Feature

Mitsubishi Motors Taking up the Challenge of Becoming Carbon Neutral

MITSUBISHI MOTORS aims to become carbon neutral throughout the supply chain by 2050.

In October 2020, MITSUBISHI MOTORS formulated the Environmental Plant Package*1, and we are working to reduce our CO_2 emissions to contribute toward the realization of a society with net-zero CO_2 emissions by 2050. We are promoting a host of measures, such as developing electrified vehicles*2 and technologies to improve fuel efficiency, introducing energy-saving equipment in production processes and using renewable energy in factories, offices and dealerships.

In January 2022, the Renault-Nissan-Mitsubishi Alliance announced its aim to become carbon neutral by 2050. We are working to strengthen our electrified vehicle lineup by combining our own technologies with those of the alliance. The All-New "Outlander PHEV Model," which launched in 2021, and the new "eK X EV," an EV in the Kei-car class that launched in June 2022, have received much greater support from customers than expected. The "MINICAB-MiEV," Japan's only commercial electric vehicle (EV) in the Kei-car segment, will soon be back on the market due to demand from many companies. In March and June 2022, we concluded comprehensive cooperation agreements with the city of Kurashiki in Okayama Prefecture and the city of Okazaki in Aichi Prefecture, respectively, toward the realization of a carbon neutral society.

Conditions around the world have changed substantially since our introduction of the i-MiEV, the world's first mass-produced EV. Our electrification technology has been well accepted by society, as it moves toward carbon neutrality. With more people taking up the challenge of becoming carbon neutral, we have decided to work together to achieve carbon neutrality by 2050.

We recognize that achieving carbon neutrality will require us to strengthen our efforts throughout the supply chain. In products, starting with our proprietary plug-in hybrid electric vehicles (PHEVs) and Kei-car commercial EVs, we will promote electrification while leveraging the technologies of the alliance to proactively introduce the electrified vehicles that best meet the energy situation, infrastructure development status, and customer needs of each country and region. In our business activities, we will seek to minimize energy use and transition to renewable sources of energy to reduce CO_2 emissions. Across the supply chain, we will collaborate with business partners, related companies and organizations, and governments and municipalities to reduce CO_2 emissions at the production stage (through raw materials and parts) and in logistics (including products). We will also promote renewable energy and charging infrastructure, utilize carbon-neutral fuel and promote V2X*3.

*1: Please see pages 24–26 for details.
*2: Battery electric vehicles, plug-in hybrid electric vehicles (PHEVs), and hybrid electric vehicles
*3: A general term encompassing vehicle to home (V2H) and vehicle to grid (V2G), among others.

Revisions to Environmental Vision 2050

In our Environmental Vision 2050, we have stated our commitment to contribute to net-zero CO_2 emissions and the realization of a society that is resilient to climate change. We have recently revised Environmental Vision 2050 to incorporate our goal of becoming carbon neutral. We will further strengthen our efforts to achieve carbon neutrality by 2050.

Environmental Vision 2050

In December 2015, the Paris Agreement was adopted at COP21. Members of this accord agreed to curtail the rise in average global temperatures to 2°C above levels before the Industrial Revolution and to work to keep the rise to 1.5°C. Given such social demands, MITSUBISHI MOTORS believes it can contribute toward the realization of a sustainable society, achieving a balance between the progress of humankind and the global environment, through the proliferation of electrified vehicles and the promotion of their use in society.

Action to Climate Change	Resource Circulation	Pollution Prevention
Through electrified vehicles and the increased use of renewable energy, we aim to become carbon neutral and contribute to the realization of a society that is resilient to climate change.	We will contribute to a resource-recycling- oriented society by minimizing input resources and maximizing resource efficiency.	We will contribute toward a society free of environmental pollution affecting human health and the ecosystem by reducing the environmental impact of our products and the pollution resulting from our business activities.

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Cultivating a Carbon Neutral Society through Electrified Vehicles

To achieve carbon neutrality, MITSUBISHI MOTORS will promote the electrification of automobiles and the use of electrified vehicles to address various social issues.

We will promote the spread of electrified vehicles by communicating their advantages to society, including the use of their high-capacity drive batteries for leisure activities and power supply during disasters. In addition, we will contribute to the spread of renewable energy, which is at the foundation of a carbon-neutral society, by using IoT to adjust charging and by building energy storage systems employing used batteries, which will also help in reducing CO_2 emissions during battery production.

We will work with business partners to develop electric vehicles (EVs) for business applications and promote comprehensive collaboration with local communities from a variety of angles.

Social Issues	Our Aims	Current Initiatives
Using Electric Vehicles (EVs) Effectively Electric vehicles (EVs), which do not emit CO_2 while driving, offer good environmental performance, but their limited cruising range can be a source of dissatisfaction.	**Increasing the Spread of Electric Vehicles (EVs)** **▶Contribute toward a reduction in CO_2 emissions** To help increase the spread of electric vehicles (EVs), we will ascertain what performance business and other applications require, and develop electric vehicles (EVs) with performance that meets those needs.	**Conducting Demonstration Tests with a View to Using Electric Vehicles (EVs)** In Thailand and Indonesia, we are conducting demonstration tests with national post services and a logistics company using the "MINICAB-MiEV," our commercial battery-powered electric vehicle in the Kei-car segment. Please see page 75 for details.  "MINICAB-MiEVs" being used in demonstration tests (Indonesia)
Promoting an Understanding of Electrified Vehicles In order to popularize electrified vehicles, we need to communicate to society their value and the significance of their popularization.	**Increase the Spread of Electrified Vehicles and Renewable Energy** **▶Contribute toward a reduction in CO_2 emissions** With regard to electrified vehicles and renewable energy, we will share with the community the convenience of electrified vehicles and the significance of promoting electrified vehicles and renewable energy.	**Entering Comprehensive Collaboration Agreements with Municipalities to Achieve a Carbon Neutral Society** We are working with local governments on the promotion of electrified vehicles and other decarbonization initiatives. Please see page 21 for details.  Kurashiki, Okayama Prefecture (March 2022)
Promoting an Understanding of Renewable Energy To encourage the spread of renewable energy, we need to communicate to society the significance of its spread.		**Developing DENDO DRIVE STATIONs** We are developing next-generation branches where customers can experience the use of electrified vehicles as power sources in times of disaster, as well as the appeal of electrified vehicles. These branches convey the significance of electric vehicles: allowing energy source diversity and functioning as external power supplies in times of disaster. Please see page 44 for details.  Auto Mall Takeo Branch Kyushu Mitsubishi Motor Sales Co., Ltd.

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Social Issues	Our Aims	Current Initiatives
Stabilizing the Supply of Renewable Energy To expand the use of renewable energy, it is necessary to provide the flexibility to account for unstable power generation.	**Build a System to Reemploy Used Batteries** ▶Reduce CO_2 emissions in battery production, as well **Use Storage Battery Systems as VPPs*** ▶Help stabilize local power supply grids	**Energy Storage System Utilizing Solar Power Generation Equipment and Used Batteries** We are introducing a power storage system that employs a large-scale rooftop solar power system and used batteries from the "Outlander PHEV." Please see page 43 for details.
Increasing Applications for Used Batteries Some batteries recovered from electrified vehicles can still be used, employing them is an issue.	Used batteries from electrified vehicles are employed in systems that store and utilize power derived from renewable energy sources, contributing to a stable supply of renewable energy.	  Solar power system and battery storage system installed at the Okazaki Plant (Aichi Prefecture)
Leveling Electricity Demand There is a concern that as electrified vehicles become more widespread, the concentration of charging times could result in excessive power loads.	**Recommend Charging During Times when Electricity Rates Are Low and Electricity Supplies are in Surplus** ▶Reduce the electric power load ▶Maintain a balanced electric power network By combining electrified vehicles with IoT, we will prevent an increase in electricity loads.	**Demonstration Project for Adjusting the Charging of Electrified Vehicles** We participated in a demonstration project to adjust charging through the use of dynamic pricing, in which electricity rates fluctuate according to electricity supply and demand conditions and other factors. Please see page 40 for details.

* VPP stands for virtual power plant, which involves an advanced approach to adjusting the supply-demand balance of electricity. Advanced IoT-based energy management technology is used to bundle together the production facilities, private power generation facilities, storage batteries, and lighting and air conditioning systems of factories and households to make them function like a single power plant.

Increasing the Use of Electrified Vehicle Batteries to Expand the Potential of Mobility

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Electrified Vehicles and the Realization of a Resilient Society (DENDO Community Support Program)

By entering into disaster cooperation agreements with municipalities and loaning them roving COVID-19 vaccine vehicles, MITSUBISHI MOTORS is helping municipalities with its plug-in hybrid electric vehicles (PHEVs), which can generate power and be tapped as sources of electricity. By combining the power of PHEVs to provide transportation and the power of electricity, we are making people's lives safer and more reliable.

Examples of Activities

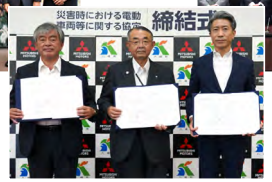
1. Disaster Cooperation Agreements with Municipalities

In response to requests from local governments that have experienced power outages due to disasters, the Company, together with its affiliated dealers, is promoting efforts to conclude disaster cooperation agreements with local governments throughout Japan so that "Outlander PHEVs" and other electrified vehicles that can be used to supply electricity can be provided to disaster areas and evacuation centers as quickly as possible.

As of end-July 2022, we had such agreements in place with 203*1 municipalities. By FY2022, we aim to have agreements in place in all of Japan's 47 prefectures.

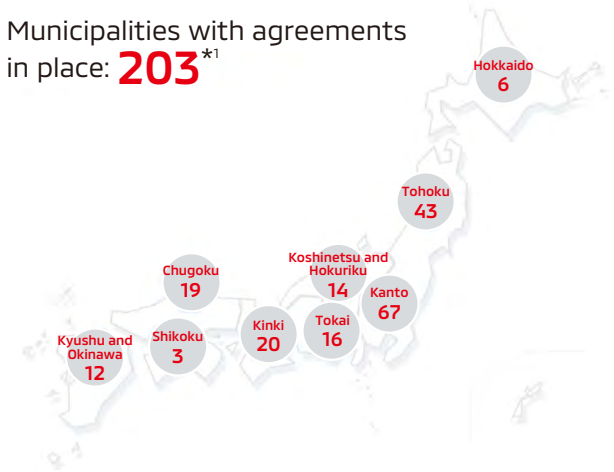
Aichi Prefecture
(June 2021)

Niigata Prefecture
(March 2022)



Happo-cho, Akita Prefecture
(Our 200th cooperation agreement, in July 2022)

Agreements in Place with Municipalities around Japan (As of July 31, 2022)



◆ Recent agreement status (Japanese only)
WEB https://www.mitsubishi-motors.co.jp/carlife/phev/dcsp/

*1 Excluding two-party agreements between affiliated dealers and municipalities

2. Participation in the City of Kawasaki's "Verification of Using Electric Vehicles (EVs) to Supply External Batteries for Artificial Respirators in the Event of Disaster"

We participated in the "Verification of Using Electric Vehicles (EVs) to Supply External Batteries for Artificial Respirators in the Event of Disaster*2," conducted by the city of Kawasaki, Kanagawa Prefecture, and provided "Outlander PHEV" and "Eclipse Cross PHEV Model" vehicles. In the event of power outages due to large-scale disasters that have occurred in recent years, it could become necessary to secure supplies of power for artificial respirators and other equipment for people receiving medical care at home.

Verification of power supplies in Kawasaki, Kanagawa Prefecture
(August 2021)

For the verification, dedicated batteries were removed from artificial respirators and connected to PHEVs' 100-volt AC outlets for charging. The project verified that when dedicated batteries are attached to artificial respirators, they work stably, so this can be used as a measure to address power outages in the event of a large-scale disaster.

*2 In this verification, dedicated batteries were removed from the medical devices for charging; they were not connected directly to the medical devices. This verification should not be construed as suggesting any change in interpretation of the warning statement in user manuals for the "Outlander PHEV" and "Eclipse Cross PHEV Model," that the "100V AC Power Supply (1500W) (Cabin Equipment Section)" should "never be used for medical equipment."
No checks have been made except for the external batteries for the two types of artificial respirators used in the verification. External batteries of all artificial respirators have not been validated for use.

3. Signing Comprehensive Collaboration Agreements toward the Realization of a Carbon Neutral Society

We have signed comprehensive collaboration agreements with the cities of Kurashiki, in Okayama Prefecture, and Okazaki, in Aichi Prefecture, with a view toward realizing a carbon neutral society. Through these collaboration agreements, we will work together to build a decarbonized society centered on the spread of our electrified vehicles.

Key points of the collaboration

(1) Working toward the realization of a carbon neutral society in the region
(2) Promoting the spread of electrified vehicles
(3) Fostering an understanding of how electrified vehicles are useful in decarbonization and disaster preparedness
(4) In addition to the items mentioned above, contributing to objectives that are mutually agreed upon by both parties

Kurashiki, Okayama Prefecture
(March 2022)

Okazaki, Aichi Prefecture
(June 2022)

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Business Initiatives toward Becoming Carbon Neutral

In October 2021, MITSUBISHI MOTORS established the CO_2 Reduction Promotion Subcommittee of the Sustainability Committee. The subcommittee is tasked with promoting activities to reduce CO_2 emissions from business activities. The entire MITBUBISHI MOTORS Group is involved in these activities, which include participation from production, development and sales companies in Japan and overseas.

In the aim of becoming carbon neutral by 2050, we will approach the issue from both the "demand side" (energy consumption) and the "supply side" (energy generation and procurement).

On the demand side, we will work to minimize energy consumption by:

(1) Making manufacturing processes more efficient,
(2) Promoting energy-saving activities,
(3) Promoting the electrification of motive power and
(4) Developing new-generation technologies

In addition, on the supply side we will work toward a transition to low-cost, stable renewable energy by:

(5) Introducing renewable energy (such as solar power generation),
(6) Promoting the procurement of renewable energy and
(7) Offsetting/recovering carbon

"Seven Approaches" to Becoming Carbon Neutral by 2050