

Resource Recycling Initiatives



Progress in FY2022

Direct landfill waste
(Management Target
Companies: 20)
[FY2021: less than 0.5%]

Less than **0.5%**

- Promoted strengthening adoption of non-fossil-based plastic
- Began development of autonomous street lighting by reusing batteries from electrified vehicles
- Installed energy storage facilities for the demonstration of two concepts employing used batteries in conjunction with quick chargers and bidirectional chargers at the Okazaki Plant's M-Tech Lab, which started the demonstration in January 2023

<Related pages>

P15 MITSUBISHI MOTORS' Materiality

P20 Materiality

P30 Environmental Plan Package

P33 Environmental Management

P118 Environmental Data Related to Products and Business Activities

Basic Approach

The rise in populations and economic growth in emerging markets is leading to a rise in the consumption of minerals, fossil fuels and other resources.

MITSUBISHI MOTORS is working to use fewer resources and use them more effectively. We believe we can add more value to vehicles in manufacturing process. This belief underpins our belief that effective resource use is an important priority. The Environmental Plan Package positions resource recycling as an environmental issue to engage in directly, and we are contributing to a resource-recycling-oriented society by minimizing input resources and maximizing resource efficiency.

Countries and industry groups are formulating various initiatives in order to promote automobile recycling and correct processing. In response, the Company set targets to improve the ease of recycling, reduce the use of lead, and introduce recycled parts for new vehicles when the "MITSUBISHI MOTORS Recycling Initiative" was established in 1998. We have continued to engage in this initiative.

With regard to waste generated by our business activities, to achieve the goal set in Environmental Targets 2030 of "zero direct landfill waste (less than 0.5%)," we are working to reduce waste generated outside the company and reuse resources. In FY2022, our management target companies achieved zero direct landfill waste (less than 0.5%).

▶ Data (pp. 120): Generated waste, generated waste and externally disposed waste (MITSUBISHI MOTORS along), raw material inputs

Recycling-Based Design and Development

Under vehicle recycling legislation in Japan, Europe and China, automobile manufacturers are obligated to consider recycling when developing products.

We conduct design and development that actively incorporates not just recycling, but all aspects of the 3Rs including reduction and reuse. We have implemented the 3Rs in the stage starting with conceptual design in accordance with our unique "Recycling Plan Guidelines."

With regard to wires and harnesses, and motors, we have improved detachability and ease of recycling in accordance with the "Harness Design Guidelines."

At dealers, bumpers recovered or replaced during repairs are recycled for battery trays and other exterior parts. We are also promoting the increased use in other parts of recycled materials and non-fossil-based plastic used in vehicles, such as biomass plastics. Recycled materials such as clothing are used for silencer parts such as dashboards, and biomass plastics are used for interior parts such as steering wheel garnishes.

TOPICS

Using Thermoplastic Resin

The “XPANDER CROSS,” which was launched in 2019, uses easily recyclable thermoplastic resin for exterior and interior parts.

Main parts (indicated in green) that use thermoplastic resin

Exterior



Interior

Promote recycling of end-of-life vehicles

MITSUBISHI MOTORS encourages the recycling of end-of-life vehicles to reduce the environmental impact of waste from these vehicles. In Japan, the European Union and other regions, we promote recycling in accordance with the automobile recycling laws of each country. We comply carefully with the evolving automobile recycling laws that are being introduced in emerging countries in Asia.

The Environmental Targets 2030 identify the reuse of batteries used in electrified vehicles as one item to be addressed. From the perspective of conserving resources, we are undertaking initiatives to utilize used batteries.

Reuse of Batteries Used in Electrified Vehicles

Used electrified vehicle batteries retain sufficient storage capacity to make them useful for other applications, so from the perspective of conserving resources we are working to effectively reuse electrified vehicle batteries. To ensure these batteries can be effectively used for storage, we are conducting verification using a large-scale rooftop solar power system at the Okazaki Plant and built a power storage system that employs used batteries from the “OUTLANDER PHEV” (previous model).

In January 2023, we installed demonstration equipment for electrified vehicle quick chargers and bidirectional chargers at the Okazaki Plant, and the demonstration has begun. We intend to conduct effectiveness of the concept and technical verification, with the aim of introducing the system at our dealers and other locations in the future. (Please see page 27 for details.)

In addition, with MIRAI-LABO Co., Ltd., we have be-

gun the development of autonomous street lighting by reusing batteries from electrified vehicles. In April 2023, autonomous street lighting was installed in the Okazaki Plant and we began a demonstration experiment. These lights require no external power supplies, but use solar power, used batteries from electrified vehicles and recycled steel. In the event of disaster or power failure, such street lights continue to function and without having to be turned off. With the aim of commencing sales by in FY2024, the FY2023 demonstration experiment will obtain data on batteries and other items during use, and verify the practicality of the system, considering factors such as the number of days when the sun does not shine.

In Japan, Europe and North America, we have begun creating a system for collecting used batteries. The aim is to develop recycling technologies for and properly dispose of batteries for electric vehicles and plug-in hybrid electric vehicles.

Response to Automobile Recycling Laws in Japan

Since the End-of-Life Vehicle Recycling Law was enacted in Japan in 2005, we have been accepting used automobile shredder residue (ASR^{*1}), airbags, and fluorocarbons for recycling.

Regarding ASR recycling, we participate in ART^{*2} in order to jointly process ASR. As a result of the creation of new processing facilities and other measures, the ASR recycling rate in FY2022 was 96.8%, substantially above the statutory standard of 70% in effect since 2015. We will continue to develop new recycling facilities to ensure the stable processing of ASR.

^{*1} Automobile shredder residue

^{*2} Automobile Shredder Residue Recycling Promotion Team established by 13 companies, including Nissan Motor Co., Ltd., Mazda Motor Corporation and MITSUBISHI MOTORS.

MITSUBISHI MOTORS outsources the treatment of airbags and fluorocarbons to the Japan Auto Recycling Partnership (JARP).

In addition, for the effective use of recycling fees deposited from customers, we proactively work on increasing the recycling rate by conducting efficient recycling and proper processing of these three items.

We accept for recycling three items identified by Japan's End-of-Life Vehicle Recycling Laws (ASR, airbags and fluorocarbons). As part of a project to support the advancement of automobile recycling, we engaged in the following two R&D projects from August 2021 to March 2023.

- 1) Research to restore the physical properties of PP resin*¹ recovered from ASR and expand the use of non-fossil-based plastic.
- 2) In the aim of realizing a low-carbon society, research to verify the applicability of technology to diagnose battery degradation, quickly and to a high degree of accuracy, that can facilitate the reuse and closed-loop utilization of drive batteries

We have joined the "LiB Joint Recovery System" established by the Japan Automobile Manufacturers Association and work to efficiency recovery lithium-ion batteries (LiBs). The system started operating in October 2018 to properly dispose of used LiBs with the Japan Auto Recycling Partnership as a contact point.

*¹ Polypropylene resin, a general-purpose polymer composed of carbon and hydrogen

Recycling Promotion in the EU

Response to the EU's Directive on the Recycling of End-of-Life Vehicles

In the EU, in accordance with the End-of-Life Vehicles Directive*² established in 2000, automobile manufacturers or importers must accept and recycle end-of-life vehicles. Also, in 2003, the ELV Directive*³ was enacted, specifying ease of recycling as a certification requirement.

We built a system of acceptance and recycling in line with the actual situation of EU member countries centering on our European subsidiary Mitsubishi Motors Europe B.V. (MME).

- *² "Directive of the European Parliament and of the Council on End-of-Life Vehicles"
 *³ End-of-Life Vehicles

Provision of Dismantling Information

In the EU, automobile manufacturers must provide dismantling information for new model vehicles to treatment operators. The company provides such information on a timely basis by using the International Dismantling Information System (IDIS) jointly developed by automobile manufacturers.

Response to the EU's Directives on Approval for Vehicle Models for Recyclability

In the EU, satisfying the minimum 95% recyclability rate is a requirement for type approval of vehicle models, and the company established a system that satisfies the requirements of this directive. Our vehicles sold in the EU meet the requirements of the directive under this system.

Going forward, we will continue to acquire recyclability approval for all new models sold in the EU.

Initiatives to Reduce Waste Generation and Reuse Resources in Production Activities

We are working to reduce the amount of waste generated through manufacturing by improving its production processes. As for the generated waste, we reduce treatment costs and continue to improve the sorting and treating methods to utilize it as resources.

Effective Use of Resources and Recycling

