment of Dependency on and Impact on Nature

Isuzu uses the tool ENCORE[*1] to understand the extent of our dependence on and impact on nature. We have assessed these dependencies and impacts throughout our value chain and created a heatmap. Moving forward, we will advance the evaluation of risks and opportunities related to natural capital based on these results and our business operations.

For raw material procurement, we will enhance engagement with our business partners through communication on reducing environmental impact and GHG emissions. For manufacturing and use, we aim to reduce risks and seize opportunities through initiatives aligned with our 2030 Environmental Roadmap.

Heatmap of Dependencies[*2]



Biodiversity Conservation

Heatmap of Impacts*2

	Land-use change			Direct extraction		Climate change	Pollution				Other
	Land use	Freshwater use	Marine use	Water use	Other resource use	GHG emissions	Air pollution	Water pollution	Soil pollution	Waste	Noise and light pollution, etc.
Raw material procurement	High	High	High	High	Low	High	High	High	High	High	High
Manufacturing				High		High	Medium	High	High	High	Medium
Usage						High	High				High

Low Medium High

*1 Exploring Natural Capital Opportunities, Risks, and Exposure

*2 Regarding raw material procurement, since various raw materials (such as petroleum, minerals, glass, natural rubber) and procurement processes (such as chemicals, metals, electronic components, tires) are involved, we take care to adopt those with significant levels of dependency and impact to ensure that we do not underestimate the degree of dependence and impact.

Promoting Biodiversity Conservation Efforts

Isuzu is working on biodiversity conservation activities at its Fujisawa and Tochigi Plants in collaboration with nearby universities.

Since 2013, Isuzu began conducting surveys of the flora and fauna on its plant premises. The results revealed that at both plants, insufficient forest maintenance was causing imbalances in the ecosystem and an overgrowth of invasive species, weakening the public functions of the satoyama (traditional rural landscapes).

Based on advice from the universities, we have been maintaining the plant sites since FY2017, including developing areas where native species can thrive.

Since 2017, annual surveys have confirmed a decrease in invasive species and a trend towards improving the imbalance in the ecosystem.


Fujisawa Plant: Maintaining the site's forested area
(Left: Before, Right: After)


Tochigi Plant: Maintaining the site's greenery area
(Left: Before, Right: After)

Promoting Efforts to Protect Local Ecosystems

We promote efforts to protect regional ecosystems in local communities where we conduct business, working to conserve them along with their biodiversity. In addition, by encouraging these activities across the entire Isuzu Group, we will remain committed to protecting global biodiversity.

Watarase-yusuichi Conservation Activities

Since 2016, Isuzu has been involved in conservation activities at the Watarase-yusuichi near its Tochigi Plant.
The Watarase-yusuichi is the largest reservoir area in Japan and is a Ramsar-registered wetland that serves an important flood control function to prevent flood damage in the region. Isuzu, along with volunteers from its Tochigi Plant, nearby Group companies, and their families, participates in activities such as reed cutting, removal of invasive plants, and litter cleanup, organized by local governments and NPOs. The ongoing conservation activities conducted with local residents have borne fruit and storks have been seen flying and nesting in the Watarase-yusuichi.
In FY2022, Isuzu was recognized as an Environmental Conservation Organization by Tochigi City. Additionally, for three consecutive years, in FY2022, FY2023, and FY2024, Isuzu received letters of appreciation from Oyama City as a Watarase-yusuichi Conservation Support Organization.
Furthermore, the Tochigi Plant is involved in tree planting activities in Ashio, located upstream along the Watarase River, which flows into the Watarase-yusuichi. Ashio was once devastated by smoke pollution from copper smelting, leading to the deforestation of the surrounding mountains. By participating in reforestation efforts, Isuzu aims to create opportunities for learning about environmental conservation through activities both upstream and downstream.

Invasive plant removal activities

Awarded by Oyama City for three consecutive years

Participants in Ashio reforestation activities

Biodiversity Conservation

Participating in Activities to Develop Forests That Supply Water in Kanagawa Prefecture

Since FY2019, the Isuzu Fujisawa Plant has been participating in Kanagawa Prefecture's Forest Restoration Partner project, conducting conservation activities to protect the forests in the Ashigarakami District that serve as the water source for the groundwater used by the plant.

Since FY2020, Group companies within the Fujisawa Plant have also joined these efforts. Through thinning work to restore neglected forests to a healthy state and nature observation activities, participants are reminded of the importance of biodiversity and the significance of preserving the forests that serve as water sources.

Although activities were suspended in FY2021 and FY2022 to prevent the spread of COVID-19, they resumed in FY2023. In November 2023, 18 employees and their families from two companies participated in the conservation activities.

Nature observation under the guidance of instructors

Isuzu Plaza's Biotope

At Isuzu Plaza, a biotope has been established to replicate the unique ecosystem of the Fujisawa region, where the plaza is located. Since FY2020, we have been collaborating with local university research labs. Our efforts include improvements like revising tree signage content to create a biotope that serves as a place of relaxation for the community, allowing everyone to feel closer to nature. We are actively seeking various pieces of advice to achieve this goal.
We encourage students to utilize this space for fieldwork and as a practical platform for considering community coexistence. We also provide them with opportunities to present their research findings to Isuzu. Additionally, employees are discovering the significance of ecosystem conservation afresh, while drawing inspiration from the innovative ideas of the students.

Promoting Sustainable Procurement

Adoption of Environmentally Friendly Materials

Isuzu has replaced traditional wood used for truck beds with bamboo, a member of the grass family, in consideration of forest conservation.
Bamboo, with its fast growth rate that allows it to be used as a material in about five years, along with its excellent durability, is considered a suitable material for truck beds.
Bamboo flooring material is being used in many vehicle models, including the new ELF released in March 2023.

A vehicle utilizing bamboo flooring material

Biodiversity Conservation

Developing Human Resources to Build a Society in Harmony with Nature

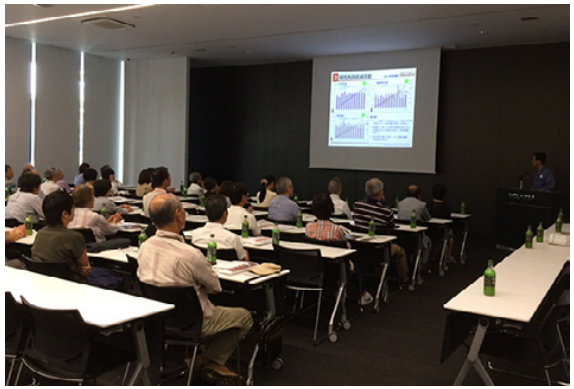
Isuzu has been conducting regular environmental education for employees since FY2017 to raise environmental awareness and deepen understanding of Isuzu's environmental activities.
This education is provided through a combination of e-learning and in-person training, which also helps reduce CO_2 emissions associated with employee travel.

Starting in FY2024, Isuzu introduced common environmental education for executives and personnel responsible for environmental activities across the entire Isuzu Group. This initiative aims to enhance understanding of the Isuzu Environmental Vision 2050 and the 2030 Environmental Roadmap. This activity will be expanded to all Isuzu Group employees in the future, facilitating human resource development so that each member of the Isuzu Group can contribute to the realization of the Isuzu Environmental Vision 2050 alongside our customers and partners.

Communication with the Local Community Surrounding the Plant

At the Isuzu Fujisawa Plant, we provide an opportunity for members of local residents' associations from six neighboring areas to learn about Isuzu's and the Fujisawa Plant's environmental conservation initiatives.
In October 2019, 46 participants attended the event.

* Activities were voluntarily suspended from FY2021 to FY2024 to prevent the spread of COVID-19. We plan to resume these activities in FY2025.



Explanation of environmental conservation initiatives