# **Progress in FY2023**



ates in our environmental management target companies. However, these equity-method associates have been excluded since FY2021.

We set the base value 545 thousand t-CO<sub>2</sub>, which is calculated by subtracting 43 thousand t-CO<sub>2</sub>, the emission amount made by the equity-method associates, from 588 thousand t-CO<sub>2</sub>, the officially reported volume of FY2018 (the benchmark year).

<Related pages> P12 MITSUBISHI MOTORS' Materiality P15, P17 Materiality P23 Environmental Plan Package P26 Environmental Management P118 Environmental Data Related to Products and **Business Activities** 

## **Basic Approach**

In recent years, extreme weather, such as heat waves, droughts and floods due to heavy rain, has caused disasters one after another around the world. The largest cause of these extreme-weather events is climate change, whose major factor seems to be global warming caused by increases in CO<sub>2</sub> and other greenhouse gases.

Global efforts to reduce CO<sub>2</sub> emissions are accelerating. As international frameworks for achieving a sustainable society such as the Paris Agreement and the United Nations Sustainable Development Goals (SDGs) progress, the 28th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP28), held in November and December 2023, implemented the Global Stocktake and indicated the need to reduce greenhouse gas emissions by 43% by 2030 and 60% by 2035 compared to 2019 levels.

CO<sub>2</sub> reduction image throughout supply chain

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Automobiles generate CO<sub>2</sub> throughout the life cycle, from production to driving and disposal. For this reason, MITSUBISHI MOTORS has identified "responding to climate change and energy issues" as a material issue, taking into account its impact on the economy, environment and people. Furthermore, in the Environmental Plan Package, we position this as one of the important challenges to address directly, and are working to achieve carbon neutrality throughout its supply chain by 2050. We have set specific targets, and efforts are underway to achieve this goal. Furthermore, in the mid-term business plan "Challenge 2025," also includes "Working toward Carbon Neutrality" as one of the 3 major challenges, and we position it as a theme to be pursued by the entire company.

As for products, starting with our original plug-in hybrid electric vehicles (PHEV) and Kei-car segment commercial electric vehicles, we will promote electrification while leveraging the technologies of Alliance

Electrification of products (electric vehicles, PHEV, etc.)

<Products (vehicle emissions)>



\*2 Including new and stock vehicles

# Environment



Message from

• 7.2 • 7.3 9.4 • 13.1 • 13.2 In addition, in order to study specific measures and formulate medium- to long-term policies and targets for achieving carbon neutrality across the supply chain by 2050, we established the Carbon Neutrality Council under the Sustainability Commit-

tee. Members of this council, which is chaired by the Executive Officer, Executive Vice President, include Executive Officers in charge of management strategy, product strategy, production, procurement, logistics, and other areas.

In FY2023, we made progress toward achieving Environmental Targets 2030 through the accumulation of concrete measures in each area and estimating CO<sub>2</sub> emission forecasts through FY2030.



TCFD Consideration Team Members: People in the general manager class at relevant divisions

	Roles	Meeting frequency
Sustainability Committee	Monitoring Progress toward the Environmental Targets 2030	Three times a year
Carbon Neutral Council	Meets three to four times a year, formulating medium- to long- term policies and targets for achieving carbon neutrality by 2050	Three to four times a year
Subcommittee for Promote the Reduc- tion of CO2 from Business Activities	Draft action plans for reducing CO <sub>2</sub> in areas of business activity, promotion of specific measures, etc.	Twice a year
TCFD Consideration Team	Identify and assess climate- related risks and opportunities, consider scenario analysis, etc.	Meets as necessary

#### Structure of Promoting Carbon Neutrality (As of April 2024)

Supervision

Board of Directors

**Executive Committee** 

Sustainability Committee

 Chair: Executive Officer, President & CEO Members: Executive Officer, Executive

Vice President/senior executive officer/

general managers of relevant divisions

Deliberation

and reporting

Deliberation

and reporting

### to proactively introduce the electrified vehicles that best meet the energy situation, infrastructure development status, and customer needs of each country and region. In parallel with our electrification efforts, we will work to improve our fuel efficiency technologies for vehicles powered by internal combustion engines. In our business activities, in addition to reinforcing energy saving measures as well as pursuing productivity-enhancing technologies, we will promote fuel conversion and the development and introduction of next-generation production technologies.

Furthermore, we will expand the use of renewable energy, centering on the introduction and expansion of solar power generation facilities at major plants.

To achieve carbon neutrality throughout the supply chain, it is essential for us to reduce CO<sub>2</sub> emissions in the production phase of raw materials and parts, as well as in the transportation of products. We will promote activities to visualize and reduce CO<sub>2</sub> emissions in cooperation with our suppliers. At the product disposal stage, we will promote recycling of products and materials through the adaptation of low-CO<sub>2</sub> materials and recycling-conscious design.

We will also explore various carbon offset options for CO<sub>2</sub> emissions that cannot be ultimately reduced through these efforts.

In addition, our electrified vehicles have large-capacity batteries that can be used in energy management and as emergency power sources in times of disaster. Through these measures, we are also engaging in measures to adapt to climate change.

As expectations for companies to curb climate change are expected to increase, we will continue reinforcing our efforts to further reduce CO<sub>2</sub> emissions.

## Structure of Promoting Carbon Neutrality

We are making progress on "Responding to Climate Change and Energy Issues" under our framework for promoting sustainability. The Sustainability Committee, chaired by the Executive Officer, President & CEO, deliberates on climate change risk and opportunity assessments and response measures and checks progress and performance toward our "Environmental Targets 2030."



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### Development and Spread of Electrified Vehicles

In our Environmental Targets 2030, MITSUBISHI MOTORS set the target of achieving a 40% reduction in average CO<sub>2</sub> emissions from new vehicles by 2030 (compared with FY2010 levels). To meet this target, we have raised our target ratio of electrified vehicle sales to 50% by 2030 and to 100% by FY2035. This change focuses our core technologies on responding to climate change and energy issues through electrified vehicles, which emit low CO<sub>2</sub> while driving, and concentrates on their development. Centering on our strength in plug-in hybrid electric vehicles (PHEV), we will expand our lineup of electrified vehicles, thereby promoting their popularization and use in society and contributing toward the realization of a sustainable society.

### Electric Vehicles (EV)

Electric vehicles (EV) are driven by electricity in battery, so they emit no exhaust gases such as CO<sub>2</sub> while driving.

We released the "i-MiEV" as the world's first mass-produced EV in 2009. In addition to its environmental performance, the "i-MiEV" performed better than conventional gasoline engine vehicles on quietness and acceleration starting from maximum torque. In 2011, we launched the "MINICAB-MiEV," a Kei-car segment commercial electric EV. In 2012, we began offering the "MINICAB-MiEV TRUCK," also an EV in the Kei-car segment. These technologies are the foundation of next-generation EVs, such as PHEV.

• 7.2 • 7.3

We believe that expanding the lineup of Kei-car EVs, which are expected to be used in more everyday situations, will be the key to the spread of electrified vehicles. Accordingly, in June 2022 we launched the "eK X EV," a new EV in the Kei-car segment, and in December 2023 we launched the "MINICAB EV," new commercial EV in the Kei-car segment. We will continue to focus on the development of EV to contribute toward the realization of a carbon neutral society.





The "MINICAB EV," Our New Commercial Electric Vehicles in the Kei-Car Segment, Launches in Indonesia



The new "MINICAB EV," which launched in Japan in December 2023, is a commercial electric vehicle in the Kei-car segment. This model draws extensively on the development and maintenance expertise we have accumulated over the past 12 years with the "MINICAB-MIEV," which has sold some 13,000 units (as of end-October 2023). The "MINICAB EV" features substantial improvements, such as a driving range of 180km (in WLTC mode) on a single charge, up around 35% compared with previous models, as well as expanded safety and functional equipment.

In February 2024, MITSUBISHI MOTORS commenced sales in Indonesia of the "MINICAB EV" (known locally as the "L100 EV"), via its local join venture, PT Mitsubishi Motors Krama Yudha Indonesia (MMKI).

As decarbonization efforts accelerate in various fields toward the realization of a carbon-neutral society by 2050, demand for commercial electric vehicles in the Kei-car segment is further increasing in the logistics industry and from local governments. Introducing the "MINICAB EV" will help reduce CO<sub>2</sub> emissions in the last mile of commercial use.

#### Plug-in Hybrid Electric Vehicles (PHEV)

PHEV are powered by electricity stored in batteries and by the motor, using the engine to generate electric power when the battery level is low. PHEV combine the powerful driving performance, high level of quietness, and driving stability characteristic of electric vehicles, without the concern that battery capacity will limit the vehicle's driving range.

Our journey in PHEV began with the "OUTLAND-ER PHEV" in 2013, followed by the "ECLIPSE CROSS PHEV model" in 2020 and the launch of the All-New "OUTLANDER PHEV model" in 2021. At low to medium speeds, the PHEV system uses electric power from the battery, but when the battery level is low, it generates electric power during operation using the engine while also supplying power to the motor and battery. Furthermore, during high-speed driving, the vehicle is driven by the engine and simultaneously assisted by the battery-powered motor. In this way, the drive mode is automatically selected according to the situation. CO<sub>2</sub> emissions are substantially lower than conventional gasoline engine vehicles, delivering outstanding environmental performance.



"ECLIPSE CROSS PHEV model" and "OUTLANDER PHEV model"



The Values Plug-in Hybrid Electric Vehicles (PHEV) Provide:





It is possible to use only the electric motor without consuming gasoline for short trips, such as for everyday commuting and shopping. The motor and engine can also be used in combination to extend the driving range, using the engine to generate the electricity when battery levels run low.



Via a bi directional (V2H\*5) charger, the electricity in the battery and the engine's generating capabilities can be used in combination to supply electricity for up to 12 days\*6. It can also be used as an emergency power source in times of disaster.

- \*5 Short for "vehicle to home," V2H is a system that enables electricity stored in a car's battery to be supplied to the home.
- \*6 For the All-New "OUTLANDER PHEV model" Potential supply capacity is calculated by MITSUBISHI MOTORS (calculations assume approximately 10 kWh per day for general household power consumption and do not include the conversion efficiency of the V2H equipment and/or similar device).





#### Hybrid Electric Vehicles (HEV)

MITSUBISHI MOTORS' HEV system offers EV mode, series hybrid mode, parallel hybrid mode, and regenerative mode. The system automatically selects the optimal driving mode according to driving conditions and remaining drive battery capacity to achieve low fuel consumption and powerful and pleasant motor drive.

When starting off or at low speeds, in EV mode the vehicle runs on electric power alone, with the drive battery supplying power to the motor. In series hybrid mode, when the vehicle is climbing or accelerating, the engine is used to generate electricity, and the motor is used to drive the vehicle in combination with power from the drive battery. At higher speeds, the system switches to parallel hybrid mode, in which the car runs on engine power and is assisted by the motor. In regenerative mode, the vehicle recovers energy from deceleration, which it converts into electric power and stores in the drive battery.

In FY2023 we launched the "COLT HEV model" in Europe and the "XPANDER" and "XPANDER CROSS HEV model" in Thailand. In FY2024, we are launching the new "ASX HEV model," starting in Europe from June.

#### TOPICS

### Launch of "XPANDER" and "XPANDER CROSS" HEV Models in Thailand

The "XPANDER" and "XPANDER CROSS" HEV models that launched in February 2024 are manufactured at Mitsubishi Motors (Thailand) Co., Ltd. (MMTh), our production and sales company in Thailand.

Our HEV system, derived from PHEV, delivers the environmentally friendly and pleasant driving experience that only an electric vehicle can offer. Based on the FF 2WD, the system enables safe and reliable driving with unique four-wheel control technology, including Active Yaw Control\*1, ensuring optimal driving according to weather and road conditions with a variety of drive modes. Despite being an HEV, the user can also select an EV driving as a situationally appropriate override option, such as on early morning drives in quiet residential areas when engine noise may be a nuisance.

\*1 Active Yaw Control: This function controls the yaw moment resulting from the difference in braking force and driving force between the left and right wheels to improve maneuverability and stability on slippery road surfaces and when cornering.





"XPANDER HEV model"

"XPANDER CROSS HEV model"

## Promoting the Use of Electrified Vehicles as a Way of Adopting to Climate Change

By leveraging the large-capacity batteries on its electric vehicles (EV) and PHEV to supply electricity, we are contributing to measures in various countries and industries to adapt to climate change and energy issues. We are applying these to such areas as areas as energy management, V2X<sup>\*2</sup> and use as emergency power sources in times of disaster.

\*2 A general term encompassing vehicle to home (V2H) and vehicle to grid (V2G), among others



### Launch of a Smart Charging Service Demonstration Project Employing Our Connected Technology for Electrified Vehicles

MITSUBISHI MOTORS, MC Retail Energy Co., Ltd., Kaluza Ltd. and Mitsubishi Corporation have begun a demonstration project to commercialize Japan's first smart charging service, which uses connected technology from our electrified vehicles.

Through this smart charging service, we aim to reduce energy costs for society as a whole and provide an attractive charging environment for users of electrified vehicles. The results of this demonstration project will be used in the development of this service.

#### **Overview of the Demonstration Project**

The service automatically optimizes recharging for customers<sup>\*1</sup> who own the "OUTLANDER PHEV model" at times when market prices of electricity are low. Charging takes place by the time specified by the customer, using a smartphone app and normal home electrical circuitry. The recharging employs an EV recharging control platform provided by Kaluza, an OVO Group company in which Mitsubishi Corporation has an equity stake.

During the demonstration period, customers will be able to save on charging costs based on charging control results by subscribing to a demonstration-specific electricity plan that MC Retail Energy will develop for this service. The service enables direct charging control from the Kaluza platform to the vehicle through our connected system, eliminating the need for charging facilities with communication functions (smart charging facilities).

\*1 The service targets people who live in the service areas of TEPCO Power Grid, Inc. or Chubu Electric Power Grid Co., Inc., who register for our connected service ("MITSUBISHI CONNECT"), and who have regular home charging equipment installed.



#### TOPICS

Demonstration Testing of Two Concepts for Energy Storage Utilization in Conjunction with Chargers for Electrified Vehicles



Demonstration facility for utilizing used batteries

In January 2023, we installed demonstration facilities for two concepts linked to quick chargers and bi-directional chargers for electrified vehicles in the M-Tech Lab<sup>22</sup>, a smart grid demonstration facility



M-Tech Lab

at the Okazaki Plant, where we are conducting demonstration tests.

Both systems utilize used battery modules. One is an energy storage system that connects to the power line of a quick charger and discharges stored power to reduce power peaks when fast-charging electrified vehicles. The other is an energy storage unit, which is connected to a bidirectional charger in a CHAdeMO\*<sup>3</sup> standard. This unit stores energy even when the electrified vehicles are away, facilitating efficient energy management. In the future, we will work with energy storage equipment manufacturers to introduce these systems at Group sales companies' shops and other locations.

 \*2 M-Tech Lab: Test equipment for a smart grid demonstration, our first initiative utilizing used batteries, began operating in April 2012.
 \*3 CHAdeMO: A quick-charging system for electric vehicles, a global standard that Japan led the way in standardizing in 2010

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#### Launch of Joint Demonstration of Movable Storage Batteries Utilizing Used Batteries

In September 2023, MITSUBISHI MOTORS and Hitachi, Ltd. have begun a joint demonstration of "Battery Cube\*<sup>1</sup>," a movable storage battery that utilizes used batteries from electrified vehicles. This is part of an effort to realize a circular economy for batteries installed in electrified vehicles.

This demonstration, which aims to verify the practicality of the Battery Cube, employs used batteries from the OUTLANDER PHEV, our plug-in hybrid vehicle. The demonstration, which assumes power outages due to a disaster across a wide area, connects a V2X<sup>\*2</sup> system from Hitachi Building Systems Co., Ltd. with the Battery Cube's CHAdeMO V2H<sup>\*3</sup> connector. Power from the Battery Cube is being used to drive the "Urban Ace HF," Hitachi's standard elevator. In addition to supplying power from electrified vehicles equipped with V2H functionality, which has been proven in the past, this combination using a Battery Cube should help to ensure continuous backup power supply in case of disaster.

We aim to begin working with Hitachi to reuse used batteries from electrified vehicles and commercialize Battery Cube in FY2024. We will work together to introduce Battery Cube to companies and local governments. We are also planning a joint demonstration for energy



Left: Battery Cube supplying electricity Right: Used batteries inside the Battery Cube

management that connects electrified vehicles and Battery Cube with solar panels and other devices to make effective use of renewable energy. In addition to reusing batteries from electrified vehicles, we will study concepts for subsequent recycling, in line with our aim of realizing a circular economy for electrified vehicle batteries.

- \*1 Battery Cube: A registered trademark of Hitachi Building Systems Co., Ltd. in Japan
- \*2 V2X (Vehicle to X): A generic term for technologies that connect and interoperate between automobiles and various objects. In the energy field, V2X systems are being put to practical use to enable the mutual supply of electric power by connecting electric vehicles to homes, buildings, and grid systems.
- \*3 CHAdeMO V2H: A Vehicle to Home standard for CHAdeMO, a quick recharging method proposed as a standard by Japan's CHAdeMO Association.





Demonstration Projects of Autonomous Street Lighting That Utilizes Used Batteries from Plug-in Hybrid Vehicles (PHEV)

MITSUBISHI MOTORS and MIRAI-LABO Co., Ltd. are developing an autonomous street lighting system using used batteries from PHEV in hopes of contributing to decarbonization through the increased use of renewable energy. Our autonomous street lighting systems store solar power generated during the day in used batteries from PHEV, using that power to illuminate LED lights at night. Since they do not require an external power supply, the streetlights do not go out in the event of a disaster or power failure. Used batteries mean that CO<sub>2</sub> emissions from battery production are lower than for streetlights using new batteries, and CO<sub>2</sub> emissions during operation are zero, as the electricity comes from solar power.

In FY2022 to FY2023, we commenced a demonstration project that involved installing 24 autonomous street lighting systems on the facilities of the Okazaki Plant, Mizushima Plant, Kyoto Plant, and Tokachi Research & Development Center. We are acquiring usage data on batteries and other components and verifying the practicality of the systems, looking at such factors as the number of non-sunlit days. We aim to bringing the system to market in FY2024.

Number of Autonomous Street Lighting Systems Installed (As of April 2024)

Locations	Number installed
Okazaki Plant	15
Mizushima Plant	2
Kyoto Plant	4
Tokachi Research & Development Center	3
Total	24



Okazaki Plant Mizushima Plant

Kyoto Plant Tokachi

Research & Development Center

### **Development of Improving Fuel Economy Technologies**

MITSUBISHI MOTORS is continuously promoting the development of powertrain technologies to reduce fuel consumption and improve energy efficiency.

Idle Reduction System "AS&G" (Auto Stop & Go) AS&G is an idle reduction system that automatically stops and starts the engine. This has a major effect on improving the fuel economy because no fuel is consumed when at a stop. When fitted with a coasting stop function, AS&G stops the engine while decelerating.



### **Deceleration Energy Recovery** (Power Generation Control)

This technology involves the intensive charging of the battery using electric power generated while decelerating. This reduces the amount of power required from the engine, thereby improving fuel economy.

MITSUBISHI MOTORS CORPORATION Sustainability Report 2024

Environment



#### Hybrid System

The eK series (excluding the "eK WAGON") uses MIT-SUBISHI MOTORS' 12V BSG\*1 hybrid system. The power produced by regenerative energy during deceleration is used to efficiently charge the lithium-ion battery, and the motor assists the engine during acceleration to achieve torquey and fuel-efficient driving and smooth engine stopping and starting.

The new "OUTLANDER" uses 48V BSG hybrid system specifications, generating more power from the energy of deceleration.

\*1 Short for "belt-driven starter generator," the BSG adds motor functionality to the generator, using a belt drive to assist engine startup and providing power assistance.



Hybrid system on the "eK X"

Variable Valve Timing Mechanism Mitsubishi Innovative Value timing Electronic Control System (MIVEC)



MIVEC engine

The MIVEC is a variable valve timing mechanism for minimizing fuel consumption. The intake valve lift is continuously varied according to the operating condition to minimize air intake energy loss, resulting in improved fuel efficiency.

#### Gasoline Direct-Injection Turbo Engine

The "ECLIPSE CROSS" adopts a 1.5L downsized direct-injection turbo engine (4B40). By precisely controlling in-cylinder injection and intake port injection based on driving circumstances, this engine delivers superior fuel economy and a clean exhaust gas. By combining an exhaust manifold integrated with the cylinder head, intake and exhaust MIVEC, and a compact turbocharger with an electric wastegate actuator, the engine optimizes supercharging pressure control to respond as the driver demands, thus delivering a comfortable and powerful driving.

The new "OUTLANDER" is also equipped with a next-generation 1.5L downsized direct injection turbocharged gasoline engine, which is an improved version of the 4B40 engine. Additionally, it is combined with a hybrid system that incorporates a 48V BSG. This system assists the engine during start-up and acceleration with the motor, achieving a high level of performance and fuel efficiency.



Direct injection turbocharged gasoline engine (4B40)

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#### **Clean Diesel Turbo Engines**

The new "TRITON" we launched in Thailand in July 2023 is equipped with a new 2.4L diesel turbo engine. The weight and friction losses of the engine are reduced due to the optimally designed key components such as the cylinder block, piston and connecting rods. Additionally, the fuel injection system has been upgraded to the next generation, providing high performance while achieving excellent fuel efficiency and clean exhaust gas characteristics.

In February 2024, we added a higher-output version of the engine with a two-stage turbocharger. With a maximum output of 150 kW and maximum torque of 470 Nm, it delivers powerful acceleration and abundant torque that rises responsively from low to mid-range speeds.

#### New Gasoline Engine for Electrified Vehicles

The HEV models of "XPANDER" and "XPANDER CROSS" that went on sale in Thailand in February 2024 are powered by a newly developed 1.6L gasoline engine for electrified vehicles. A high expansion ratio cycle (Atkinson cycle<sup>\*2</sup>) is used to improve combustion efficiency, and an electric water pump has been adopted for the first time in a MITSUBISHI MOTORS engine to eliminate the auxiliary drive belt and reduce mechanical losses.



1.6L gasoline engine for electrified vehicles

\*2 Atkinson cycle: A type of internal combustion engine that uses a higher expansion ratio than compression ratio to reduce exhaust heat and improve thermal efficiency.

ESG Data



#### TOPICS

#### Equipped with a 2.4L Clean Diesel Turbo Engine



"TRITON"

After launching "TRITON" in Thailand in July 2023, MITSUBISHI MOTORS added a new variant in February 2024, which adopts a higher output version of its engine to respond to market diversification.

The new clean diesel engine with two-stage turbocharger offers maximum output of 150 kW and maximum torque of 470 Nm. It delivers a powerful sense of acceleration and abundant torque that rises responsively from low to mid-range speeds.

In addition, the engine uses a "urea SCR\*1 system" that purifies nitrogen oxides (NOx) emitted from diesel engines by using AdBlue, an aqueous urea solution, thereby achieving clean emissions along with low fuel consumption and high power output.



### Taking the Initiative in Business Activities Toward Carbon Neutrality

To become carbon neutral, MITSUBISHI MOTORS will approach the issue from both the "demand side" (energy consumption) and the "supply side" (energy generation and procurement). To ensure our activities

#### "Seven Approaches" to Become Carbon Neutral

are carried out systematically, we have formulated a medium- to long-term roadmap toward carbon neutrality. Following this plan, we are working to develop future technologies, improve production processes and expand the introduction of renewable energy.

We have established the CO<sub>2</sub> Reduction Promotion Subcommittee as an infrastructure of the Sustainability Committee. The subcommittee, which has mem-





bers from production, development and sales companies in Japan and overseas, aims to help the entire MITSUBISHI MOTORS Group achieve carbon neutrality in its business activities. The subcommittee shares information on the progress of action plans, actual CO<sub>2</sub> emissions, and other pertinent data. It also drafts reduction measures, considers future technologies, and deliberates the future energy mix.

Message from

the President & CEO

#### (As of April 2024)



### Introduction of Renewable Energy

MITSUBISHI MOTORS is actively seeking to use renewable energy in its operations, taking into consideration the energy situation at each site. To do so, we are introducing in-house renewable energy generation and purchasing renewable energy from energy suppliers.

We believe solar power offers us an important way to achieve carbon neutrality, and we are proactively introducing solar power generation at our locations. In addition, in FY2023 we began introducing CO<sub>2</sub>-free electricity derived from renewable energy sources for some of our domestic production facilities.

#### TOPICS

### Starting to Use Solar Power Generation Equipment (Rooftop of the Plant)

In FY2023, we introduced solar panels to supply 2.8MW of power at Mitsubishi Motors Philippines Corporation (MMPC), 1.7MW at Asian Transmission Corporation (ATC), and 1.3MW at the Mizushima Plant. We also added solar panels at other locations: 5.6MW at Mitsubishi Motors (Thailand) Co., Ltd. (MMTh), 2.0MW at MMTh Engine Co., Ltd. (MEC), and 5.6MW at PT MITSUBISHI Motors Kra-

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ma Yudha Indonesia (MMKI), bringing total Group generating capacity to approximately 30MW.



Solar power system at MMTh's No. 3 Plant

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### **Initiatives at Manufacturing Plants**

To reduce CO<sub>2</sub> emissions from production activities, we have established a medium- to long-term roadmap to achieve carbon neutrality in each area of production technology-pressing, welding, painting, assembly and powertrain-and we are developing future technologies and improving production processes to this end.

We are sharing good practices among all sites and incorporating a variety of plans into our annual capital investment plans at individual bases and implementing them. We are improving the efficiency of production equipment, using electric equipment instead of the use of fuels, steam or compressed air, and upgrading general equipment to more energy-saving models.

In energy-saving activities involving participants from production sites and production technology and motive power departments, we are working to improve the operation of energy-intensive processes such as painting and casting. We also review the operation and management of power supply equipment such as boilers and compressors, and strive to prevent air leaks and other losses. These activities focus on operational improvements following the introduction of new facilities.

ESG Data



#### TOPICS

### Optimizing Operational Control of the Painting Process (Okazaki Plant)

At the Okazaki Plant, MITSUBISHI MOTORS has substantially revised how we manage the painting process, and we are undertaking thorough initiatives toward energy conservation.

Quality control during the painting process requires that air control be closely monitored. We have carefully reviewed individual conditions and introduced revisions to temperature and humidity, reducing air speed and intermittent operation, employing blowers in processes that use compressed air, and controlling air conditioning in response to the temperature and humidity of the outside air.

As a result of these efforts, we expect to reduce energy consumption throughout the overall painting

process by approximately 10% and reduce CO<sub>2</sub> emissions by 3,500 tons per year. Going forward, we will apply the knowledge we gain at the Okazaki Plant to other sites.



Bird's-eye view of the paint plant at the Okazaki Plant



#### TOPICS

#### Efforts to Reduce Air Consumption (Kyoto Plant)

The compressors used to produce compressed air account for about 20% of the energy used by the Kyoto Plant. Accordingly, decreasing the plant's consumption of compressed air is a priority for reducing CO<sub>2</sub> emissions.

In FY2023, we focused on reducing the amount of compressed air wasted in the casting process. We introduce such measures as the intermittent use of air for cooling and cleaning. We also expanded the rotary water drainage system, which we found to be highly effective in FY2022, to other lines, and installed three new units. Furthermore, we upgraded our compressor, improving the energy efficiency of the compressed air supply.

These measures are expected to reduce compressor power consumption by more than 15% and CO<sub>2</sub> emissions by approximately 2,800 tons per year.



Upgraded inverter-type compressor

### **Office Initiatives**

We are also promoting the use of renewable energy and introducing various types of energy-saving equipment in areas other than manufacturing, such as at R&D and head office locations.

Part of the electric power used at the Research and Development Building (Okazaki, Aichi Prefecture) and head office (Minato-ku, Tokyo) is supplied by renewable energy, thanks to the erection of rooftop solar power system and making use of the Tradable Green Certificates System\*. Also, CO<sub>2</sub> emissions are being reduced by using energy-saving electrical equipment and air conditioners.

In July 2020, we began tracking electricity use and power generation per capita at our Research and Development Building, comparing these figures with other offices, and using digital signage to show year-on-year comparisons by month. In these ways, we are working to increase employee awareness about saving energy.



Digital signage at Research and Development Building (Okazaki)

\* This system is used to trade environmental added value of renewable energy generated from natural energy sources using renewable energy certificates issued by a certificate issuer and confirmed by a third-party organization.



### **Dealer Initiatives**

MITSUBISHI MOTORS encourages our dealers in Japan to acquire Eco-Action 21 certification and carry out activities such as reducing the amount of energy and water they use, lowering the amount of waste they produce, and promoting the widespread use of electrified vehicles.

Eco-Action 21 is an environmental management certification and registration system based on guidelines recommended by Japan's Ministry of the Environment. Eco-Action 21 has the following three features.

- The environmental management framework is easy for small and medium-sized businesses to configure and operate.
- The system enables organizations to track and manage their CO<sub>2</sub> emissions, working toward zero CO<sub>2</sub>.
- The system facilitates thorough management of compliance with environmental laws and regulations.

For details on Eco-Action 21, please see the website of the system's central secretariat (only in Japanese).

 WEB
 https://www.ea21.jp/

#### Dealers That Have Acquired "Eco-Action 21" Certification (As of March 1, 2024)

	Company	
Aomori Mitsubishi Motor Sales Co., Ltd.	Toyama Mitsubishi Motor Sales Co., Ltd.	Kyushu Mitsubishi Motor Sales Co., Ltd.
Higashi Nihon Mitsubishi Motor Sales Co., Ltd.	Toyama Diamond Motors Co., Ltd.	Oita Mitsubishi Motor Sales Co., Ltd.
Ibaraki Mitsubishi Motor Sales Co., Ltd.	Kumamoto Mitsubishi Motor Sales Co., Ltd.	Sobu Mitsubishi Motor Sales Co., Ltd.
Kyoto Mitsubishi Motor Sales Co., Ltd.	Nagasaki Mitsubishi Motor Sales Co., Ltd.	Tokai Mitsubishi Motor Sales Co., Ltd.
Nishi Nihon Mitsubishi Motor Sales Co., Ltd.	Ishikawa Chuo Mitsubishi Motor Sales Co., Ltd.	Sunen Mitsubishi Motor Sales Co., Ltd.
Shiga Mitsubishi Motor Sales Co., Ltd.*1	Mie Mitsubishi Motor Sales Co., Ltd.	Gunma Mitsubishi Motor Sales Co., Ltd.

\*1 Certification received for the Kyoto Mitsubishi Motor Sales Co., Ltd. Group

#### TOPICS

#### Rolling out the DENDO DRIVE STATION across Japan's Prefectures

We seek to put DENDO DRIVE STATIONS into operation in prefectures across Japan. DENDO DRIVE STATIONS are next-generation dealerships where visitors can experience the appeal of electrified vehicles, including their use as power sources in times of disaster and their contribution to the environment.

In FY2023, we opened four stations<sup>\*2</sup>, bringing the nationwide total to 97.

By deploying DENDO DRIVE STATION branches across Japan, we will increase the significance of electrified vehicles by diversifying their energy sources and communicating their value as sources of electric power in times of disaster. Please see our website for details on our next-generation dealerships, called DENDO DRIVE STATIONS. (only in Japanese)

WEB) https://ttps://www.mitsubishi-motors.co.jp/carlife/phev/dendo/index.html

\*2 The Shin-Nanbu Branch of Kumamoto Mitsubishi Motor Sales Co., Ltd., the Saga Branch of Kyushu Mitsubishi Motor Sales Co., Ltd., and the Auto Mall Tarami and Sasebo branches of Nagasaki Mitsubishi Motor Sales Co., Ltd.



Shin Nanbu Branch, Kumamoto Mitsubishi Motor Sales Co., Ltd.



Exterior



Lifestyle Corner In a corner designed to look like a typical household dining area, we conduct a "1500W experience demonstration" to show how daily life can go one, even during disasters, by using just a 100V AC power supply (1500W) from an electrified vehicle.



Electrified Vehicle Charging Facilities Electricity generated by the solar power system is used to charge electrified vehicles through V2H\*<sup>3</sup> equipment.

\*3 V2H: Vehicle to home, V2H is a system that enables electricity stored in a car's battery to be supplied to the home.





### **Physical Distribution**

### Capture and visualize Global Logistics CO<sub>2</sub> Emissions

MITSUBISHI MOTORS is promoting to capture and visualize Global Logistics CO<sub>2</sub> emissions across the global supply chain, including overseas operations.

In addition to the ongoing efforts to understand Logistics CO<sub>2</sub> emissions from overseas production plants, in FY2O23, we expanded the scope to include overseas vehicle sales subsidiaries. Furthermore, we are analyzing the visualized Logistics CO<sub>2</sub> emissions and promote initiatives to reduce emissions.



#### Working to Reduce CO<sub>2</sub> Emissions from Logistics

We are promoting initiatives to reduce Logistics CO<sub>2</sub> emissions in the transportation of production parts, after sales parts, and finished vehicles. Key logistics efficiency measures include not only improvements driven by our own efforts, such as packaging improvements and increasing transport loading rates, but also active and comprehensive initiatives through collaboration with logistics partners. These include promoting eco-driving, increasing the size of transport equipment, modal shifts, reducing transport distances through joint transportation with alliance partners, and shared use of logistics facilities. In addition to these proactive and comprehensive measures, we are considering collaborating more closely with logistics partners to encourage the introduction of vehicles that run on non-fossil fuels.





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Distribution route: Nakatsu, Oita Prefecture → Distribution center near Mizushima Plant (Kurashiki, Okayama Prefecture), approx. 400 km

	Previously: Large trucks	After improvement: Full trailers	Improvement effect
Trips per month	40	22	Down by 18
Annual CO <sub>2</sub> Emissions	228t-CO2	150t-CO2	Down by 78t-CO2

■ Improvement Example 2: Modal Shift That Utilizes Domestic Vessels\* (Shin Moji Port → Osaka South Port)



Target logistics route: Kitakyushu area → Okazaki Plant (Okazaki, Aichi Prefecture), approx.

	Previously: Transported by large trucks	After improvement: Transported by domestic vessels	Improvement effect
Annual CO2 Emissions	265t-CO2	111t-CO2	Down by 154t-CO₂

\* Domestic vessel: Ship used for transport cargo within in Japan

In addition, our use of domestic vessels for modal shift (Shin Moji Port to Osaka South Port) was commended by the Director-General of the Maritime Bureau of the Ministry of Land, Infrastructure, Transport and Tourism as an excellent operator in the "FY2023 Eco-Ship Modal Shift Project" organized by the Japan Long-Course Ferry Association, and was awarded the "Eco-Ship Mark" certification.









Target logistics route: Kurashiki Cargo Terminal Station → Niigata Cargo Terminal Station,

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	Previously: Transported by trailer	After improvement: Transported by rail	Improvement effect
Annual CO <sub>2</sub> Emissions	10.8t-CO2	2.4t-CO2	Down by 8.4t-CO2