Environment

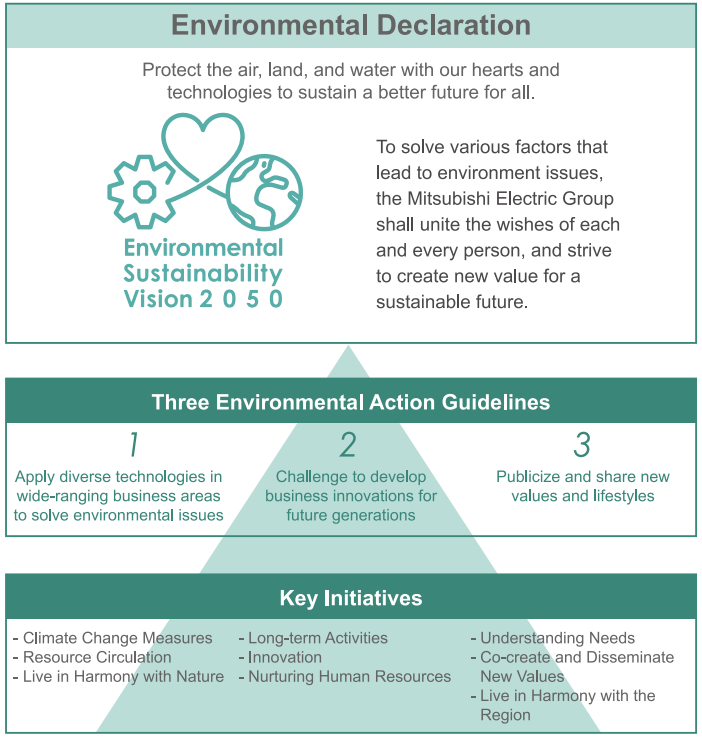
Basic Policy

The Mitsubishi Electric Group sets forth a clear course of action it shall take toward 2050 in Environmental Sustainability Vision 2050, and promotes initiatives to realize sustainability of the global environment based on an environmental policy that outlines how the Group shall contribute to the environment.

Environmental Sustainability Vision 2050

In recent years, corporations are expected to further continue their long-term efforts to solve global environmental issues. The Mitsubishi Electric Group's new Environmental Sustainability Vision 2050 defines environmental protection as an even greater corporate priority and stipulates increased initiatives toward this end. It establishes Mitsubishi Electric's future course toward 2050 in the form of the Environmental Declaration, Three Environmental Action Guidelines, and Key Initiatives.

Environmental Sustainability Vision 2050



Apply Diverse Technologies in Wide-Ranging Business Areas to Solve Environmental Issues

The Mitsubishi Electric Group shall utilize diverse technological assets throughout wide-ranging business areas, and across the entire value chain, to solve various environmental issues, including climate change, resource circulation and coexisting harmoniously with nature.

Key Activities

Climate Change Measures

1) Promoting and disseminating outstanding energy-saving products, systems, services and renewable energy businesses, together with our stakeholders, we will contribute to reducing greenhouse gases worldwide.
2) Respecting the global shift toward carbon neutrality, we will promote the reduction of greenhouse gases throughout the value chain, from development, design, procurement of raw materials and production through sales, distribution, use and disposal. Our present target is to reduce CO_2 emissions to net-zero by 2050.
3) Observing changes in the global environment, we will provide solutions that contribute to minimizing the risks of natural disasters.

Resource Circulation

1) Reducing the size and weight of products, we will consider the use of recycled materials and recyclability rate of the products and systems we produce.
2) Eliminating resource waste throughout the value chain, we will strive to maximize the effective use of resources.
3) We will work to expand the supply of safe, clean water globally, as well as to enforce water treatment that does not pollute oceans and rivers.
4) We will promote the effective use of water taking the water environment of each region into consideration.
5) We will promote resource recycling businesses globally, such as reuse, repair of products/systems and waste reduction.
6) We will aim to achieve 100% effective use of wastes, such as plastics, generated during manufacturing processes.

Live in Harmony with Nature

1) Throughout the Group, we will carry out activities to preserve biodiversity in the mountains, rivers, and oceans, and at all business sites, and promote the development of local environments and human resources to be passed to future generations.
2) We will work to control, suppress, substitute, and properly dispose of harmful substances that may affect the natural environment.

Challenge to Develop Business Innovations for Future Generations

The Mitsubishi Electric Group shall draw on internal and external strengths, combine them when required to resolve difficult issues, and take on the challenge of developing technologies and business innovations for future generations.

Key Activities

Long-term Activities

1) We will set specific indices and action items while considering future prospects in the mid-term Environmental Plan formulated every three years.
2) We will verify the validity of long-term goals approximately every five years, doing so considering international agreements, foreign affairs and business conditions.

Innovation

1) We will cooperate with other companies and institutions, and use our technological assets, technologies and business synergies to create innovative technologies and solutions.
2) We will proactively adopt innovational technologies and solutions that enable us to lead manufacturing in future generations.

Nurturing Human Resources

1) We will foster a corporate culture in which employees, as ordinary citizens, take the initiative on creating new lifestyles in harmony with nature.
2) We will develop highly specialized human resources who accept diverse values, and proactively work on environmental issues.

Publicize and Share New Values and Lifestyles

The Mitsubishi Electric Group shall promote active dialogue, collaboration, and co-creation with all stakeholders, publicizing and sharing new values and lifestyles that will result in living comfortably, in harmony with nature.

Key Activities

Understanding Needs

1) We will work to understand our customers'needs and expectations for the environment through sales activities, exhibitions, events, and other initiatives.
2) We will hold discussions with stakeholders, and confirm the validity of our environmental targets and measures, to promote more effective environmental activities.

Co-create and Disseminate New Values

1) We will propose new lifestyles that provide the pleasure of contributing to the environment through the use of our products, systems, and services.

Live in Harmony with the Region

1) We will hold discussions with local residents and municipalities, and contribute to creating a better local environment, including Satoyama conservation and bio-diversity preservation activities at business sites.

Environmental Policy

Based on its Purpose, "We, the Mitsubishi Electric Group, will contribute to the realization of a vibrant and sustainable society through continuous technological innovation and ceaseless creativity," the Mitsubishi Electric Group clearly states its contribution to the realization of sustainability as one of its key management policies. Our aim is to realize both a sustainable global environment and a safe, secure, and comfortable society. To find solutions to environmental problems such as climate change, resource depletion, and the loss of biodiversity, contributing to the protection of the environment is positioned as one of the most important issues that the Group must address.

Utilizing our accumulated and newly developed state-of-the-art technologies, and in accordance with "Environmental Vision 2050," we will provide products and services through a wide variety of businesses that contribute to resolving climate change issues and creating a recycling-based society. At the same time, we will draw on strengths, both within and outside of the Group, and with the passion of all employees, focus on creating innovative technologies, products and services while proposing new values that will support future generations. Particularly, in view of the global trend towards rapid decarbonization, we are addressing the reduction of greenhouse gas emissions throughout our value chain while also promoting the recycling of resources globally and making efforts to preserve biodiversity.

As a good corporate citizen, the Group will continue to work with its employees, their families, and local communities to foster environmental awareness and expand the sphere of its activities that are contributing to society. We will actively disseminate information on our environmental initiatives in an effort to promote a mutual understanding with society. In doing so, we will comply with laws and social norms, change the ways we think and act with a keen sensitivity to changes in society, and always conduct business activities while giving continuous consideration to protecting the environment.

Under the Environmental Declaration, "Protect the air, land, and water with our hearts and technologies to sustain a better future for all," all employees of the Mitsubishi Electric Group will contribute with pride and passion to enrichen people's lives and improve the global environment.

November 2021

Kei Uruma
President & CEO

Strategy for Climate Change

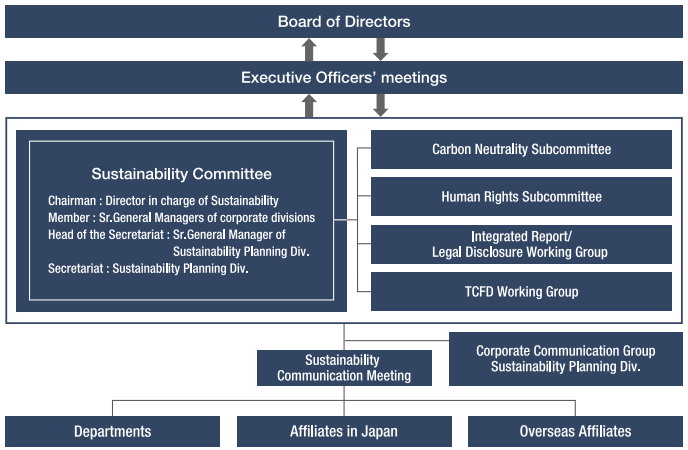
Financial Information Based on Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)

The Mitsubishi Electric Group has expressed its support for the recommendations of the TCFD (Task Force on Climate-related Financial Disclosures), and as such, the Group promotes efforts and discloses information in line with these recommendations.

Governance

Sustainability Promotion Framework and Roles of the Board of Directors and Management

The policies and planning for the sustainability activities of the Mitsubishi Electric Group are decided by a Sustainability Committee appointed by the Mitsubishi Electric's executive officers. The Committee is composed of the heads of Mitsubishi Electric's corporate divisions (26 members in charge of environmental, social and governance aspects from divisions such as Corporate Strategic Planning and Corporate Human Resources), and discusses the results of activities performed during the previous fiscal year, decisions on future activity plans, and responses to law amendments, from a perspective that spans the entire Mitsubishi Electric Group. The Sustainability Committee generally holds meetings at least three times a year and the details on the discussion of Sustainability Committee meetings are reported to the senior executives during the Executive Officers' meetings. From fiscal 2022, the details on the discussion of Sustainability Committee meetings are also reported to the Board of Directors, and are supervised on the basis of many different viewpoints.



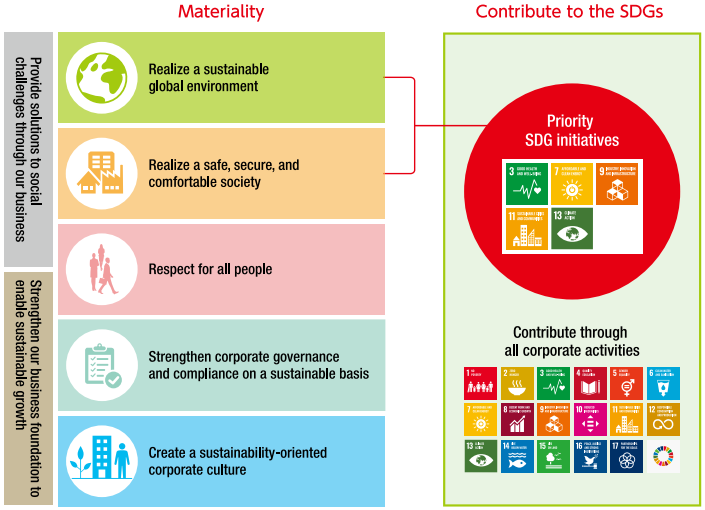
Sustainability promotion Framework (FY2023)

Sustainability Initiatives and Materiality

Knowing that sustainability activities are directly linked to corporate management, we have defined our materiality and each of our departments responsible for ethics and legal compliance, quality assurance and improvement, environmental conservation and philanthropy activities, and communication with stakeholders implements its own initiatives, based on the sustainability policy of the Mitsubishi Electric Group. In order to deal with sustainability challenges that involve multiple divisions in a cross-sectional manner, we also have established the "Carbon Neutrality Subcommittee," the "Human Rights Subcommittee," and projects under the Sustainability Committee, and we also engage in efforts to promote initiatives while clarify the responsible divisions for individual activities. As projects for fiscal 2023, we will establish the "Integrated Report/Legal Disclosure Working Group" and "TCFD Working Group" to consider the clarification of individual categories of activities and the roles of participating divisions, information disclosure in accordance with norms, and other matters. The progress of these subcommittees' initiatives is confirmed at each Sustainability Committee meeting.

In order to realize our Purpose of "a vibrant and sustainable society", the Group places even greater emphasis on sustainability initiatives at the management level with five material issues identified from the two perspectives of "providing solutions to social challenges through our business" and "strengthening our business foundation to enable our sustainable growth." Through our materiality initiatives, we will help to resolve social issues, as well as contribute to the SDGs, to create economic and social value.

One of these material issues is "the realization of a sustainable global environment" for which we are promoting initiatives to respond to climate-related issues and achieve carbon neutrality.



Materiality and SDGs

Strategy

Climate Change Risks and Opportunities in the Short, Mid-to-Long Term

The Mitsubishi Electric Group has identified climate-related risks and opportunities.

Table 1 Examples of Climate-related Risks and Initiatives by the Mitsubishi Electric Group

Risks	Examples of the Group's Initiatives
■ Transition Risks	
Policy and Legal Risks (Short-to-Long Term) • Increase in carbon pricing • Strengthened obligation of emission reports • Orders and regulations for existing products and services by relevant authorities • Litigation	• Reduction of GHG[*1] emissions through promotion of environmental plans and setting and taking initiative on science based targets • Promotion of environmentally conscious design (global warming, resource conservation, recyclability, hazardous substances, packaging) • Capital investment related to environmental activities, including energy saving and global warming countermeasures • Implementation of supply chain management (formulation and implementation of green procurement standards) • Reporting of Scope 1, 2 and 3 emissions and implementation of third-party certification • Acquisition and maintenance of ISO 14001 certification • Confirmation of legal compliance through environmental audits • Disclosure of initiatives related to climate change and other environmental issues
Technology Risks (Mid-to-Long Term) • Replacement of existing products and services with low-emission alternatives • Failed investment in new technologies • Cost of transition to low-emission technologies	• Development of new technologies through R&D investment • Implementation of intellectual property activities • Mobile capital investment mainly in key growth businesses • Capital investment related to environmental activities, including energy saving and global warming countermeasures
Market Risks (Mid-to-Long Term) • Changes in customer behavior • Uncertainty in market signals • Rise in raw material costs	• Promotion of environmentally conscious design • Capital investment related to environmental activities, including energy saving and global warming countermeasures • Market research and feedback on product development
Reputation Risks (Mid-to-Long Term) • Changes in consumer preferences • Criticisms of the industrial sector • Increased concerns among stakeholders, or negative feedback from them	• Reduction of GHG emissions through promotion of environmental plans and setting and taking initiative on science based targets • Capital investment related to environmental activities, including energy saving and global warming countermeasures • Promotion of environmentally conscious design • Response to environmental risk management • Implementation of natural environment conservation activities, including the protection of local biodiversity • Disclosure of initiatives related to climate change and other environmental issues
■ Physical Risks	
Acute Risks (Short-to-Long Term) Increased severity of extreme weather such as cyclones and floods	• Formulation and periodic review of BCPs[*2] • Implementation of supply chain management (formulation and implementation of green procurement standards, decentralization of production sites by purchasing from multiple companies, etc.) • A certain amount of investment every year in environmental activities, including initiatives against climate change • Reduction of GHG emissions through promotion of environmental plans and setting and taking initiative on science based targets
Chronic Risks (Mid-to-Long Term) Changes in precipitation patterns and extreme variations in weather patterns	

*1 Greenhouse gas *2 Business continuity plan

Table 2 Examples of Climate-related Opportunities and Initiatives by the Mitsubishi Electric Group

Social Challenges (Opportunities)	Examples of the Group's Initiatives
■ Resource Efficiency	
• Use of more efficient modes of transport (modal shift) • Use of more efficient production and distribution processes • Promotion of recycling • Relocation to a more efficient building • Reduction in water usage and consumption	• Development of products suitable for resource conservation, such as thinner materials and smaller tubes • Promotion of plastic recycling • Energy conservation and reduction of operation costs for buildings as a whole through ZEB (net Zero Energy Building), etc. • Development of coordinated control technology for in-building mobility and facilities • Provision of systems for water distribution management, water storage and discharge through dam management, and water intake management for agricultural water • Promotion of reclaimed water use • Strengthening of products and solutions that support e-F@ctory[*1] • Promotion of a modal shift • Localization of production and sales bases
■ Energy Source	
• Use energy sources that contribute to carbon neutrality • Use of new technologies • Shift toward decentralized energy generation	• Effective use of electricity and response to needs for system stabilization accompanying the expansion of renewable energy and decentralization of power sources - Large energy storage systems - Smart medium voltage DC distribution network system D-SMiree[*2] - Distributed power supply system/VPP system - Multi-region digital power supply system (multi-region EMS)
■ Products and Services	
• Development and/or expansion of goods and services that contribute to carbon neutrality • Development of new products or services through R&D and innovation • Ability to diversify business activities • Shift in consumer preferences	• Development of energy-saving products optimized for local climate conditions and needs • Development of innovative new products such as the Misola,[*3] a lighting fixture that imitates a deep blue sky and natural light in indoor spaces. • Improvement of the energy efficiency of railway vehicles and effective utilization of regenerative electric power from braking • Demonstration of ZEB-related technologies, including the construction of demonstration facilities • Development and supply of the EcoMBR[*4] filtration membrane cleaning system for water treatment • Provision of smart meters • Development and supply of energy conservation equipment that facilitates the measurement of energy consumption and the collection and analysis of energy consumption data • Global supply of high-efficiency equipment, including electric power train systems • Development and supply of low-loss SiC devices • Localization of production and sales sites • Balanced promotion of short-, medium- and long-term research and development
■ Resilience	
• Participation in renewable energy programs and adoption of energy efficiency measures • Resource substitutes/diversification	• Effective use of electricity and response to needs for system stabilization accompanying the expansion of renewable energy and decentralization of power sources • Contribution to preventing global warming by using observation satellites, strengthening the monitoring of meteorological phenomena and the global environment, understanding of disaster situations, and promoting disaster prevention • Meteorological radar system • Field Edge® image-based water level measurement device • Provision of BCP solutions, such as data centers, teleworking, and video conferencing services

*1 Introduction to e-F@ctory
*2 Mitsubishi Electric's smart medium voltage DC distribution network system D-SMiree
*3 Misola "blue-sky" lighting
*4 Water treatment technology based on a membrane bioreactor using ozonated water

Case Example Contribution to world-leading global environmental observation

Mitsubishi Electric is committed to contributing to society with its global observation satellites as an important pillar of space development, and is focusing on the development of the following satellites.

Geostationary meteorological satellites Himawari-8 and -9

Himawari-8 and -9 are geostationary meteorological satellites developed by Mitsubishi Electric. They provide observation data to Japan and to more than 30 countries and regions in the Asia-Pacific, and play an important role in weather observations and disaster monitoring in each country.

Greenhouse gases observation satellite Ibuki-2 (GOSAT-2)

Ibuki-2 is a greenhouse gases observation satellite (GOSAT) developed by Mitsubishi Electric, and a successor to GOSAT Ibuki, the world's first satellite dedicated to observing the concentration distribution of greenhouse gases from outer space. Equipped with a high-performance observation sensor, it contributes to increasing measurement precision. It also contributes to monitoring for air pollution, as it can estimate fine particulate matters (black carbon, PM2.5, etc.).

For more information on the development of observation satellites, also see the website on "The Mitsubishi Electric Group's Sustainability—Electronic Systems Group"
The Mitsubishi Electric Group's Sustainability—Electronic Systems Group

Impact on Business and Strategy

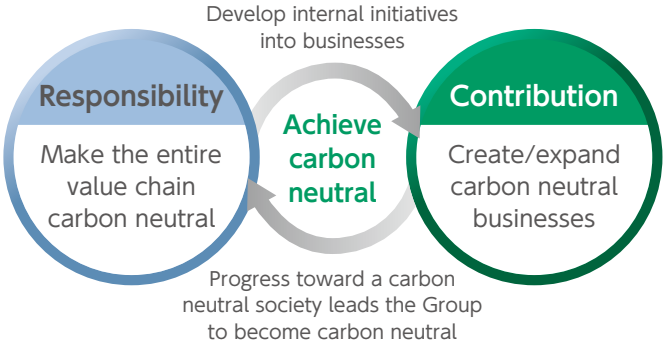
In fiscal 2022, we examined our response to climate-related risks and opportunities toward achieving carbon neutrality and clarified our policy initiatives. In fiscal 2023, we will further analyze and examine what impact the climate-related risks and opportunities have on our financial planning.

Policy Initiatives

- Adopted dual approaches to carbon neutral: Responsibility and Contribution.
- Responsibility: Make the entire value chain carbon neutral
- Contribution: Create/expand carbon neutral businesses

We will work to achieve carbon neutrality through a mutual enhancement of expanding our in-house initiatives to business and returning the positive impact on the Mitsubishi Electric Group back to business again by way of progress made on initiatives in society as a whole.

Adopted dual approaches to carbon neutral: Responsibility and Contribution.



Responsibility: Carbon neutral initiatives in the entire value chain

Initiatives to reduce greenhouse gas at factories and offices.

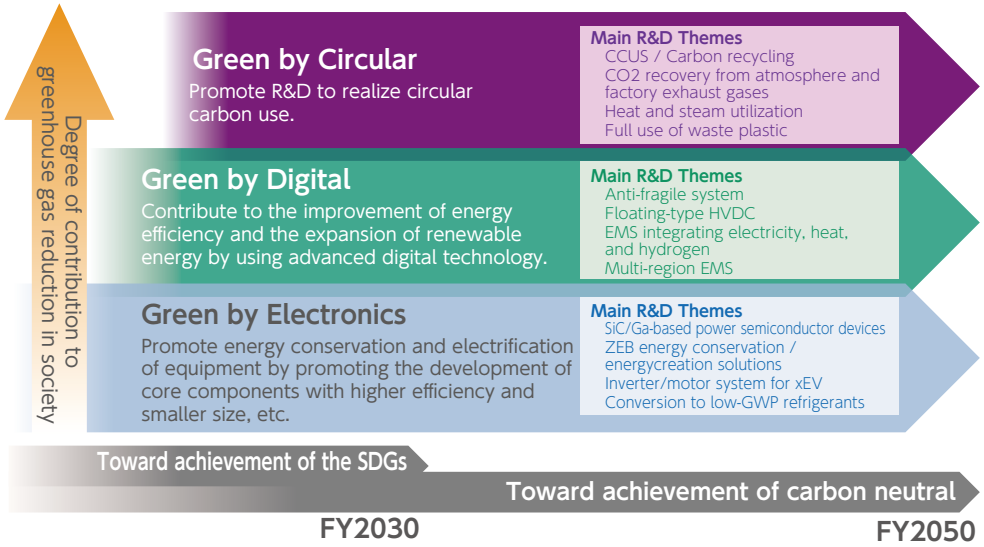
- Continuously invest 0.15% of revenue in carbon neutral efforts.
- Use renewable energy to 85 sites in Japan in FY2023
- Promote expansion of internal renewable energy procurement using multi-region EMS(*).

* Multi-region EMS: Energy management system that automatically optimizes power interchange of renewable energy between multi sites, operation of distributed power sources and storage batteries, and purchase plan of renewable energy certificates.

Contribution: Create/expand businesses that contribute to carbon neutral.

To make society as a whole carbon neutral, we have established a development roadmap up to 2050 and will accelerate R&D in three innovation areas:
Green by Electronics, Green by Digital, and Green by Circular.

- Green by Electronics: Promote energy conservation and electrification of equipment by promoting the development of core components with higher efficiency and smaller size, etc.
- Green by Digital: Contribute to the improvement of energy efficiency and the expansion of renewable energy by using advanced digital technology.
- Green by Circular: Promote R&D to realize circular carbon use.



CCUS: Carbon dioxide Capture Utilization and Storage, EMS: Energy Management System, GWP: Global Warming Potential, HVDC: High Voltage Direct Current

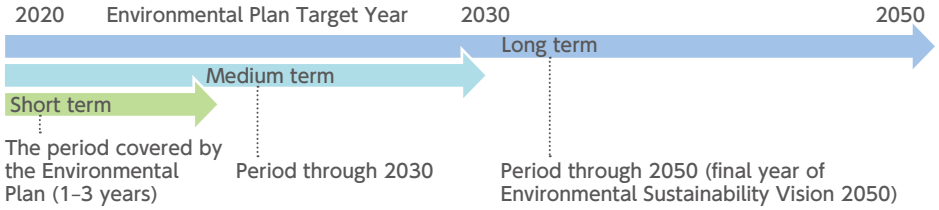
Scenario-based Analysis and Resilience

The corporate activities of the Mitsubishi Electric Group are assessed through scenario analysis based on IPCC*1 representative concentration pathway scenarios. The assessment is made based on two scenarios: a scenario that shows the state of transition (social trend) when keeping the global average temperature rise to below 2°C compared to pre-industrial levels (the 2°C scenario*2), and a scenario in which the temperature rises nearly 4°C as a result of continuing with conventional global warming countermeasures (the 4°C scenario*3).

The scenario analysis forecasts up to 2050 with periods classified as shown below.

- Long-term: Period through 2050 (final year of Environmental Sustainability Vision 2050)
- Medium-term: Period through 2030
- Short-term: Period covered by the Environmental Plan (1 – 3 years)

*1 IPCC: Intergovernmental Panel on Climate Change *2 Applied the IEA 450 scenario, etc.
*3 Applied the IPCC RCP 8.5 scenario, etc.



Climate-related Risks and Initiatives by the Mitsubishi Electric Group

Climate-related risks can be broadly divided into risks associated with the transition to a decarbonized society (transition risks) and risks associated with the physical impacts of global warming (physical risks). These risks can result in increased expenses (for production, internal administration, financing, etc.) and decreased revenues.

If the 2°C scenario progresses, social demand for reducing greenhouse gas emissions is expected to grow, raw material costs are expected to rise due to changes in the energy demand and supply balance, and the amount of generated power by renewable energy sources is expected to increase, in the transition to a decarbonized society. As a result of efforts to realize such a society, the likelihood of transition risks arising from the tightening of laws and regulations on greenhouse gas emissions and an increase in the burden of technological development will be relatively high (compared to physical risks).

If the 4°C scenario progresses, there is expected to be a significant increase in the frequency and severity of heavy rains and floods and a chronic rise in temperature. Physical risks such as the suspension of operations and disruption to supply chains due to disaster will be relatively high (compared to transition risks).

In response to these risks, the Mitsubishi Electric Group implements initiatives as shown in Table 1 "Examples of Climate-Related Risks and Initiatives by the Mitsubishi Electric Group."

For example, even if laws and regulations strengthen the curtailment of greenhouse gases under the 2°C scenario, the Group can mitigate the impacts of such a regulatory move, as it is already working to reduce its emissions through its Environmental Plan and participating

in science-based targets. Similarly, the impact of rising raw material costs can be mitigated by further promoting environmentally conscious design, something which is already being implemented with respect to tackling global warming, resources conservation, and improved recyclability. We are also making capital investments related to environmental activities, including energy saving and other measures to combat global warming. Additionally, we are investing in the research and development of new technologies in a well-balanced manner from the short, medium, and long-term perspectives.

In response to physical risks, such as flooding, that will materialize under the 4°C scenario, we have formulated a business continuity plan and review it once a year while moving ahead with the decentralization of production sites. We are also taking steps to prevent production problems in the supply chain, such as by purchasing from multiple companies and having our suppliers operate multiple production plants.

Climate-related Opportunities and Initiatives by the Mitsubishi Electric Group

As the 2°C or 4°C scenario progresses, social issues arising from climate change and the need to respond to them are expected to become more apparent.

For example, if the 2°C scenario progresses, it is predicted that the amount of power generated by renewable energy will increase. The Mitsubishi Electric Group is capable of contributing to addressing needs for effective use of electricity and system stabilization that stem from such expansion of renewable energy and the decentralization of power sources, by providing large energy storage systems, smart medium- and low-voltage direct current distribution network systems, distributed power source operation systems / virtual power plant (VPP) systems, and multi-region digital power delivery systems (multi-region EMS).

If the 4°C scenario progresses, frequent heavy rain and floods are expected. Using observation satellites, the Group is able to enhance the monitoring of meteorological phenomena and the global environment, understand disaster situations, and help prevent disasters.

The Mitsubishi Electric Group has a wide range of businesses. Our strength is our ability to provide a wide range of products, services, and solutions that contribute to solving social issues arising from climate change. We therefore believe that we have sustainable growth opportunities over the short to long term through our solutions to these social challenges as shown in Table 2 "Climate-Related Opportunities and Initiatives by the Mitsubishi Electric Group."

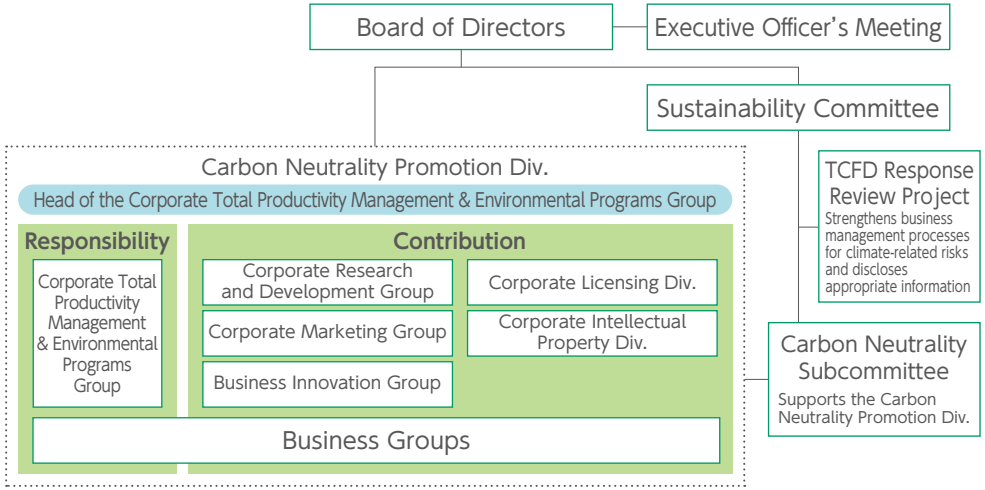
Resilience of Climate-related Strategies

As a result of this assessment of climate-related risks and opportunities and our initiatives toward them, the Mitsubishi Electric Group can be said to have resilience against such risks under both the 2°C and the 4°C scenarios and the opportunity for sustainable growth through the solving of social challenges arising from climate change.

Risk Management

Strengthening the Climate-related Risk Management Framework

In fiscal 2022, we reviewed our climate-related risk management system and strengthened the system in an effort to achieve carbon neutrality with the help of many corporate groups and divisions.



The Head of the Corporate Total Productivity Management & Environmental Programs Group supervises the areas of "responsibility" and "contribution," promoting carbon neutrality as a whole. The Sustainability Committee has also established a Carbon Neutrality Subcommittee to review progress and discuss responses to issues on hand.

A permanent carbon neutrality promotion system from fiscal 2023

Environmental Risk Management Process

In carrying out corporate activities to address environmental issues including climate change, the Mitsubishi Electric Group has formulated a three-year Group-wide Environmental Plan based on its corporate strategy and environmental vision.

The plan sets out quantitative targets to be achieved, and the Executive Officer in charge of Corporate Total Productivity Management & Environmental Programs, who is responsible for environmental management, formulates the plan and shares it with each organization throughout the Group. Each organization formulates and implements its own annual Environmental Action Plan (EAP) based on the Environmental Plan.

The results of action taken are reviewed by the Executive Officer in charge of Corporate Total Productivity Management & Environmental Programs with each organization reviewing the three-year Environmental Plan and its annual EAP as and when necessary.

The Environmental Management System is integrally operated by the Mitsubishi Electric Group as a whole with all organizations within the Group (business groups, head office corporate divisions, corporate groups, factories, and affiliated companies) working to achieve the Group's three-year Environmental Plan as a common goal. Each organization identifies

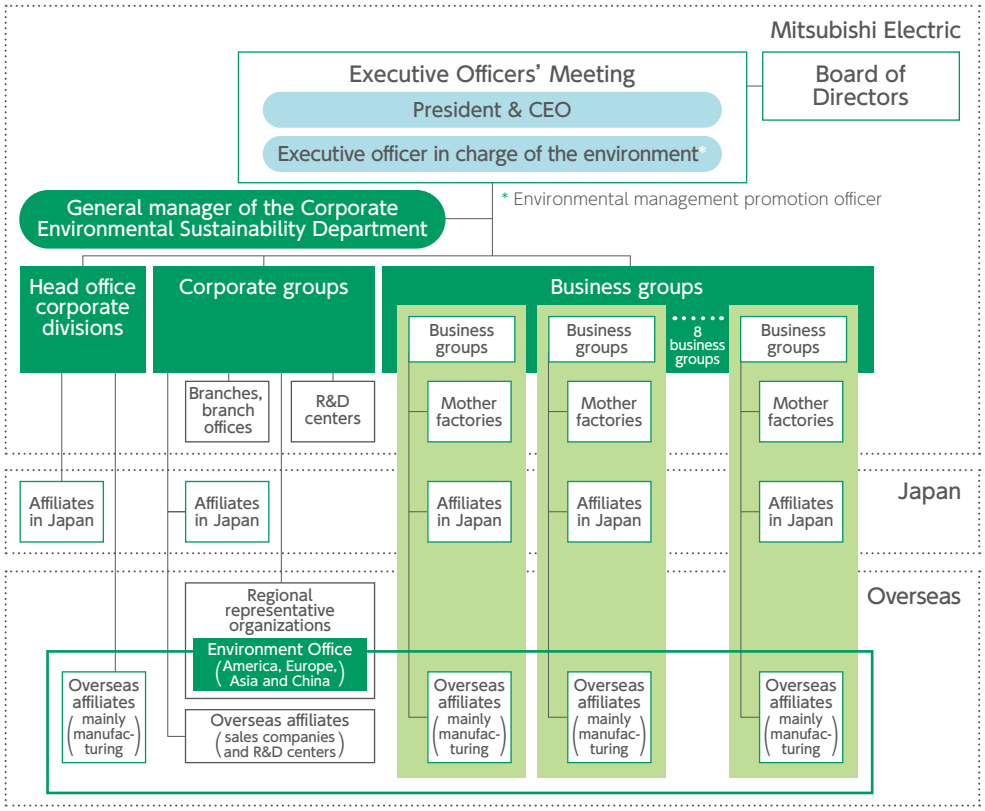
and assesses environmental risks and opportunities, including climate-related risks, and reflects them into its own EAP.

Among each organization, business groups, head office corporate divisions, and corporate groups, direct and manage activities of their own organizations, their branch offices, works, and affiliated companies based on the EAP.

Each organization has an Environmental Promotion Manager who manages and supervises the EAP, its performance, and environmental performance within the scope of its management and supervision.

An Environment Office has also been set up within the regional organization responsible for the functions of regional headquarters in the Americas, Europe, Asia, and China, which supports the development of Group-wide measures and the activities of all affiliated companies in the region under its management.

EAP progress from each division is received and compiled by the head of the Corporate Environmental Sustainability Department who, after identifying and assessing company-wide risks and opportunities, reviews the environmental plans as and when necessary.



The environmental risk management framework

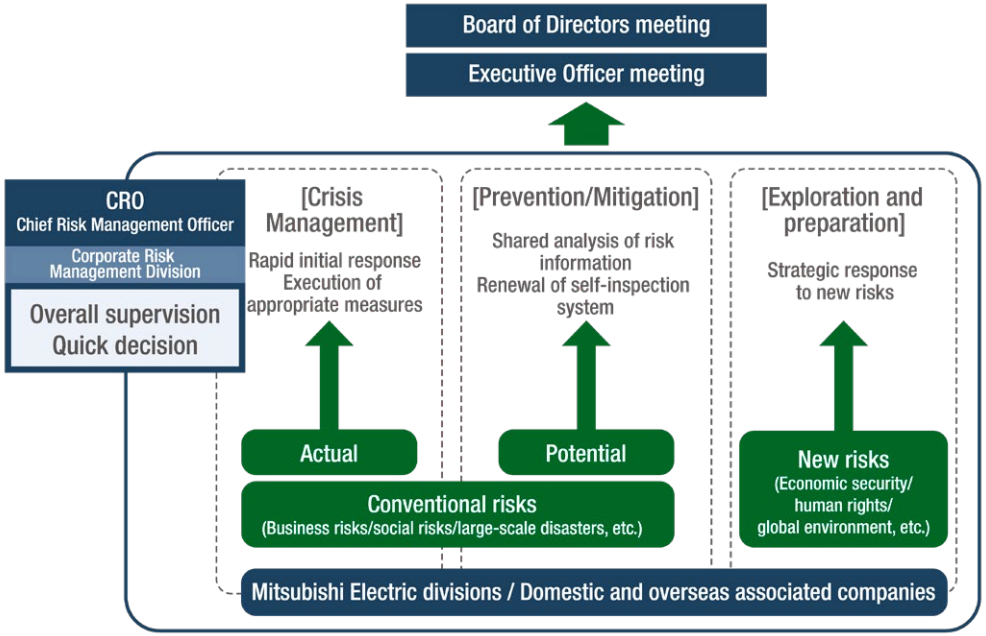
Organization-wide Risk Management

Risk management is implemented independently by each division and by domestic and overseas associated companies. In addition, the Group has established a CRO[*1] and a Corporate Risk Management Division[*2] to supervise the entire Group and has also built a framework to enable quick decision making. The Group addresses not only conventional risks such as large-scale disasters and social risks, but also promotes agile and strategic exploration of and preparation for new risks such as economic security, human rights, and the global environment.

In particular, important matters related to management supervision and execution are deliberated upon and decided at the Board of Directors meetings and the Executive Officer meetings.

The Sustainability Committee and its subcommittees and projects discuss and clarify how to integrate the process of identifying, assessing, and managing climate-related risks into risk management and business management of the entire organization.

*1 Chief Risk Management Officer (Established January 2022)
*2 Established January 2022



Risk Management Framework (Mitsubishi Electric Group)

Indicators and Targets

Calculating and Understanding Greenhouse Gas Emissions in the Value Chain

The Mitsubishi Electric Group calculates and tracks greenhouse gas emissions (Scope 1, 2 and 3) in its value chain. For calculation and assessment, we refer to the GHG Protocol and the Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain published by Japan's Ministry of the Environment.

For details, see "Greenhouse Gas Emission along the Value Chain"

Greenhouse Gas Emission along the Value Chain

Long-Term Target

In our long-term environmental management vision up to 2050, the so-called Environmental Sustainability Vision 2050, the Mitsubishi Electric Group has set a target to reduce greenhouse gas emissions throughout the entire value chain to net-zero by 2050.

Mid-Term Targets

In order to achieve the long-term target above, in FY2023, the Mitsubishi Electric Group has set a target of reducing greenhouse gas emissions (Scope 1 and 2) from its plants and offices by at least 50% by 2030 compared to FY2014 levels.

In addition, the following greenhouse gas emission reduction targets were approved by the Science Based Targets initiative in January 2020.

- Scope 1 and 2: Reduce greenhouse gas emissions by 18% by 2030 compared to FY2017 levels
- Scope 3[*1]: Reduce greenhouse gas emissions by 15% by 2030 compared to FY2019 levels

*1 Scope 3 emissions cover Category 11 (Use of sold products)

Short-Term Targets

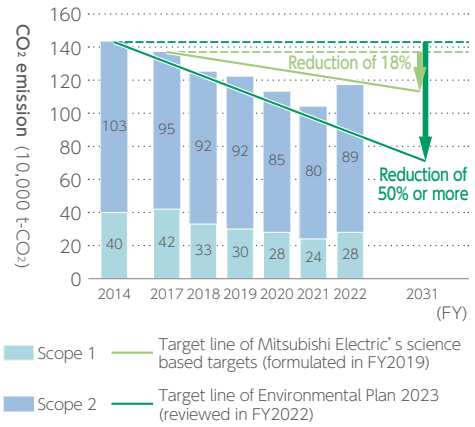
Since fiscal 1994, the Mitsubishi Electric Group has formulated an Environmental Plan every three years that sets out specific activity targets. We are presently pursuing various activities in line with the current Environmental Plan 2023 (fiscal 2022 to 2024) which sets out indicators and targets in four areas based on the action guidelines of the Environmental Sustainability Vision 2050, namely: "environmental contribution through products and services," "reducing the environmental impact of business activities," "pursuing business innovations," and "publicizing and sharing new values and lifestyles."

For details, see "Greenhouse Gas Emission along the Value Chain"

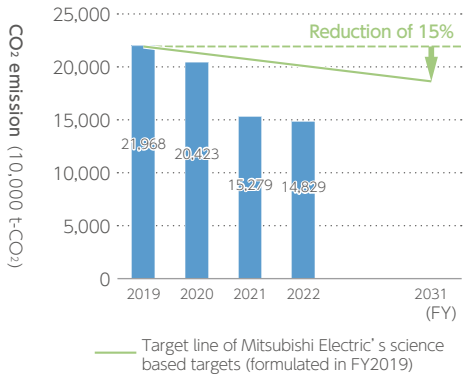
Greenhouse Gas Emission along the Value Chain

Progress

Initiatives to achieve greenhouse gas emission reduction targets are making steady progress.



Scope 1 and 2 emissions[*2] (Mitsubishi Electric Group)



Scope 3 emissions (Mitsubishi Electric Group)

*2 Scope 2 is located based. The CO_2 emission coefficient for electricity is calculated in reference to the following: Japan—the latest figures published by The Electric Power Council for a Low Carbon Society (ELCS); Overseas—the latest figures published by International Energy Agency. The global warming potential for greenhouse gases is calculated in reference to figures published in the IPCC Fifth Evaluation Report.

Third-party Verification

The Mitsubishi Electric Group has set targets for its greenhouse gas emissions (Scopes 1, 2 and 3[*3]) and amount of water used and discharged. These targets have been verified by a third party in compliance with ISO 14064-3 to ensure reliability of the data.

*3 The scope of third-party verification for Scope 3 emissions includes Category 1 (Purchased goods and services), Category 6 (Business travel), Category 7 (Employee commuting), and Category 11 (Use of sold products).

For details, see "Third-party Verification Report (Environmental Disclosure of 5 items)"

Third-party Verification Report (Environmental Disclosure of 5 items)

Inspection and strengthening of initiatives to realize carbon neutrality

Initiatives that the Mitsubishi Electric Group has so far taken toward realizing carbon neutrality have mainly included initiatives to reduce CO_2 emission from production and from throughout the value chain. In addition to these, a company-wide project called "Carbon Neutrality Project" was organized in FY2022, with the CSO as leader, CCO as subleader, and heads of relevant head office corporate departments and operating departments as members, to discuss future decarbonization initiatives.

The project has extracted issues concerning the scope of initiatives, excess and shortage of details, and responsible departments and authorities concerning decarbonization, and has discussed measures and frameworks for addressing those issues. Specific action items have been approved by the executive board, and initiatives have been launched in FY2023 in line with these items. The Mitsubishi Electric Group's contribution to realizing carbon neutrality will be accelerated hereafter in response to growing social needs.

Action Items of the Carbon Neutrality Project

- Governance:
  Install a Carbon Neutrality Subcommittee under the Sustainability Committee to promote company-wide initiatives.
- Strategy:
  Decide on company-wide policies for realizing carbon neutrality from the perspectives of responsibility and contribution.
- Risk management:
  Formulate a strategy for procuring renewable energy and reducing greenhouse gas emissions, and establish a practical Carbon Neutrality Promotion Framework to steadily fulfill our responsibility and accelerate our contribution to development and commercialization efforts.
- Metrics and targets:
  Establish 2030 targets toward achieving zero greenhouse gas emissions throughout the value chain by 2050.

For more information on the above initiatives, refer to "Information Disclosure based on Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)."

The Structure of Our Environmental Management System

Scope of Environmental Management

The Mitsubishi Electric Group operates an ISO 14001:2015 compliant environmental management system that covers Mitsubishi Electric and its major affiliates.

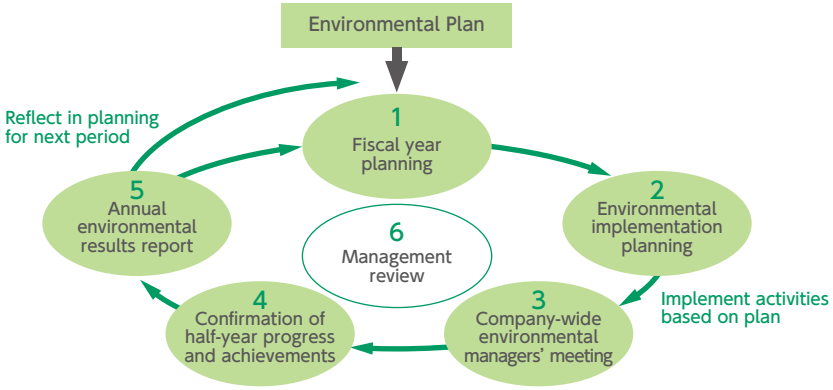
Major Affiliates

- Consolidated companies: Companies with 50% or more of (voting) shares owned by Mitsubishi Electric and directly managed by Mitsubishi Electric.
- Non-consolidated companies: Companies judged to require integrated environmental management by Mitsubishi Electric.

Environmental Plan and Environmental Implementation Plan

The Mitsubishi Electric Group formulates an environmental plan every three years, comprised of measures and targets for realizing the Environmental Sustainability Vision.

To achieve the targets of this environmental plan, each management organization formulates and acts on a yearly environmental implementation plan.



(1) Formulation of a Fiscal Year Plan–(2) Formulation of an Environmental Implementation Plan

Based on environmental plans, objectives and action plans are determined for that fiscal year.

(3) Company-wide Environmental Managers' Meeting

A meeting is held that is attended by all people who are responsible for promoting environmental practices. Information such as focus issues and policies is shared and confirmed.

(4) Confirmation of Progress and Achievements

Every six months, the Corporate Environmental Sustainability Department compiles environmental performance data and other relevant information, and reports them to the Executive Officer in charge of Corporate Total Productivity Management & Environmental Programs, who is responsible for environmental management. The Executive Officer then conducts a review and modifies environmental plans as necessary (e.g., when any significant change occurs in the business environment related to the Group).

(5) Reporting of Annual Environmental Results

The Corporate Environmental Sustainability Department compiles environmental performance data and other relevant information for the fiscal year to report to the Executive Officer in charge of Corporate Total Productivity Management & Environmental Programs.

(6) Management Review

The Executive Officer in charge of CorporateTotal Productivity Management & Environmental Programs carries out the review of activity results and reconsiders environmental plans and/or the environmental implementation plan for the next fiscal year if necessary.

Our activity level is enhanced through the "formulation," "implementation," "verification of results," and "review" of the plans throughout the fiscal year. In addition to this, audits and inspections on an "as needed" basis ensure that appropriate activities are carried out.

Sharing Information with Environmental Managers in Each Organization

Within the Mitsubishi Electric Group, in addition to the technology committees for different issues and meetings held by the people in charge of each organization, general meetings are held and attended by all people responsible for promoting the environmental practices for each division in Japan and overseas. The aims of such meetings include confirming key issues and unifying the approaches to these that the various divisions take, as well as sharing useful information such as "favorable case examples" of each other's practices and "matters to watch out for" on a regular and continuous basis. Such meetings are useful for improving overall management levels.

The "Company-wide Environmental Managers' Meeting" and the "Overseas Regional Environmental Meeting" are representative of this practice. The former brings together all environmental managers from across Japan. The latter is held in our four overseas regions (the Americas, Europe, China and the rest of Asia).

In fiscal 2022, these meetings were all held online to prevent the spread of COVID-19.

Training of Environmental Personnel

Developing Personnel to Proactively Engage in Environmental Activities

The Mitsubishi Electric Group recognizes "nurturing human resources" as one of its key activities in accordance with the action guideline to "challenge to develop business innovations for future generations," as set forth in the long-term environmental management vision, "Environmental Sustainability Vision 2050."

We strive to foster a corporate culture in which each Mitsubishi Electric Group employee takes the initiative to create a new lifestyle in harmony with nature as an ordinary citizen. We also develop human resources who possess a high degree of expertise and who accept diverse values and proactively tackle environmental issues, on a continuous basis. Furthermore, in order to provide effective training, we employ various educational curricula in accordance with each employee's role and expertise.

Environmental Education System

Target	Lecture Name
Managerial Staff	●Environmental Management Representative Training ●Environmental Section Manager Training ●New Environmental Section Manager Training
Employees Involved in Environmental Business	●MELCO Seminar Environmental Courses - Waste Management - Energy Saving Law - Chemical Substances Management - Environmental Audits - ISO 14001 - Introduction to Environmental Issues ●Key Environmental Personnel Liaison Meetings ●Environmental Basic Guidance ●Training Internal Auditors
General Employees	●Environmental Course for Employees Dispatched Overseas ●e-Learning for All Employees, Mitsubishi Electric Group Environmental Management ●Common Basic Training for New Employees ●Activities to Foster Environmental Awareness - Preserving Biodiversity at Business Sites - Satoyama Woodland Preservation Project - Mitsubishi Electric Outdoor Classroom ●Outdoor Classroom Leader Development/Satoyama Preservation Projects, Mitsubishi Electric Outdoor Classroom Promotion Meetings

Preventing Environmental Incidents

Preventing Environmental Incidents through Information-Sharing and Equipment Inspections

Both within Japan and overseas, the Mitsubishi Electric Group strives to prevent environmental incidents, such as the leakage of substances that may result in water or soil pollution or have a negative impact upon the environment. Owing to its efforts, the Group received no administrative punishments or penalties for any environmental violation in FY2022.

As preventive measures, Mitsubishi Electric ensures that its entire workforce is fully familiar with the relevant laws and regulations, revises company rules to reflect any updates to such laws and regulations, and ensures these updates are made known throughout the Group. In the case of a problem (e.g., minor oversight) occurring, Mitsubishi Electric shares the cause and countermeasures throughout the entire Group to prevent it from reoccurring. Aiming to increase the awareness of environmental risk management, the Mitsubishi Electric Group's offices and factories across Japan take measures such as watching internal training videos that introduce examples of problems and the establishment and renewal of important laws, thereby firmly instilling environmental management issues across a wider range of occupational levels. In addition, periodic facilities inspections are carried out at all Group bases, the results of which are compiled into necessary measures from time to time and utilized.

Environmental audits are also conducted at major affiliated companies overseas in an effort to uncover and prevent environmental risks.

Responding to Soil and Groundwater Pollution

As stated in our internal rules, the Mitsubishi Electric Group's business sites (works, laboratories, etc.) conduct environmental assessments such as when there is a change in land characteristics. These assessments are based on a survey method that complies with relevant laws and regulations, and the necessary countermeasures or solutions are implemented in accordance with the state of pollution.

In fiscal 2022, we assessed survey results and countermeasures regarding the condition of soil and groundwater due to land utilization for a total of nine cases and have confirmed that all cases were handled appropriately.

Regarding areas that were recognized as having groundwater or soil pollution problems in the past, we purify the land using methods compliant with laws and regulations, and continue to regularly report the results of our monitoring to relevant government organizations.

Appropriate Storage and Processing of PCB Waste and Devices Containing PCBs

Mitsubishi Electric conducts inspections at all bases that store PCB waste and/or handle devices containing PCBs at least once a year to confirm the status of PCB storage and usage.

With respect to high-concentration PCB waste, a small number of devices still exist, as verified in an internal investigation, but their disposal is slated to be completed within fiscal 2023. In fiscal 2022, we processed 889 devices (4,989kg). Our affiliates in Japan also processed 36 devices (10kg).

Customers can confirm whether or not an electrical device manufactured by a Mitsubishi Electric Group company contains PCB by referring to a list available on the corporate website.

ISO Certification

Mitsubishi Electric has obtained company-wide multi-site (collective) ISO 14001:2015 certification. This certification structure was chosen as part of our attempt to strengthen compliance by the company as a whole and to further strengthen our contribution to the environment through business operations based on our environmental plans.

Please refer to "ISO 14001 Certificate of Registration (Scope: Mitsubishi Electric Corporation" for details of sites included in the multi-site certification. Among all Group companies required to report on their environmental management system, roughly 57% have acquired ISO 14001 certification.

ISO 14001 Certificate of Registration (Scope: Mitsubishi Electric Corporation)

Environmental Audits

The Mitsubishi Electric Group combines the multiple types of environmental auditing shown below in order to carry out checks from various perspectives. These audits are performed at each business site to confirm their compliance with laws and regulations, the operational status of the environmental management system, and the progress of environmental action plans.

Overview of the Four Types of Environmental Audits

	Internal auditing at business sites	Mutual auditing between business sites	Auditing of affiliated companies	Auditing by the audit division
Implementing body	All Mitsubishi Electric business sites (head office, branches, works and R&D centers) and affiliated companies	All Mitsubishi Electric business sites (head office, branches, works and R&D centers)	Mitsubishi Electric (head office and works)	Mitsubishi Electric (head office audit division)
Subject of audits	Other organizations within the same business site	Other business sites	Affiliated companies	Mitsubishi Electric and affiliated companies
Frequency of audits	Once a year	Once a year	Once every two to three years	Once every three years

Environmental Plan 2023

Formulation Background and Concept

Environmental Plan 2023 is the first environmental plan formulated based on Environmental Sustainability Vision 2050. In order to achieve "carbon neutrality" and a "circular economy," we will promote innovation in development and accelerate the reduction of our products' environmental impact through their entire lifecycles. Based on this plan, we will also ensure strict management of targets in relation to effective usage rates of plastic waste.

Products

Environmental activities starting from product development

Starting from fiscal 2022, we have been assessing the extent of reduction of the environmental impact of newly developed products (or improvement rates from previous models) over our entire product range, using indices specified for each product.
We will centrally manage the energy consumption of each product and the environmental data of materials that are used as well as packaging materials, and apply the PDCA cycle to raise our level of environmentally conscious designs.

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Services

Expansion of environmental solutions and services

We will make energy-saving proposals for systems using integrated solutions, strive to extend the service life of equipment through maintenance, and promote the modernization of elevators and escalators. We will also enhance our resource recycling solutions, including the reuse of air-conditioning piping, and further expand the "closed-loop recycling" of plastics.

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Business Activities

Maintaining/improving measures to reduce the environmental impact of business activities

When constructing new buildings and introducing energy-saving equipment, we will ensure strict compliance with all relevant energy-efficiency guidelines. We will also continue to manage the reduction of energy usage by establishing targets to improve the operations of our facilities. Furthermore, we will strive to introduce renewable energy that is suited to each area, and strengthen our governance of waste.

The targets of Environmental Plan 2023 and the results of fiscal 2022, the first year of the plan, are as shown in the chart below. Steady progress is being made in reducing CO_2 emission from our products and from our plants and offices. Toward the realization of a circular economy, we will promote the effective utilization of plastics with an eye on achieving the FY2024 targets.

Note that the target for reducing CO_2 emission from our company has been changed from the initial target that had been established at the time of formulation of the plan to reflect the new fiscal 2031 target established in 2022.

Activities and Key Performance Indicators

Activity	KPI	Target set in Environmental Plan 2023	Fiscal 2022 result	Fiscal 2022 self-evaluation
Environmental contribution through products and services				
Expanding our contribution to CO_2 emission reduction with new products	Improvement rate of new products over previous models	1% or more in fiscal 2024	1.7%	○
Improving the usage rate of recycled plastics	Usage rate of recycled plastics (procurement volume of molding/packaging materials	10% or more in fiscal 2024	8.9%	△
Reduction of the environmental impact of our business activities				
Reducing CO_2 emitted from our company	CO_2 emission (Scopes 1 and 2)	Reduction of 30% or more compared to fiscal 2014	Reduction of 19%	△
Improving the effective usage rate of plastic waste	Effective usage rate of plastic waste (in Japan)	90% or more	89.6%	△
Using water effectively	Water consumption per unit of sales in high-risk sites	Reduction of 4% or more compared to fiscal 2020	Reduction of 24%	○
Publicizing and sharing new values and lifestyles				
Promoting the "Mitsubishi Electric Outdoor Classroom" and "Satoyama" Woodland Preservation Project"	Number of areas where activities are held	39	36 areas	△

○:Target achieved △:Target not achieved

We have set indexes and targets in order to measure the progress of product improvement initiatives undertaken by the Mitsubishi Electric Group as a whole and by our business sites. With respect to items that may require creative efforts by each business site, we will encourage participation from all business sites and employees, without setting across-the-board targets.

Measures Regarding "Environmental Contribution through Products and Services" and "Pursuing Business Innovations"

Making Our Environmental Contribution Visible and Setting Targets

We will make our environmental contribution visible and set targets by following the below procedure. In doing so, we aim to instill in our employees an awareness of environmentally friendly design, particularly among our designers, and to strengthen this awareness.

(1) Define the operating conditions and evaluation items* for carrying out an environmental performance evaluation of each product group (including systems and solutions).
(2) Centrally manage the environmental performance of products using an electronic system. This will facilitate the collection and analysis of data.
(3) Set targets for each product group and assess their achievement at the development and design stages (during design reviews).
Further improvements will be made based on the results of the above.

* Global warming countermeasures and resource-saving efforts are mandatory evaluation items. Other than these, appropriate items are selected for each product group from recyclability, volume of chemical substances used, and weight of packaging materials used.

環境性能評価項目の一例

Classification	Evaluation item		
(1) Global warming (mandatory)	Contribution to reducing greenhouse gas emissions	Power consumption during operation	
(2) Resource saving (mandatory)	Amount of recycled plastics used	Weight of product/ component	
(3) Recyclability	Number of components	Improvement of ease of disassembly	Standardization of materials
	Material labeling	Non-use of flame retardants	Reduction of instruction manuals
(4) Chemical substances	Reduction of substances of concern contained in products		
(5) Packaging materials	Packaging materials (plastics, etc.)	Weight and volume of packaging materials	

Expansion of Recycled Plastic Use

In order to expand the use of recycled plastics, we will promote the development and trial production of products using recycled plastics at relevant business sites.

Measures Regarding "Initiatives to Reduce Environmental Impact of Business Activities"

Setting CO_2 Emission Targets in Annual Plans and Formulating Measures

Business groups in charge of production works formulate CO_2 emission reduction plans and measures as part of their annual business plans. Based on these plans, they strive to reduce their CO_2 emissions.

Thorough Efforts to Improve Energy Efficiency in Buildings and Facilities

We strictly observe the Building Energy-saving Guidelines when planning the construction of new buildings or the refurbishment of existing structures, and the Production Facilities Energy-saving Guidelines when introducing new production facilities at our factories.

Expanding the Introduction of Renewable Energy

We will expand the introduction of renewable energy using the following two approaches.

(1) Examine the best means for each region, including the installation of solar power generation systems, examination of other renewable energy sources, and utilization of the green electricity certificate, and identify issues.
(2) Examine how to effectively utilize any surplus electricity from solar power generation, including the use of self-consignment systems.

Effective Utilization of Plastic Waste

We will aim to achieve a 100% effective usage rate of used plastics by 2035. Toward this end, we will promote the visibility of waste sources and the quantitative management of plastic waste by setting target values. We will also survey and share information about recycling contractors possessing the required technologies.

Measures Regarding "Publicizing and Sharing New Values/Lifestyles"

We will further enhance our interaction with and contribution to local communities by holding the Satoyama Woodland Preservation Project and the Mitsubishi Electric Outdoor Classrooms in an integrated manner. We will also focus on environmental activities such as the cleaning of local areas, which will also help to spread information about plastic pollution in the world's seas and oceans. The outcomes of our initiatives in Japan and overseas will be published as and when needed, and the Group's contribution to environmental improvement will be made visible.

From the perspective of proposing new lifestyles, we will begin our efforts from within the Group, such as by making active use of remote working to save energy and optimize work-life balance, and encouraging the use of reusable cups/bottles to establish the habit of being environmentally conscious in all aspects of everyday life. By having each employee practice an environmentally conscious lifestyle, we hope to eventually spread these activities to local communities.

Environmental Considerations for Value Chain Management

Design/Development | Procurement | Production | Packaging/Transportation | Usage | Disposal/Recycling

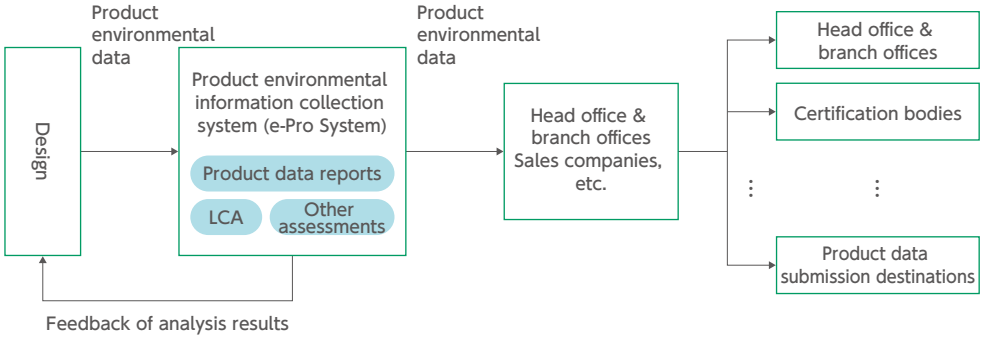
Implementation of Environmentally Conscious Design

Utilization of a product environmental information collection system

To ensure proper disclosure of product environmental information to outside the company and to respond to environmental laws and regulations in each country, a product environmental information collection system (e-Pro System) has been established that centrally manages such data as CO_2 emissions from product use and the environmental data of raw materials and packaging materials, among others. This system conforms to customer requirements to provide product data. It also contributes to promoting eco-conscious design, by enabling environmental assessment and LCA* to be implemented within the e-Pro system and fed back to design departments.

Additionally, to strengthen product designs that respond to social needs for decarbonization, an eco-design subcommittee engages in internal activities for sharing best practices and other information on laws, regulations, and eco-conscious designs in each country. It also examines the validity of LCA calculations and examines product assessment items.

*LCA: Life Cycle Assessment. Quantitative assessment of the environmental load generated from throughout the life cycle of products and services.



Utilization of product environmental data based on the product environmental information collection system (e-Pro System)

Research and Development of Products and Technologies to Solve Environmental Issues

Example Development and Operation of ZEB for Net-Zero Energy Consumption

ZEB testing facility "SUSTIE"

In October 2020, Mitsubishi Electric completed the construction of a net-zero energy building test facility, SUSTIE, on the premises of the Information Technology R&D Center (Kamakura City, Kanagawa Prefecture). This new facility conducts research and development aimed toward the further spread of ZEBs[*1]. Looking ahead to the future of ZEB, we are working to realize Mitsubishi Electric's original ZEB+® (zeb plus)[*2] concept and to enhance the functionality of buildings, for example by increasing the efficiency of working environments.

SUSTIE has achieved ZEB[*3]-level operations in fiscal 2022.

*1 ZEB: Net-Zero Energy Building

*2 ZEB+®: Mitsubishi Electric's unique initiative that aims to enhance building functionality by adding such values as productivity, comfort, convenience, and business continuity to ZEB, and managing a building throughout its lifecycle.

*3 A building whose annual primary energy balance is zero or less. The highest rank of all ZEB certifications.

Learn more about SUSTIE on our website.

SUSTIE (ZEB test facility)
ZEB test facility SUSTIE achieves ZEB-level operations

Example Transformers That Use Vegetable Oil "MELCORE-NEO™"

MELCORE-NEO™

Mitsubishi Electric also develops and manufactures a wide variety of products in the energy sector toward the realization of a sustainable society. At the Transmission & Distribution Systems Center Ako Plant, transformers for electricity distribution have been developed and manufactured using vegetable oil extracted from the nuts and seeds of plants and then refined for the internal insulation. Since 2017, these transformers have been installed in railway systems, airports, and industrial facilities.

Mineral oil derived from crude oil has been used in transformers for over 100 years. However, as it is a non-renewable resource, we are currently in the process of transitioning to vegetable oil. Mitsubishi Electric is also developing and manufacturing transformers that use vegetable oil and is establishing diagnostic technologies for wider regions as our contribution to environmental consideration and stable power supply.

Characteristics of Vegetable Oils

Calculations show that vegetable oils reduce CO_2 emission equivalents by 90% compared to mineral oil throughout their entire lifecycle (bottom left figure), because the plants that are used to make them absorb CO_2 from the atmosphere during their growth. Additionally, the soybean oil that is used in our transformers is about four times more biodegradable than mineral oil (bottom center figure). In a fish acute toxicity test (OECD 203) which verifies impacts on aquatic life, soybean oil passed the Eco Mark certification criteria*. Therefore, it can be said that soybean oil is an environmentally low-risk material. Furthermore, as the flash point of vegetable oils is substantially higher than that of mineral oil (bottom right figure), the use of vegetable oils can reduce the risk of fire or explosion. Under the Fire Service Act, mineral oil is classified as a hazardous material, but vegetable oils are classified as designated flammable goods.

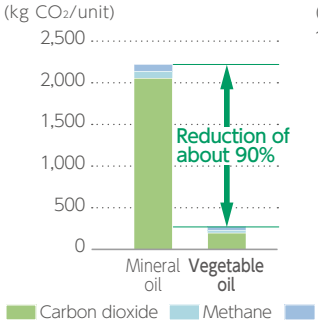


Figure 1: CO_2 emission equivalents

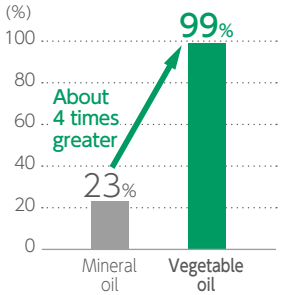


Figure 2: Comparison of biodegradability between mineral oil and vegetable oil

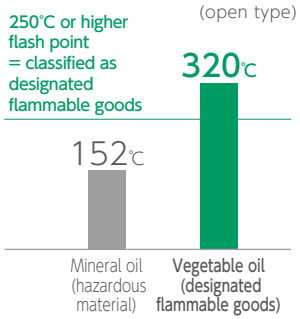


Figure 3: Comparison of flash point between mineral oil and vegetable oil

* Acquired Eco Mark certification as a biodegradable lubricant oil (certification number: 18110002)

Source of graph showing CO_2 emission equivalents: NIST, "Determining the Environmental Preferability of a Biobased Oil" (2002)

Evaluating the Status of Environmental Initiatives by Our Suppliers

Reducing Environmental Risks in Procurement Activities through Operation of the Green Accreditation System

In April 2006, the Mitsubishi Electric Group introduced a Green Accreditation System based on the Green Procurement Standards Guide established in September 2000 and revised in July 2014. Under the system, suppliers in and outside of Japan are evaluated with respect to their status of acquisition of environmental management system accreditation, compliance with statutory and regulatory requirements, management of chemical substances contained in products, and biodiversity initiatives, and suppliers that meet the Company's criteria and standards are certified. With regard to suppliers who do not meet the Company's criteria and standards, efforts are made to minimize environmental risks by engaging them in discussion and providing guidance for improvement as necessary so they can make relevant corrections. New suppliers are also asked to comply with the Green Procurement Standards Guide before commencing transactions.

Major suppliers accounting for the top 80% of total purchase amount are evaluated once every three years to renew their accreditation. In fiscal 2022, approximately 900 companies (including offices) were evaluated. 92% of them acquired and/or renewed their Green Accreditation, but 52 companies that were not up to standard were subject to guidance. Of these 52 companies, three companies received guidance on matters requiring correction, including strengthening their management of chemical substances contained in products.

Green accreditation

Reducing CO_2 from Plants and Offices

Targets and Achievements

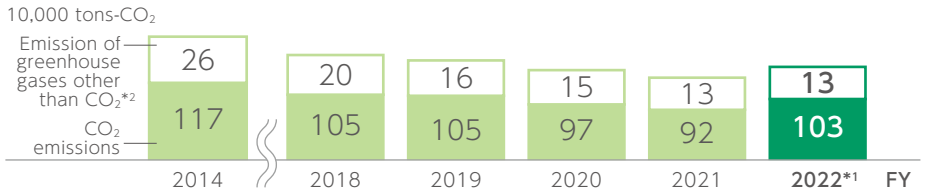
The Mitsubishi Electric Group is working to realize Environmental Sustainability Vision 2050 by promoting activities to reduce the emission of greenhouse gases (CO_2, SF_6, HFCs, PFCs originating from energy) from plants and offices.

Environmental Plan 2023 (FY2022-2024) sets forth a target that is more ambitious than previous plans. It aims to reduce greenhouse gas emissions by more than 30% by fiscal 2024 compared to fiscal 2014. Toward achieving this new target, we will step up our efforts to thoroughly save energy in our plants and offices and to expand the use of renewable energy.

CO_2 emission calculation methods and coverage rates have also been reviewed to coincide with the launch of Environmental Plan 2023. Up to now, the same CO_2 emission coefficient for electricity has been applied every fiscal year, but it has been replaced with a coefficient specific to each fiscal year, for CO_2 emission calculations of previous years as well. Furthermore, the coverage rate of CO_2 emissions has been expanded to 99% by also including small overseas offices in the scope of calculations.

As a result of the above, greenhouse gas emissions came to 1.16 million CO_2-tons in fiscal 2022. CO_2 originating from energy decreased owing to the introduction of high-efficiency devices and thorough streamlining of production facilities, and greenhouse gases other than CO_2 also decreased at an accelerated rate owing to a shift to coolant gases with a lower global warming potential and to the recovery of an increasing amount of coolant gases from production. At the same time, however, greenhouse gas emissions on the whole increased compared to the previous year due to the expanded coverage rate of CO_2 emissions.

In addition to establishing and operating energy-saving guidelines for buildings and production facilities, and promoting thorough energy saving in plants and offices, Mitsubishi Electric is also placing a focus on introducing photovoltaic generation facilities and procuring power from renewable energy sources. Going forward, we will flesh out further details of the road map for greenhouse gas reduction and promote measures for even greater reduction, toward the steady achievement of our targets.



(Note) The CO_2 emission coefficient for electricity and global warming potential used in the calculations for each fiscal year are as follows.
- CO_2 emission coefficient for Japan: The latest figure published by The Electric Power Council for a Low Carbon Society
- Overseas CO_2 emission coefficient: Figure based on the latest figure published by International Energy Agency
- Global warming potential: Figure published in IPCC's Fifth Assessment Report

*1: CO_2 emission coverage in FY2022: 99%
*2: Emissions of SF6, HFCs, PFCs from production sites

CO_2 emissions from plants and offices (Mitsubishi Electric Group)

Initiatives to Reduce CO_2 Originating from Energy and Their Results

Toward reducing CO_2 originating from energy, our activities focus on systematically introducing and updating high-efficiency and energy-saving equipment, improving operations, and extending energy conservation measures to production lines. As a result, we managed to reduce CO_2 emissions originating from energy by 14 kt to 1.03 million tons in fiscal 2022.

Half of the major achievements were realized through the introduction of high-efficiency machinery, while activities to develop energy-efficient technologies implemented by an internal technical committee also produced solid results. These activities also focus on visualizing and reducing the wasteful use of utilities and production equipment during non-operational hours.

In the classification system (SABC assessment) based on Japan's Energy Savings Law, 6 out of 19 specific Group companies in Japan, including Mitsubishi Electric, have been recognized as excellent business operators (S Class) in terms of energy conservation.

Initiatives to Reduce SF_6, HFCs and PFCs, and the Results

Three types of non-CO_2 greenhouse gases are emitted by the Mitsubishi Electric Group in its business activities: SF_6 (sulfur hexafluoride), HFCs (hydrofluorocarbons), and PFCs (Perfluorocarbons). SF_6 is used inside gas-insulated switchgear for electrical insulation, as well as in the etching process during semiconductor and liquid-crystal display production.

HFCs are used as refrigerants in air conditioners and refrigerators, while PFCs are used during the etching process in production of semiconductors and liquid-crystal displays.

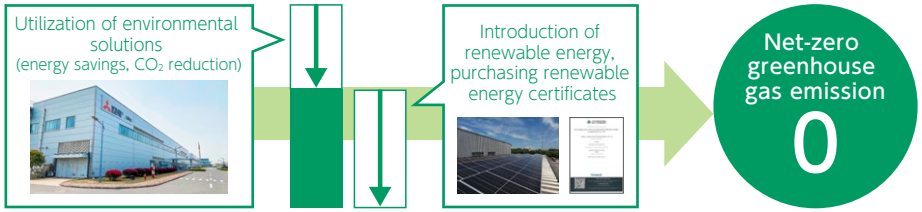
In fiscal 2022, we continued our initiatives for switching to the use of refrigerants with lower GWP, improving operations, and achieving greater gas recovery and abatement. Owing to these measures, emissions turned out to be 130 kt, corresponding to a 62kt reduction compared to the previous fiscal year.

Case Example Net-zero greenhouse gas emission achieved by Mitsubishi Electric Automation Manufacturing (Changshu) Co., Ltd.

In China, the manufacturing industry accounts for roughly 70% of total power consumption, befitting its moniker as "the world's factory." In recent years, however, it has begun promoting decarbonization of the manufacturing industry as a national policy, based on a declaration to "achieve carbon neutrality (net-zero CO_2 emission) by 2060."

Mitsubishi Electric Automation Manufacturing (Changshu) Co., Ltd. (MEAMC), which operates in China, has also been directing its efforts to save energy and reduce CO2, taking advantage of the Mitsubishi Electric Group's environmental solutions such as the E-JIT* System. It has also introduced renewable energy, purchased renewable energy certificates, and achieved net-zero greenhouse gas emissions in June 2021 as the first plant to do so within the Group.

Greenhouse gas emissions



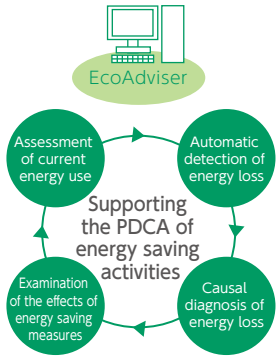
*E-JIT (Environment & Energy Just in Time): Mitsubishi Electric's comprehensive solution to simultaneously optimize the efficiency of environmental measures, maximize energy efficiency, and strengthen production efficiency.

Case Example Helping Customers to Reduce CO_2 emissions using the energy-saving analysis & diagnosis application EcoAdviser

The Mitsubishi Electric Group offers an application called EcoAdviser to contribute to saving energy in entire plants. EcoAdviser comprehensively supports customers engage in continuous energy saving activities by visualizing the status of power usage by each production facility and automatically analyzing energy loss and its causes via AI.

Mitsubishi Electric Fukuyama Works has achieved an annual energy savings of roughly 10% with certain facilities by using this application. Moreover, the time required for data analysis and for identifying causes of energy loss has been reduced by approximately 90% compared to conventional methods.

Monitoring and analysis of power consumption status



Effective Utilization of Plastic Waste

The Mitsubishi Electric Group has thus far worked to lower the final disposal rate of plastic waste, but as a certain target level has been achieved both in Japan and overseas, it has now decided to maintain the final disposal rate at that certain level.

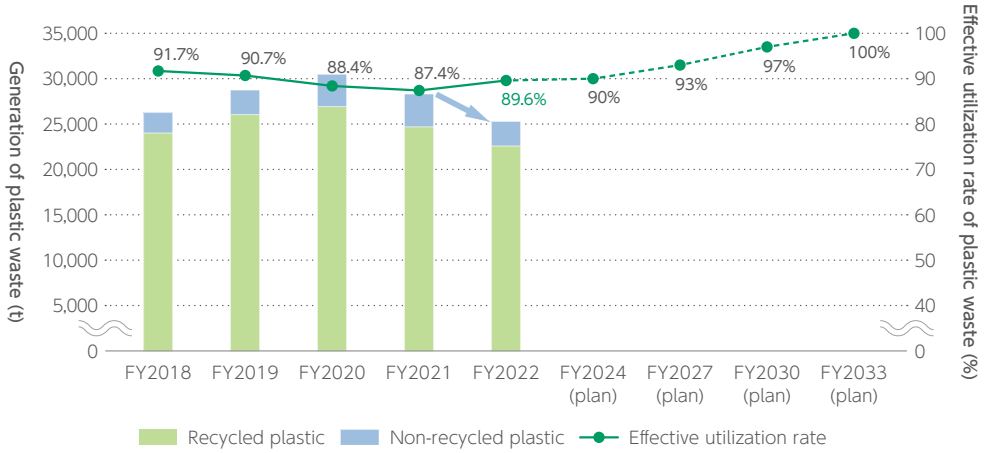
In Environmental Plan 2023 that has been newly launched in fiscal 2022, we have set forth a target of achieving effective plastic utilization rates of 90% or more in Japan by fiscal 2024. This target is based on the Ocean Plastics Charter that was adopted at the G7 Summit and the Resource Circulation Strategy for Plastics formulated by the Ministry of the Environment. It also conforms to the Act on Promotion of Resource Circulation for Plastics that went into force in April 2022.

Target values have been individually established for each site according to their actual (average) effective utilization rates from fiscal 2018 to 2020, instead of applying uniform targets across all sites.

Status of initiatives by the Mitsubishi Electric Group (in Japan)

Toward improving the effective utilization rate of plastic waste, we mainly conducted a survey of the present state of plastic waste generation at our sites in fiscal 2022. Based on the results of this survey, we are considering ways to enforce proper sorting and to conduct a review of plastic recycling companies.

In fiscal 2022, 250,000 tons of plastic waste were generated, which was 10% less than the previous year, and the effective utilization rate of plastic waste in Japan stood at 89.6%. Going forward, we will endeavor to control plastic waste generation by promoting a sharing of information on recycling companies among our sites and the visualization of plastic waste. At the same time, we will strive to increase the ratio of material recycling in the recycling of plastics.



Plastic waste generation, effective utilization rate, and target values

Status of initiatives by the Mitsubishi Electric Group (overseas)

Overseas laws, regulations, and waste treatment situations vary according to country and region. Therefore, we plan to address the plastic waste issue overseas by firstly assessing the actual state of plastic waste and the status of material and chemical recycling. Then we will establish and work toward achieving our fiscal 2024 targets.

Specification, Disposal and Transportation of Hazardous Wastes

The Mitsubishi Electric Group specifies hazardous wastes as follows, monitors their output and appropriately disposes of them in compliance with the laws and regulations of the regions in which our facilities are located. We also carry out material recycling and thermal recycling where we can in order to reduce final disposal (landfill) volume.

- Mitsubishi Electric and affiliates in Japan: "Specially-controlled industrial wastes" specified by the Japanese Waste Disposal Law
- Overseas affiliates: Hazardous wastes defined by local laws and regulations

Wastes containing polychlorinated biphenyl (PCB) are managed separately based on the "Law concerning Special Measures for Promotion of Proper Treatment of PCB Wastes, PCB Special Measures." Please refer to "Preventing Environmental Incidents" on page ● for details.

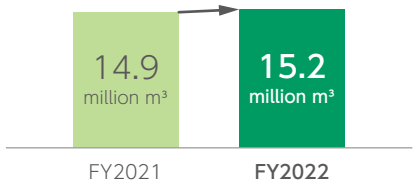
In fiscal 2022, total hazardous waste emissions of Mitsubishi Electric Group companies in Japan amounted to 1,439 tons, of which 520 tons were recycled. That of overseas affiliates totaled 4,670 tons, of which 1,469 tons were recycled.

Reducing Water Usage

Considering the increasing importance of water resources worldwide, the Mitsubishi Electric Group has been measuring data on water used/reused at all of its 96 business sites in Japan and overseas on a continuous basis. However, from this fiscal year, we have begun collecting data from an additional 89 sites, for a total of 185 sites, with an eye to increasing the coverage rate of water usage. Owing to this change, coverage rate in terms of water usage has increased to more than 98%. In the same way as before, these figures are checked on a regular basis for any significant change, and depending on the findings, necessary measures are taken when needed. Any effective case examples are shared with other business sites on occasions such as Key Environmental Personnel Liaison Meetings to be implemented laterally.

In fiscal 2022, water usage totaled 15.20 million m³ by the Mitsubishi Electric Group, of which 4.47 million m³was reused water, corresponding to a reuse ratio of 29%. Additionally, water usage per unit of sales was 3.40 (m³/million yen).

In Japan, water used in production processes was recycled for reuse in the same processes, and treated wastewater was used for flushing toilets and refilling cooling towers to promote the use of gray water. Rainwater was also used to reduce the use of groundwater. As a result of these initiatives, water usage totaled 13.30 million m³, of which 4.35 million m³ was reused water, corresponding to a reuse ratio of 33%. Outside of Japan, we focused on reducing the amount of water intake by reusing water and expanded the use of gray water. Owing in particular to initiatives taken at our business sites in China to conserve water and reduce water usage by increasing water reuse, water usage amounted to 1.9 million m³, of which 0.12 million m³ was reused water, corresponding to a reuse ratio of 6%.



Total Water Usage (Mitsubishi Electric Group)

For details on total water usage, please refer to “Material Balance” on page 34 .
Material Balance

Water Risks

Water risk is increasing worldwide with ever-more serious water shortages and pollution, as well as abnormal weather caused by climate change. This affects the production of both raw materials and products, leading to a corresponding interest in corporate water risk management.

Water risk within the Mitsubishi Electric Group is evaluated as part of our corporate risk management framework. The evaluation factors in the influence on stakeholders, as well as the impact on ecosystems. We use the results of this assessment to prioritize countermeasures for each production base and take clear action. We also take measures to minimize any impact on the surrounding environment, such as by ensuring compliance with wastewater standards in each region. Furthermore, during product development, we evaluate product impact on water sources and their lifecycles and strive to minimize the impact.

Response to High-risk Sites

Mitsubishi Electric Group uses WRI Water Aqueduct[*1] and other risk assessment tools to keep track of current and future water risk at business sites both in Japan and abroad (including the presence of water stress[*2]).

Based on this data, in fiscal 2021, overseas business sites with particularly high water risks have been identified as high-risk sites in consideration of their regional characteristics (i.e., seasonal high water/drought conditions of oceans and rivers from which water is taken) and business characteristics (i.e., water usage accompanying production activities).

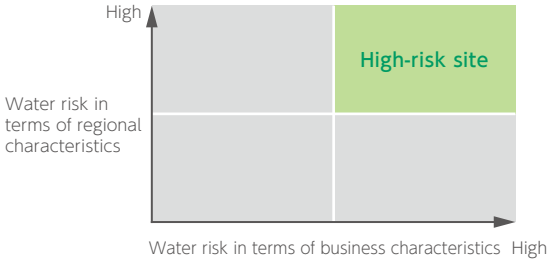
To reduce water usage in high-risk sites (total of five sites), Environmental Plan 2023 sets forth a target of “reducing water usage per unit of sales by 4% or more by fiscal 2024 compared to fiscal 2020.” The five selected sites together account for roughly 5% of total water usage by the Mitsubishi Electric Group as a whole and roughly 8% of total sales.

By distributing survey sheets to these high-risk sites, we confirmed the status of water conservation at facilities that use water and their efforts to reuse water. Additionally, based on the results of these surveys, water faucets were replaced with water-saving faucets, and the use of recycled water was promoted. As a result, water usage per unit of sales was reduced by 24% in fiscal 2022 compared to fiscal 2020. By implementing effective water risk measures in consideration of regional characteristics and circumstances in each of our sites, we aim to co-exist in harmony with local communities.

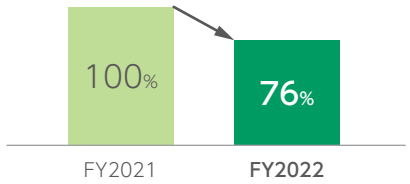
We will continue to strengthen our efforts based on this policy with a focus on high-risk sites.

*1 WRI Aqueduct: Water risk assessment tool developed by the World Resources Institute (WRI).

*2 Water stress: Water stress levels can be defined by an index that indicates how close the relationship is between the supply and demand of water. When maximum water availability per capita falls below 1,700 m³, it is considered that water stress is present.



Conceptual diagram of water risk analysis



Water usage per unit of sales in reference to fiscal 2020 (five high-risk sites)

Status of Water Intake/Drainage/Reuse

Status of Water Intake

At business sites of the Mitsubishi Electric Group, water is taken to be used mainly for cooling, cleaning and adjusting the concentration of water-based paints, and as a solvent, an additive to materials and a heat medium. In fiscal 2022, the number of survey sites was increased from 96 to 185 to increase the coverage rate of water usage. As a result, water intake was 10.73 million m³, approximately 0.38 million m³ more than the previous fiscal year.

Status of Water Drainage

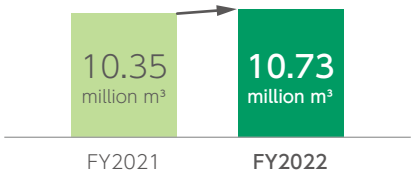
To avoid exceeding standard values set for each drainage point, the Mitsubishi Electric Group has established even more stringent voluntary standards, based on which water is treated before it is discharged. When there is a certain drainage standard in place according to properties specific to the water area, such a standard is also incorporated into our standards. The compliance of these standards is confirmed through measurements conducted on a regular basis.

Water drainage in fiscal 2022 was 8.39 million m³, 0.23 million m³ more than the previous fiscal year, on account of the increase in the number of survey sites.

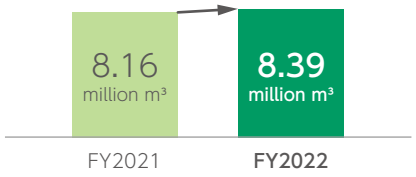
Status of Water Reuse

At Mitsubishi Electric Group's factories, not only fresh intake water, but water that has been used once is reused after it is treated and recycled.

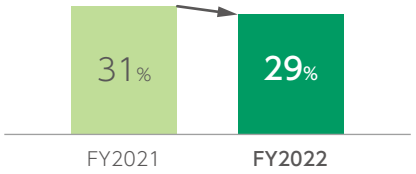
Reused water totaled 4.47 million m³ in fiscal 2022, corresponding to a reuse ratio of 29%.



Water Intake
(Mitsubishi Electric Group)



Water Drainage Volume
(Mitsubishi Electric Group)



Water Reuse Ratio
(Mitsubishi Electric Group)

Case Example Reducing water use by recycling wastewater

In Thailand, economic development has brought about a serious water shortage, and there has been a rising awareness of the importance of water resources. In January 2020, the Thai Ministry of Industry has even issued a request to manufacturing industries for their cooperation in reducing the amount of wastewater that is discharged outside of factories and promoting efficient water use.

Under this situation, Mitsubishi Electric Automation (Thailand) Co., Ltd., an affiliated company based in Bang Chan Industrial Estate in Bangkok, succeeded in reducing the amount of wastewater discharged outside the plant and in reducing 600 m³ of annual use of water supply, by recycling wastewater at its wastewater treatment facility and using the recycled water to nurture a wall garden (approx. 228 m²) installed in a rest area within its site. Recognized for its environmental initiatives including the wall garden, the company has been certified as an ECO Factory in Thailand.

Wall garden using diskidia (foliage plant)

Mitsubishi Electric Automation (Thailand) Co., Ltd.

Managing Chemical Substances

Tracking the Use of Controlled Chemical Substances with Our Own Chemical Substance Management System

Mitsubishi Electric Group companies in Japan have been managing internally defined controlled chemical substances on a voluntary basis since 1997.

In particular, chemical substances contained in products are managed in Japan and abroad using the MelHARo-web chemical substance management system, which includes procurement information for both materials and parts. From fiscal 2022, a newly added feature allows for information entered into the MelHARo-web system to also be registered in the European Chemicals Agency[*1]'s SCIP database[*2]. In addition to these administrative efforts, we are also working to systematically reduce the use of chemical substances that are expected to be restricted by future laws and regulations.

We also apply our Chemical Substance Management System to the management of release and transfer of substances regulated by the PRTR Law[*3] (PRTR[*4]) and volatile organic compounds (VOCs). Sulfur oxide (SOx) and nitrogen oxide (NOx) are also managed using our voluntary standards based on the laws and regulations of the regions where our business sites are located. We will continue to track our use of these substances and ensure their proper management.

*1 European Chemicals Agency (ECHA): A European Union organization that supervises the management of chemical substances.

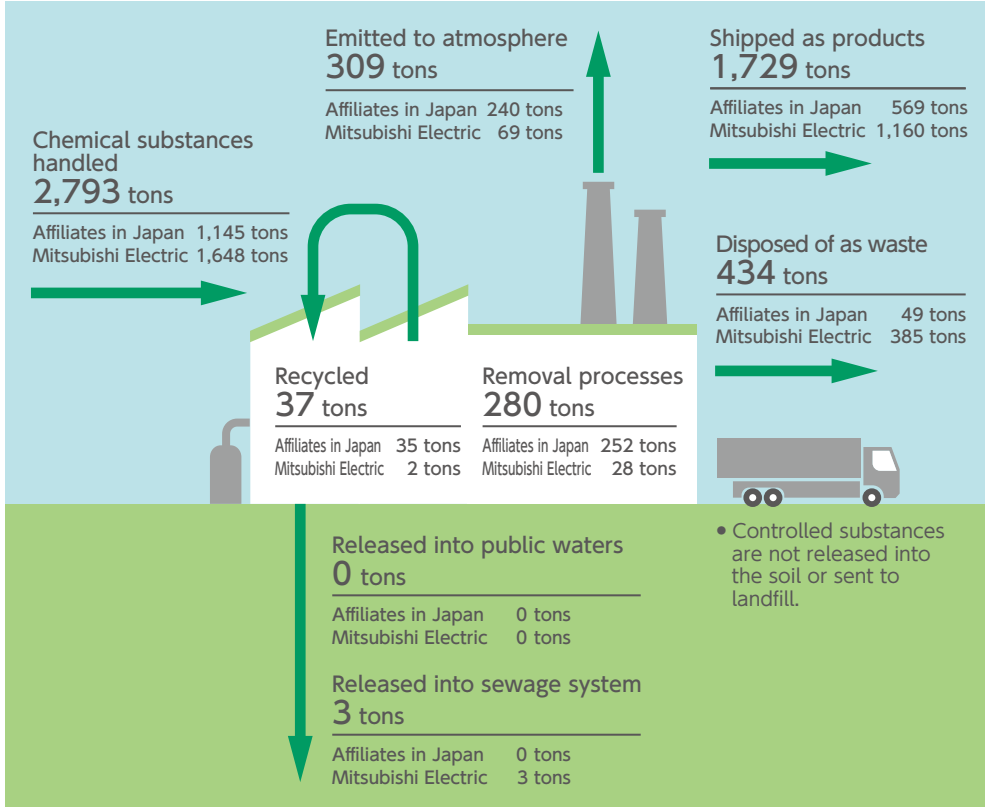
*2 SCIP or Substances of Concern In articles as such or in complex objects (Products) database: A database of information on chemical substances contained in products managed by ECHA.

*3 PRTR Law: Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof.

*4 PRTR: Pollutant Release and Transfer Register. A system under which companies track the quantity of substances potentially harmful to human health or the ecosystem which are released into the environment or transferred outside a business establishment through waste materials, and report this data to government authorities. The authorities then use these reports and other statistics to produce estimates on release and transfer, and announce them publicly.

For details on the release and transfer of chemical substances, please refer to "Material Balance" on page 34.

Material Balance



Fiscal 2022 Release and Transfer of Substances Regulated by the PRTR Law (Mitsubishi Electric Group Companies in Japan)

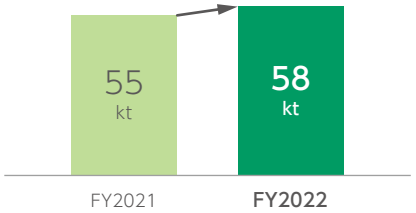
Reducing the Use of Disposable Packaging Materials

Achievements of Mitsubishi Electric Group Companies in Japan in Fiscal 2022

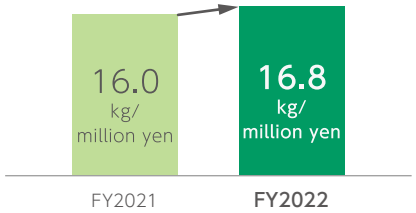
Improvements in logistics are part of Mitsubishi Electric Group's Just-In-Time improvement activities. Our fundamental principle in this area is to reduce the weight of transport packaging while ensuring that products are delivered safely to customers. Based on this line of thinking, we practice the 3Rs in packaging: reduce (simplify packaging), reuse (more returnable containers and packaging), and recycle (recycling of used packaging material).

At Mitsubishi Electric Group companies in Japan, simpler packaging is promoted, and the use of returnable containers and packaging has been expanded. Owing to these initiatives, the amount of packaging materials used was 58 kt, and the amount per unit of sales was 16.8 kg/million yen. Though total usage of packaging materials increased, on account of the increase in the number of export packages.

The amount of packaging materials used by our 25 overseas affiliates was 69 kt, and the amount per unit of sales was 46 kg/million yen.



Usage of Packaging Materials (Mitsubishi Electric Group Companies in Japan)



Packaging Materials Used per Unit of Sales (Mitsubishi Electric Group Companies in Japan)

For details of the usage of packaging materials, please refer to "Material Balance" on page 34.
Material Balance

Reducing CO_2 from Logistics

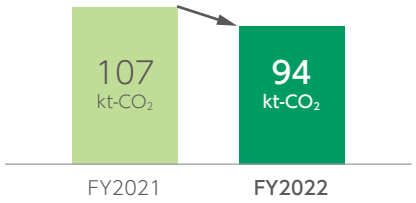
Basic Policies on Logistics (Distribution)

To improve product logistics (distribution), we strive to eliminate irrational, irregular, and wasted efforts by visualizing logistics work by quantification, with the ultimate goal of realizing Economy & Ecology Logistics (Eco-Logistics) that improve transport efficiency and economy and to reduce environmental impact.

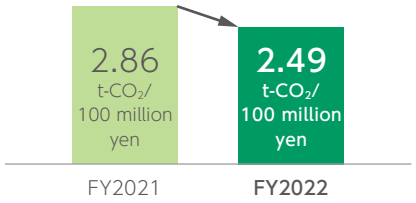
Fiscal 2022 Achievements of Mitsubishi Electric Group Companies in Japan

At Mitsubishi Electric Group companies in Japan, the following measures continued to be implemented throughout fiscal 2022. As a result, CO_2 emissions totaled 94 kt-CO_2, and the amount per unit of sales was 2.49 t-CO_2/100 million yen.

- Reviewing transportation routes
- Switching from truck transportation to rail transportation (modal shift)
- Reducing the number of trucks by improving load ratios (including Container Round Use)



Total CO_2 Emissions from Distribution (Mitsubishi Electric Group Companies in Japan)



CO_2 Emissions per Unit of Sales from Distribution (Mitsubishi Electric Group Companies in Japan)

Regarding overseas affiliates, the amount of CO_2 emitted by a total of 25 companies was 417 kt, and the amount per unit of sales was 27.4 t-CO_2/100 million yen.

For details of CO_2 emissions from distribution, please refer to "Material Balance" on page 35.
Material Balance

Contribution to Reducing CO_2 from Product Usage

As more CO_2 is emitted during product usage than during production, the Mitsubishi Electric Group has identified "reducing CO_2 from product usage" and "contributing to reducing CO_2 by product usage" as priority issues, and is working to improve its products.

Evaluation of Reducing CO_2 from Product Usage

Power consumed by customers during product use is viewed as corresponding to the amount of CO_2 emissions resulting from generating that power. Increasing product energy efficiency can lead to a reduction of CO_2 from product use.

Environmental Plan 2023 promotes initiatives to increase product energy efficiency by evaluating improvements in product energy efficiency using the new indicator shown below, beginning with models that are newly developed in fiscal 2022.

$$\text{Improvement rate over previous models (\%)} = \frac{\text{(annual power consumption of previous models – annual power consumption of newly developed models)}}{\text{annual power consumption of previous models}} \times 100$$

Evaluation of Our Contribution to Reducing CO_2 by Product Usage

Among products of the Mitsubishi Electric Group, there are some that can help customers reduce CO_2 by being used. For example, using the Group's heat pump system has greater potential to reduce CO_2 emissions compared to using combustion-type heating and hot water systems. The Group's inverters and power devices, as well, can reduce CO_2 by being used, since they contribute to enhancing the energy efficiency of the final products they are embedded in.

Contribution to reducing CO_2 is calculated by comparing the use of a relevant product with the use of an alternative product that would likely be used if the relevant product did not exist. It is based on the following formula, with the alternative product as the reference product.

$$\text{Contribution to reducing } CO_2 = (CO_2 \text{ emission from using a "reference product"}) - (CO_2 \text{ emission from using the relevant product})$$

In Environmental Plan 2023, the improvement in contribution to reducing CO_2 when a customer chooses to use a Mitsubishi Electric product is calculated using the new indicator shown below, beginning with models newly developed in fiscal 2022.

$$\text{Improvement rate over previous model (\%)} = \frac{\text{(contribution to reducing } CO_2 \text{ by newly developed model – contribution to reducing } CO_2 \text{ by previous model)}}{\text{contribution to reducing } CO_2 \text{ by previous model}} \times 100$$

Targets and Achievements of "Reducing CO_2 from Product Usage" and "Contribution to Reducing CO_2 by Product Usage"

Under Environmental Plan 2023, we are working toward the target of improving "CO_2 reduction from product usage" and "contribution to reducing CO_2 by product usage" both by 1% on average over previous models by fiscal 2024. In fiscal 2022, an improvement rate of 1.7% on average was achieved over previous models owing to significant improvements that were seen in a wide range of products, including car electronics and servo system products.

We will continue our efforts to pursue greater energy efficiency and contribution to reducing CO_2 throughout the process of developing new models as our contribution to society.

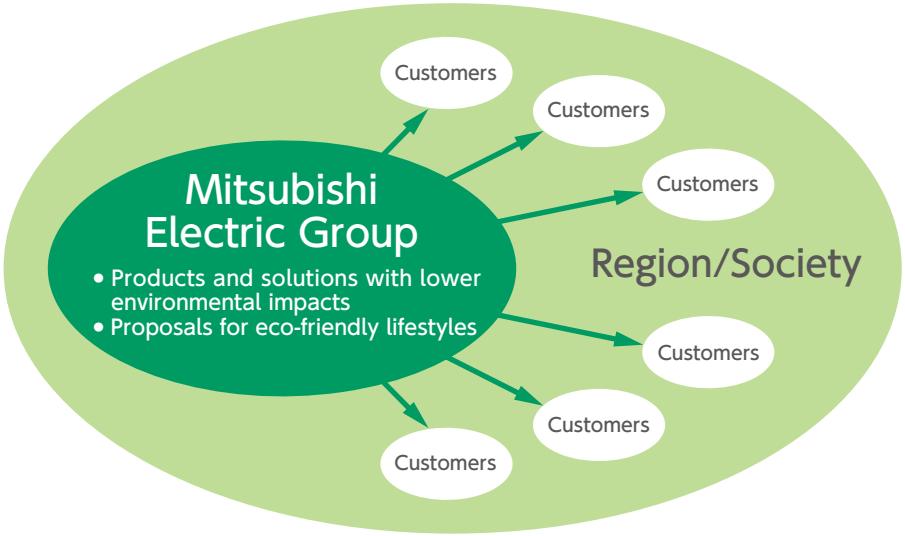
Annual energy consumed by newly developed models and average rate of improvement of contribution to reducing to CO_2 over previous models

Breakdown of products relevant to "reducing CO_2 from product usage" and "contribution to reducing CO_2 by product usage"

Evaluation item	Product examples	Indicator used to evaluate improvement rate over previous models
Reducing CO_2 from product usage	Monitoring, control, and protection devices for power generation plants and systems, railcar air-conditioning systems, electrical equipment for railcars, movable platform gates, vacuum circuit breakers, elevators, escalators, intelligent transport systems (ITS; ETC, smart interchanges), air conditioners, refrigerators, ventilation fans, electric fans, processing machines, LED light bulbs, residential lighting fixtures, etc.	Reduction in annual energy consumed during product usage
	Turbine generators	Improvement of power conversion efficiency
	Optical communication network systems, wireless communication systems	Reduction in annual energy consumed per product performance
	Car electronic products	Reduction from the incorporation of products with power energy use, proportionally divided by weight
Contribution to reducing CO_2 by product usage	Water heating systems (heat pump electric water heaters, electric water heaters)	Improvement of the contribution to reducing CO_2 by using heat pumps, in reference to combustion-type heating and hot water systems
	Inverters, power devices (power modules, high power devices)	Improvement in the contribution to reducing CO_2 gained by the incorporation of products with lower power loss
	Total heat exchanging ventilation equipment, electrical equipment for railcars (control devices)	Improvement in the contribution to reducing CO_2 expected from the introduction of said products

Providing Information and Proposals to Support Customers' Efforts to Reduce their Environmental Impact

The Mitsubishi Electric Group develops and offers products and solutions with lower environmental impacts to help customers reduce as much of their environmental impact as possible in their daily business or life. At the same time, we make an effort to share information on eco-friendly lifestyles.



Reducing Environmental Impact on Society as a Whole from Two Approaches

As an example of these initiatives, we share information with our customers through our Energy-saving Support Site, etc. This information includes power-saving advice related to how best to use our products, as well as examples of the successful introduction of products and services that contribute to reducing environmental impact.

Recovery/Recycling of Used Home Appliances at a Specialized Recycling Plant

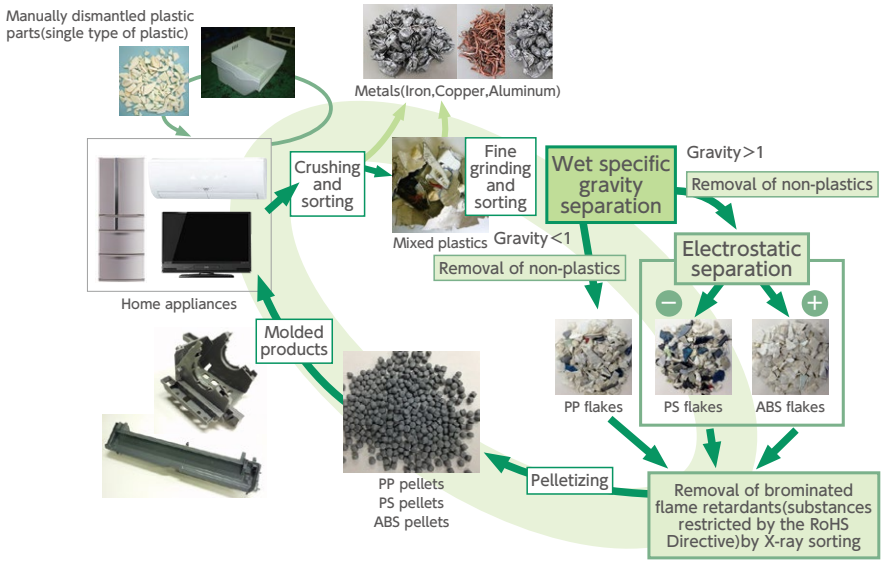
Coinciding with the enforcement of the Home Appliance Recycling Law, Hyper Cycle Systems Corporation commenced operations in Ichikawa City, Chiba Prefecture in May 1999 as the industry's first recycling plant, and has since engaged in recycling home appliances. Information obtained from this plant is fed back to product designs, to enhance the recyclability of products and to contribute to environmental conservation.

Learn more about the Mitsubishi Electric Group's home appliance recycling efforts and performance on the following website.

Closed-loop Recycling of Plastic

Since 2010, the Mitsubishi Electric Group has been fully implementing "closed-loop recycling," in which plastic recovered from used home appliances is reused in Mitsubishi Electric's new home appliance products.

Plastics are sorted by Green Cycle Systems Corporation, which utilizes Mitsubishi Electric's original technology to recycle mixed plastics into high-purity plastics that are equivalent to virgin materials.



The mixed plastic after crushing waste home appliances is recovered in high purity for each type of plastic through sorting processes such as specific gravity separation, electrostatic separation, and X-ray sorting, and is used again for new home appliances.

Flow chart of the Mitsubishi Electric Group's closed-loop recycling of plastic

For detailed information on closed-loop recycling, see the website "The Secret behind Plastic Recycling."

The Secret behind Plastic Recycling

Biodiversity Preservation Activities

Biodiversity Action Guidelines

The Earth's ecosystem is made up of diverse living organisms. All aspects of human civilization benefit from this ecosystem, but at the same time, we affect it in both direct and indirect ways. Today, damage to the ecosystem is said to be driving many species to extinction and otherwise eroding biodiversity.

In recognition of this, the Mitsubishi Electric Group has established Biodiversity Action Guidelines, which add the perspective of biodiversity as a means for living in harmony with nature to the Group's conventional measures against climate change and environmental activities aimed at achieving resource recycling. These guidelines define the role of business activities in preserving biodiversity, and outline the Group's efforts toward the development of a sustainable society through its business activities.

Resources & Procurement

Recognizing that we utilize globally procured natural resources such as minerals, fuels and plants, we shall aim to preserve biodiversity in Japan and around the world by carrying out green procurement activities.

Product Design

In designing our products and services, we shall promote the effective utilization of resources and the efficient use of energy, as well as aim to prevent the emission of substances that pose a risk to the environment.

Manufacturing & Transportation

When commencing or making changes to land use, such as when constructing factories or warehouses, we will give due consideration to protecting the biodiversity of the land in question. In manufacturing and transportation, we aim to minimize energy use, waste generation and the emission of chemical substances.

Sales, Usage & Maintenance

In our sales activities, we will work to promote better understanding among our customers of the impact that product/service usage and maintenance can have on biodiversity.

Collection & Recycling

We will actively develop recycling technologies and apply them to collected end-of-life products.

Understanding & Action

We will deepen our understanding of the importance of biodiversity and our relationship to it, and will actively and voluntarily take actions necessary to coexist in harmony with nature.

Cooperation

All companies in the Mitsubishi Electric Group, including overseas affiliates, will act as one, in cooperation with local communities, NGOs and governments.

Biodiversity Preservation Measures at Business Sites

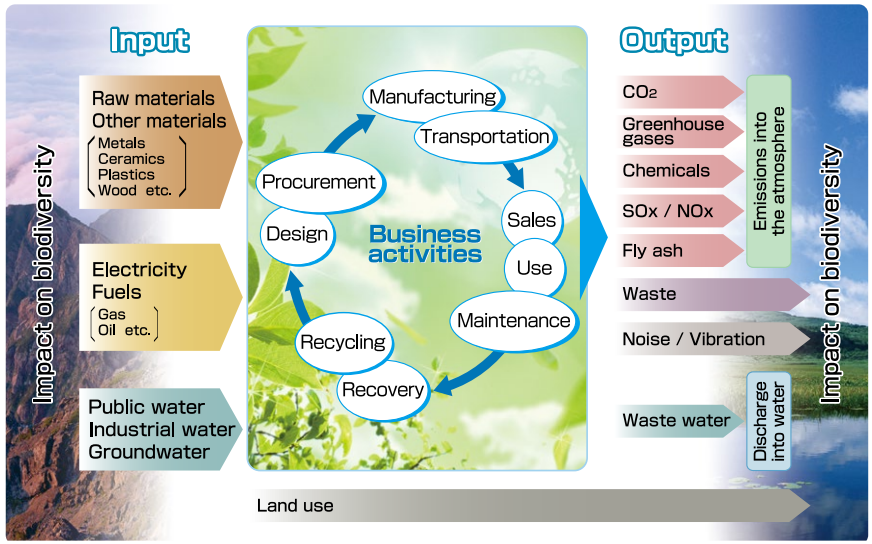
All human activities benefit from the workings of a wide variety of organisms living on earth. At the same time, various activities by human beings are destroying ecosystems and are otherwise having serious effects on biodiversity. Now, at a time when the extinction of many species is being reported, biodiversity preservation is a shared issue for all humanity.

In 2010, the Mitsubishi Electric Group introduced the Biodiversity Action Guidelines. These guidelines have two main features: (1) they include the pledge of every Mitsubishi Electric Group employee to understand the relationship between business activities and biodiversity in order for the Group to consider biodiversity in all of its business activities; and (2) they are structured according to each stage of the product lifecycle to facilitate this. Furthermore, in Environmental Sustainability Vision 2050, which was set forth in June 2019, "Coexistence with Nature," including biodiversity preservation activities, is recognized as one of the key activities leading up to 2050. Through these activities, we are striving to live in harmony with nature while also interacting with local communities.

Visualizing the Relationship between Business Activities and Biodiversity to Implement Proper Action

To deepen employee understanding of biodiversity, Mitsubishi Electric has summarized the relationship between the company's business activities and biodiversity in a chart as shown on the following page. Using this chart, the Mitsubishi Electric Group's business sites both in Japan and overseas are renewing their awareness of relations between their own business activities and the biodiversity and natural environment of their surrounding region, and are linking this awareness to concrete actions that contribute to communication with local communities and to the preservation of biodiversity.

Relationship between Business Activities and Biodiversity



Biodiversity Preservation Activities

Activity	Purpose	Details
Mitsubishi Electric Outdoor Classroom Mitsubishi Electric Outdoor Classroom	Foster environmental awareness among employees	In natural classroom settings such as woodlands, parks, waterways, and seacoasts, employees who serve as leaders invite families to experience nature to learn about the interrelationship between living creatures.
"Satoyama" Woodland Preservation Project "Satoyama" Woodland Preservation Project	Contribute to society, drawing on the voluntary efforts of employees	Employees strive to restore parks, woodlands, rivers, and other natural areas located close to business sites.
Preserving biodiversity at business sites Preserving biodiversity at business sites	Activities centered around co-existence with nature carried out at business sites	Confirmation and appropriate management of rare species, endemic species, and non-native species; promotion of co-existence with nature; and gaining an understanding of our involvement with the surrounding natural environment.

Aiming for a Higher Level of Activities

The Mitsubishi Electric Group engages in initiatives that give specific consideration to all species of living creatures. These initiatives include the Mitsubishi Electric Outdoor Classroom, the Satoyama Woodland Preservation Project, and measures to reduce the impacts of development pressure*1 and alien species pressure*2 on ecosystems. As the basis of these initiatives, we have been promoting a biodiversity preservation policy at business sites since fiscal 2015, with a focus on improving the quality of greenery within the premises of all business sites. The policy aims for all employees to make a direct contribution to regional/urban ecosystems in areas around their site by working to preserve biodiversity at their own workplace. It also encourages employees to take positive and voluntary action by regarding biodiversity as a personally relevant issue.

As these initiatives have spread to a certain extent, in fiscal 2020, we embarked on establishing a structure to consistently step up our activities. In March 2020, an internal technical committee formulated the Biodiversity Guidelines (a check sheet). Since then, the implementation level of activities and the quality of greenery at each business site in Japan have been assessed in numbers for quantitative monitoring. In fiscal 2022, we implemented these guidelines on a trial basis with a view to introducing them to affiliated companies across Japan. At the same time, we calculated the rates of improvement in assessment over the base year, and made the results of these improvements and refinements visible in this way every year, to firmly establish our ecosystem improvement activities.

*1 Development pressure: An action resulting in the destruction of habitats. The construction of a new business site and development (including that in the supply chain) intended to extract natural resources are deemed as such behaviors. One such example is when the use of water by operations affects the surrounding area, the source of water, and subsequently the habitats of living creatures.

*2 Alien species pressure: When ditches, greenery at the side of buildings, and hedges are created, non-native species of insects, vegetation, etc. may be introduced. The unintentional transfer of living creatures could pose a threat to the habitats of indigenous species or trigger genetic pollution.

Improving Enterprise Value through a Long-term Commitment to Environmental Initiatives

The destruction of the global ecosystem by human activities is the essence of environmental issues. Biodiversity preservation is essential for the continued existence of us human beings, and should be prioritized in all human activities. This is now a prevalent belief, as also clearly expressed in the Aichi Target*1 and the National Biodiversity Strategy of Japan*2 2012–2020.

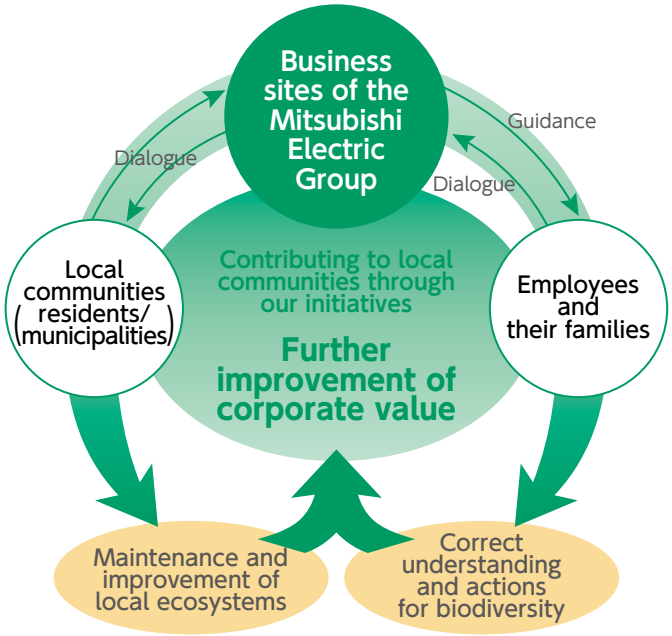
As it takes many years to maintain and enhance biodiversity, steady and continuous efforts are required.

The Mitsubishi Electric Group is committed to contributing to the achievement of the Aichi Target and attainment of the SDGs *3, and to implementing biodiversity preservation activities as part of its business activities. Through initiatives related to the above, we will further contribute to preserving regional ecosystems, and by earning respect and trust from local communities, we will strive to improve our corporate value.

*1 Aichi Target: Global target adopted by the 10th meeting of the Conference of the Parties to the Convention of Biological Diversity (COP 10) held in October 2010.

*2 National Biodiversity Strategy of Japan: Japan's baseline plan regarding the preservation and sustainable use of biodiversity, based on the Biodiversity Treaty and the Biological Diversity Act.

*3 SDGs (Sustainable Development Goals): Sustainable development goals to be achieved by 2030 included in the 2030 Agenda for Sustainable Development adopted by the United Nations General Assembly in September 2015.



Activities Contributing to Local Ecosystems

Improving the Quality of Greenery in Line with Three Courses of Action

The Mitsubishi Electric Group has set forth three courses of action as guidelines for all business sites. They are: (1) reducing negative impact on living creatures, (2) aiming for a richer symbiosis with other living creatures, and (3) restoring the relationship between employees and nature in the working environment. At each business site, action plans provide for the preservation of local indigenous species, control of alien species, and development of green space in consideration of the surrounding ecosystem, to ensure these initiatives are steadily addressed in all businesses

Three Courses of Action

Courses of Action	Examples	
A Reducing negative impact on living creatures	1. Control development pressure and alien species pressure*	(1) Assessment of impacts on living creatures
		(2) Alien species control
	2. Call attention to and preserve rare species and endemic species	(1) Disclosure of list of living creatures on premises
		(2) Preservation of rare species and endemic species
		(3) Cooperation in regards to conservation issues for surrounding areas
	3. Manage pesticides, preserve greenery and natural resources	(1) Control the killing/harming of living creatures
		(2) Consideration to natural resources, such as water and soil
B Aiming for more fruitful symbiosis with other living creatures	4. Set up functional greenery	(1) System to manage green space
		(2) Management of land used by flying organisms
		(3) Development of priority land for greenery and living creatures
		(4) Provision of continuity of greenery with areas surrounding business sites
		(5) Contribution to biodiversity preservation activities in areas surrounding business sites
	5. Break away from agricultural orientations such as simplifying/specifying greenery	(1) Diversification/multi-stratification of vegetation
		(2) Management of greenery that accords with the characteristics of plants, etc.
		(3) Contribution/consideration to regions
C Restoring the relationship between employees and nature in the working environment	6. Proactively utilize ecosystem services in the workplace (break rooms, individual floors)	(1) Provision and utilization of opportunities for cultural services
		(2) Provision and utilization of opportunities for supply services
	7. Change situation from everyone being disinterested and unrelated to everyone being involved	(1) Education for understanding and promoting action
		(2) Creation of relationships through the workplace or work duties

* Activities are carried out pursuant to the regulation on raising, planting, storing, carrying, or other handling of specified IAS in the Invasive Alien Species Act.

Environmental Data

Material Balance

Manufacturing (Input)

	FY 2020	FY 2021	FY 2022
■ Manufacturing			
Materials*1 (Weight of all products sold + Weight of packaging materials + Waste emissions)	2,660 kt	2,420 kt	2,570 kt
Total energy input*2*3	19,960,000 GJ	19,030,000 GJ	21,150,000 GJ
Electricity	1,818 GWh	1,740 GWh	1,912 GWh
Traditional electric power	1,795 GWh	1,715 GWh	1,870 GWh
Electric power from renewable energy sources	22 GWh	25 GWh	42 GWh
City gas	37,220,000 m³	34,930,000 m³	37,960,000 m³
LPG	3,617 tons	3,725 tons	3,989 tons
Oil (crude oil equivalent)*3	11,725 kl	10,484 kl	19,811 kl
Other greenhouse gases	7,611 tons	6,720 tons	8,217 tons
Water usage	15,640,000 m³	14,860,000 m³	15,200,000 m³
Intake	11,000,000 m³	10,310,000 m³	10,730,000 m³
Reuse	4,650,000 m³	4,550,000 m³	4,470,000 m³
Chemical substances			
Controlled chemical substances (amounts handled)*4	3,731 tons	3,727 tons	3,153 tons
Volatile organic compounds	2,664 tons	2,408 tons	2,123 tons

*1 Total value for shipping weight of products, plus amount of product packaging materials used, plus total amount of waste.

*2 Includes electricity, city gas, LPG, oil, etc.

*3 Figures for FY2020 and FY2021 have been re-calculated to include commercial vehicles and other company-owned vehicles (FY2020 and FY2021 include the numbers of such vehicles for sites in Japan only; FY2022 includes the numbers for sites in Japan and overseas).

*4 Japan: Substances subject to Japan' s PRTR law. Overseas: Controlled chemical substances designated by Mitsubishi Electric and used in amounts of 18 kg or more.

Manufacturing (Output)

	FY 2020	FY 2021	FY 2022
■ Products			
Weight of all products sold*5	2,303 kt	2,111 kt	2,249 kt
Weight of packaging materials*6	149 kt	124 kt	137 kt
Japan	62 kt	56 kt	59 kt
Overseas	87 kt	68 kt	78 kt
■ Emissions (from manufacturing)			
Emissions into the atmosphere			
Greenhouse gas emissions (CO_2-equivalent)	1,129 kt-CO_2	1,048 kt-CO_2	1,161 kt-CO_2
CO_2*7*9	975 kt-CO_2	923 kt-CO_2	1,033 kt-CO_2
HFCs*8*9	49 kt-CO_2	37 kt-CO_2	35 kt-CO_2
PFCs*8*9	22 kt-CO_2	22 kt-CO_2	24 kt-CO_2
SF_6*8*9	84 kt-CO_2	67 kt-CO_2	68 kt-CO_2
Chemical substances			
Controlled chemical substances*4	791 tons	814 tons	389 tons
Volatile organic compounds	946 tons	792 tons	645 tons
NOx	83 tons	25 tons	28 tons
SOx	1.0 tons	1.0 tons	0.6 tons
Discharge into water			
Water	8,620,000 m³	8,070,000 m³	8,390,000 m³
Chemical substances			
Controlled chemical substances*4	8.0 tons	8.0 tons	7.2 tons
BOD	98 tons	101 tons	65 tons
COD	131 tons	109 tons	57 tons
■ Waste			
Emissions	210,168 tons	187,137 tons	183,959 tons
Non-hazardous waste	197,560 tons	181,689 tons	182,520 tons
Hazardous waste	12,607 tons	5,448 tons	1,439 tons
Waste treatment subcontracted out	110,954 tons	101,605 tons	84,639 tons
In-house weight reduction	550 tons	757 tons	824 tons
Amount recycled	159,340 tons	147,258 tons	69,984 tons
Final disposal	311 tons	121 tons	1,562 tons
Japan	16 tons	28 tons	445 tons
Overseas	295 tons	93 tons	1,117 tons
Final waste disposal ratio (Japan)	0.01 %	0.02 %	0.24 %
Final waste disposal ratio (Overseas)	0.4 %	0.1 %	1.3 %

*5 Shipping weight of products.

*6 Total of disposable and returnable packaging materials.

*7 CO_2 emission coefficient for electricity calculated in reference to: <Japan> the latest figures published by the Federation of Electric Power Companies; <Overseas> the latest figures published by International Energy Agency.

*8 Global Warming Potential (GWP) for greenhouse gases other than CO_2 is calculated in reference to figures published in the IPCC 2nd Evaluation Report (1995).

*9 Figures for FY2020 and FY2021 have been re-calculated.

Transporting (Input)

	FY 2020	FY 2021	FY 2022
■ Sales and Logistics*10			
Fuel for trucks (gasoline)	12,240 kl	5,679 kl	5,725 kl
Japan	12,134 kl	5,675 kl	5,725 kl
Overseas	106 kl	4.0 kl	0.0 kl
Fuel for trucks (diesel)	55,640 kl	55,635 kl	57,549 kl
Japan	32,174 kl	41,969 kl	46,954 kl
Overseas	23,466 kl	13,666 kl	10,595 kl
Fuel for rail (electricity)	1.8 GWh	1.4 GWh	1.3 GWh
Japan	1.8 GWh	1.4 GWh	1.3 GWh
Overseas	0.0 GWh	0.0 GWh	0.0 GWh
Fuel for marine transport (bunker oil)	74,323 kl	60,037 kl	81,494 kl
Japan	454 kl	525 kl	377 kl
Overseas	73,869 kl	59,512 kl	81,117 kl
Fuel for air transport (jet fuel)	17,959 kl	20,833 kl	44,838 kl
Japan	624 kl	511 kl	602 kl
Overseas	17,335 kl	20,322 kl	44,236 kl

*10 Figures for overseas affiliated companies include transportation between countries.

Transporting (Output)

	FY 2020	FY 2021	FY 2022
■ Emissions*11 *12			
CO_2	435 kt-CO_2	384 kt-CO_2	512 kt-CO_2
Japan	115 kt-CO_2	124 kt-CO_2	138 kt-CO_2
Overseas	320 kt-CO_2	260 kt-CO_2	375 kt-CO_2

*11 Figures for overseas affiliated companies include transportation between countries.

*12 The sum of these figures and CO_2 emissions from procurement/logistics (1 kt-CO_2) make up Scope 3 Category 4 emissions (see next page).

Using (Input)

	FY 2020	FY 2021	FY 2022
■ Energy Consumption			
Energy consumed during product use*13	395,754 GWh	306,806 GWh	300,846 GWh

Using (Output)

	FY 2020	FY 2021	FY 2022
■ Emissions			
Greenhouse gas emissions during product usage (CO_2-equivalent)*14*15	204,225 kt-CO_2	152,794 kt-CO_2	148,292 kt-CO_2

*13 Sum of CO_2 emitted when using 76 finished products targeted for CO_2 reduction. The amount of CO_2 emitted is equal to the energy consumed multiplied by the CO_2 emissions coefficient, for which the value shown in CO_2 Emissions from Fuel Combustion Highlights (2013 Edition) is used.

*14 CO_2 emission during product usage (CO_2 equivalent): Sum of CO_2 emitted during the operation of final products. CO_2 emission coefficient for electricity calculated in reference to: <Japan> the latest figures published by the Federation of Electric Power Companies; <Overseas> the latest figures published by International Energy Agency.

*15 Figures for FY2020 and FY2021 have been re-calculated.

Reducing Greenhouse Gases Emitted in the Value Chain

The "★" symbol denotes Mitsubishi Electric Group greenhouse gas emissions for which third-party verification has been carried out by SGS Japan Inc.

Scope / Category	Accounting (kt-CO_2) (Bottom row: Total emission ratio) FY 2020	FY 2021	FY 2022	Accounting Summary*1
Scope 1: Direct emissions from fuel use and industrial processes at our company*2*3				
	280 (0.1%)	242 (0.1%)	★276 (0.2%)	
Scope 2: Indirect emissions associated with use of electricity and heat purchased by our company*4				
Market based	775	732	★819	Calculated using the power emission coefficient based on the contract
Location based*3	850 (0.4%)	806 (0.5%)	★885 (0.6%)	Calculated using the average emission coefficient of power generated in the area
Scope 1 + Scope 2 (Location based)	1,129 (0.5%)	1,048 (0.6%)	★1,161 (0.7%)	Coverage: 99% (energy usage based)
Scope 3: Indirect emissions outside the scope of our company's operational activities*4				
Category 1 Purchased goods and services*5	8,459 (3.9%)	9,454 (5.8%)	★10,099 (6.3%)	Emissions associated with activities up to the manufacturing of materials, etc. relating to raw materials, parts, purchased products, and sales*6
Category 2 Capital goods	672 (0.3%)	334 (0.2%)	★549 (0.3%)	Emissions generated by the construction and manufacturing of own capital goods
Category 3 Fuel- and energy-related activities*5	153 (0.1%)	146 (0.1%)	★166 (0.1%)	Emissions associated with procurement of fuel necessary for power generation, heat supply, etc. and power such as electricity supplied by other parties
Category 4 Upstream transportation and distribution	430 (0.2%)	386 (0.2%)	★513 (0.3%)	Emissions associated with logistic processes up to the delivery to our company of materials, etc. relating to raw materials, parts, purchased products, and sales*7
Category 5 Waste generated in operations	0.4 (0.0%)	0.4 (0.0%)	★0.4 (0.0%)	Emissions associated with transporting and processing waste produced by our company*8
Category 6 Business travel*5	33 (0.0%)	4.8 (0.0%)	★6.1 (0.0%)	Emissions associated with employee business travel*9
Category 7 Employee commuting*5	41 (0.0%)	40 (0.0%)	★36 (0.0%)	Emissions associated with employees commuting to and from their respective workplaces*10
Category 8 Upstream leased assets	—	—	—	Emissions associated with operation of leased assets hired by our company (Calculated by Mitsubishi Electric under Scope 1 and Scope 2)
Category 9 Downstream transportation and distribution*5	6.1 (0.0%)	5.9 (0.0%)	★5.2 (0.0%)	Emissions associated with the transportation, storage, cargo handling and retailing of products
Category 10 Processing of sold products*5	1.7 (0.0%)	2.1 (0.0%)	★2.4 (0.0%)	Emissions associated with the processing of interim products by business operators
Category 11 Use of sold products*3*11	204,225 (94.9%)	152,794 (93.0%)	★148,292 (92.2%)	Emissions associated with the use of products by users (consumers/business operators)
Category 12 End-of-life treatment of sold products*5	5.3 (0.0%)	5.6 (0.0%)	★5.3 (0.0%)	Emissions associated with the transportation and processing of products for disposal by users (consumers/business operators)*6
Category 13 Downstream leased assets*11	14 (0.0%)	13 (0.0%)	★12 (0.0%)	Emissions associated with operation of leased assets
Category 14 Franchises	—	—	—	Emissions at companies operating as franchises (Not applicable to Mitsubishi Electric)
Category 15 Investments	45 (0.0%)	38 (0.0%)	★26 (0.0%)	Emissions associated with operation of investments
Scope 3 total	214,085 (99.5%)	163,223 (99.4%)	159,711 (99.3%)	
Total	215,215 (100.0%)	164,271 (100.0%)	160,872 (100.0%)	

*1 Excerpt from Basic Guidelines published by the Japan's Ministry of the Environment and Ministry of Economy, Trade and Industry.
*2 CO_2, SF6, HFCs, and PFCs emissions associated with the use of city gas, heavy oil, etc., and with product manufacturing.
*3 CO_2 emission coefficient for electricity calculated in reference to: <Japan> the latest figures published by the Federation of Electric Power Companies; <Overseas> the latest figures published by International Energy Agency.
*4 CO_2 emissions associated with the use of electricity, etc.
*5 Figures for FY2020 and FY2021 have been re-calculated using the CO_2 emission coefficient for each fiscal year specified in the "emission intensity database for calculating greenhouse gas emissions of the organization throughout the supply chain."
*6 Excludes some regions.
*7 CO_2 emissions associated with product distribution/circulation (sales distribution). Subject to accounting: 55 companies (production sites).
*8 CO_2 emissions associated with transportation of waste (waste distribution). Subject to accounting: Mitsubishi Electric.
*9 Results for Japan. Excludes CO_2 emissions associated with actual use of taxis and accommodation.
*10 Assuming that all employees use passenger rail services.
*11 Figures for FY2020 and FY2021 have been re-calculated to reflect a change in scope.

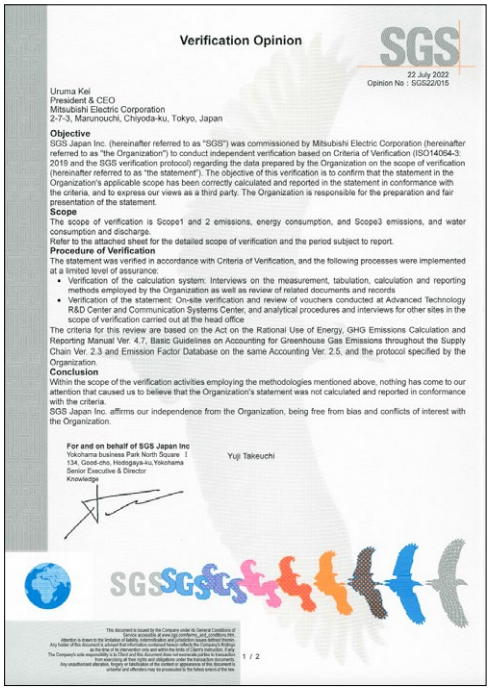
Amount of Water Intake/Drainage/Reuse

Unit: 10,000 m³

Item	Group	Japan*12	Overseas*13	China	Southeast Asia	Europe	US	Latin America
■ FY 2022 results								
Water usage (water intake plus reuse)	1,520	1,330	190	75	93	12	4.8	4.7
Intake	1,073	895	178	67	90	12	4.8	4.7
Surface water	307	206	101	21	76	1.6	0.0	2.8
Groundwater	534	531	2.7	0.0	2.2	0.5	0.0	0.0
Seawater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water discharged during development/mining processes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water purchased from third parties	233	158	74	46	12	10	4.8	1.9
Drainage volume	839	722	117	52	50	6.8	4.3	3.4
Surface water	393	393	0.1	0.0	0.0	0.1	0.0	0.0
Groundwater	4.3	2.9	1.3	0.3	0.0	0.5	0.1	0.4
Seawater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water discharged into third-party drainage facilities	441	326	115	52	50	6.1	4.2	3.0
Water reused	447	435	12	8.3	3.0	0.3	0.0	0.1
Water consumption (water intake minus drainage volume)	234	173	62	14	40	5.3	0.6	1.3
Reuse ratio (reused/used) (%)	29	33	6.1	11	3.3	2.2	0.0	1.1
Water usage per unit of sales (Water usage/sales) (m³/million yen)	3.40	—	—	—	—	—	—	—
■ FY 2021 results								
Water usage (water intake plus reuse)	1,486	1,314	172	74	87	2.8	4.8	3.6
Intake	1,031	873	158	64	83	2.6	4.8	3.6
Surface water	300	202	98	22	73	0.1	0.0	2.5
Groundwater	519	518	0.7	0.0	0.7	0.0	0.0	0.0
Seawater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water discharged during development/mining processes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water purchased from third parties	213	153	60	42	9.0	2.5	4.8	1.1
Drainage volume	807	699	108	50	49	1.3	4.8	2.9
Surface water	392	392	0.0	0.0	0.0	0.0	0.0	0.0
Groundwater	3.8	2.9	0.8	0.3	0.0	0.1	0.0	0.4
Seawater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water discharged into third-party drainage facilities	411	303	107	50	49	1.2	4.8	2.5
Water reused	455	441	14	9.7	3.8	0.2	0.0	0.0
Water consumption (water intake minus drainage volume)	225	175	50	14	34	1.3	0.0	0.7
Reuse ratio (reused/used) (%)	31	34	8.0	13	4.3	7.1	0.0	1.1
Water usage per unit of sales (Water usage/sales) (m³/million yen)	3.55	—	—	—	—	—	—	—
■ FY 2020 results								
Water usage (water intake plus reuse)	1,564	1,366	199	81	108	1.6	5.2	3.4
Intake	1,100	912	188	74	104	1.6	5.2	3.3
Surface water	337	211	127	31	93	1.1	0.0	1.8
Groundwater	536	535	0.9	0.0	0.9	0.0	0.0	0.1
Seawater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water discharged during development/mining processes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water purchased from third parties	226	166	60	43.2	9.7	0.6	5.2	1.3
Drainage volume	862	733	129	62	58	1.4	5.2	2.4
Surface water	408	408	0.0	0.0	0.0	0.0	0.0	0.0
Groundwater	2.7	1.7	1.0	0.4	0.0	0.1	0.0	0.4
Seawater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water discharged into third-party drainage facilities	451	323	128	62	58	1.3	5.2	1.9
Water reused	465	454	11.0	6.9	4.2	0.0	0.0	0.0
Water consumption (water intake minus drainage volume)	238	179	59	12	46	0.2	0.0	0.9
Reuse ratio (reused/used) (%)	30	33	5.6	8.5	3.9	0.0	0.0	0.7
Water usage per unit of sales (Water usage/sales) (m³/million yen)	3.50	—	—	—	—	—	—	—

*12 Sum of Mitsubishi Electric Corporation (non-consolidated) and affiliated companies in Japan.
*13 Includes overseas sites in areas other than China, Southeast Asia, Europe, America, or Latin America (water usage is less than 0.1% of the total).

Verification Statement



Verification Opinion

SGS

22 July 2022
Opinion No : SGS22/015

Uruma Kei
President & CEO
Mitsubishi Electric Corporation
2-7-3, Marunouchi, Chiyoda-ku, Tokyo, Japan

Objective

SGS Japan Inc. (hereinafter referred to as "SGS") was commissioned by Mitsubishi Electric Corporation (hereinafter referred to as "the Organization") to conduct independent verification based on Criteria of Verification (ISO14064-3: 2019 and the SGS verification protocol) regarding the data prepared by the Organization on the scope of verification (hereinafter referred to as "the statement"). The objective of this verification is to confirm that the statement in the Organization's applicable scope has been correctly calculated and reported in the statement in conformance with the criteria, and to express our views as a third party. The Organization is responsible for the preparation and fair presentation of the statement.

Scope

The scope of verification is Scope1 and 2 emissions, energy consumption, and Scope3 emissions, and water consumption and discharge.
Refer to the attached sheet for the detailed scope of verification and the period subject to report.

Procedure of Verification

The statement was verified in accordance with Criteria of Verification, and the following processes were implemented at a limited level of assurance:

- Verification of the calculation system: Interviews on the measurement, tabulation, calculation and reporting methods employed by the Organization as well as review of related documents and records
- Verification of the statement: On-site verification and review of vouchers conducted at Advanced Technology R&D Center and Communication Systems Center, and analytical procedures and interviews for other sites in the scope of verification carried out at the head office

The criteria for this review are based on the Act on the Rational Use of Energy, GHG Emissions Calculation and Reporting Manual Ver. 4.7, Basic Guidelines on Accounting for Greenhouse Gas Emissions throughout the Supply Chain Ver. 2.3 and Emission Factor Database on the same Accounting Ver. 2.5, and the protocol specified by the Organization.

Conclusion

Within the scope of the verification activities employing the methodologies mentioned above, nothing has come to our attention that caused us to believe that the Organization's statement was not calculated and reported in conformance with the criteria.
SGS Japan Inc. affirms our independence from the Organization, being free from bias and conflicts of interest with the Organization.

For and on behalf of SGS Japan Inc
Yokohama business Park North Square 1
134, Good-cho, Hodogaya-ku, Yokohama
Senior Executive & Director
Knowledge

Yuji Takeuchi

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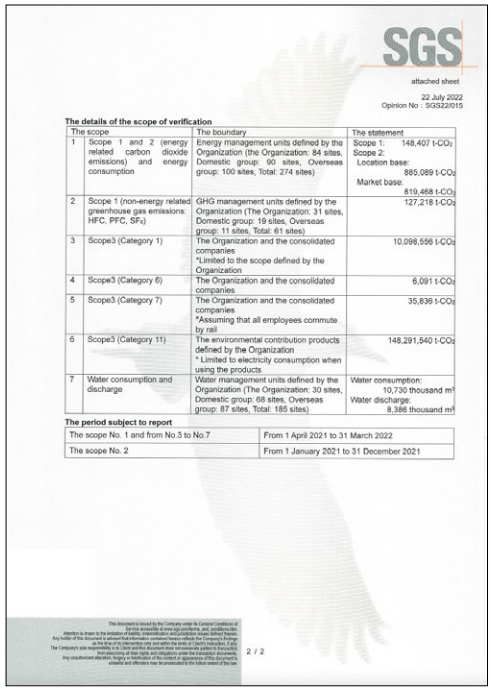

SGS

attached sheet

22 July 2022
Opinion No : SGS22/015

The details of the scope of verification

The scope		The boundary	The statement
1	Scope 1 and 2 (energy related carbon dioxide emissions) and energy consumption	Energy management units defined by the Organization (the Organization: 84 sites, Domestic group: 90 sites, Overseas group: 100 sites, Total: 274 sites)	Scope 1: 148,407 t-CO_2 Scope 2: Location base: 885,089 t-CO_2 Market base: 819,468 t-CO_2
2	Scope 1 (non-energy related greenhouse gas emissions: HFC, PFC, SF_6)	GHG management units defined by the Organization (The Organization: 31 sites, Domestic group: 19 sites, Overseas group: 11 sites, Total: 61 sites)	127,218 t-CO_2
3	Scope3 (Category 1)	The Organization and the consolidated companies *Limited to the scope defined by the Organization	10,098,556 t-CO_2
4	Scope3 (Category 6)	The Organization and the consolidated companies	6,091 t-CO_2
5	Scope3 (Category 7)	The Organization and the consolidated companies *Assuming that all employees commute by rail	35,836 t-CO_2
6	Scope3 (Category 11)	The environmental contribution products defined by the Organization * Limited to electricity consumption when using the products	148,291,540 t-CO_2
7	Water consumption and discharge	Water management units defined by the Organization (The Organization: 30 sites, Domestic group: 68 sites, Overseas group: 87 sites, Total: 185 sites)	Water consumption: 10,730 thousand m^3 Water discharge: 8,386 thousand m^3

The period subject to report

The scope No. 1 and from No.3 to No.7	From 1 April 2021 to 31 March 2022
The scope No. 2	From 1 January 2021 to 31 December 2021

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Environmental Accounting

Environmental Conservation Costs

Unit: 100 million yen

		FY 2020		FY 2021		FY 2022		Main Costs
		Capital Investment	Costs	Capital Investment	Costs	Capital Investment	Costs	
Business area activities		53	72	42	68	52	64	
	Pollution prevention	1.8	14	2.6	14	6.6	12	Updating of processing facilities for emissions, sewage water, deodorization, etc.
	Global environmental conservation	47	30	35	25	39	25	Updating of air conditioning equipment, switch to low fuel-consumption vehicles
	Resource recycling	4.3	28	5.0	29	6.2	27	Consignment of the disposal of waste, construction of additional recycling facilities
Upstream and downstream production		0.1	2.1	0.0	1.9	0.1	2.0	Sewage expenses, reduction of the environmental impact of packaging
Management activities		1.0	33	0.8	16	0.3	18	Personnel expenses, employee education
R&D activities		2.3	84	0.9	39	0.8	26	Improvement of energy/resources efficiency, designs to reduce size and weight
Community activities		0.0	1.1	0.0	0.5	0.0	0.6	Outdoor classrooms, Satoyama woodland preservation activities, cleaning and greening activities in the suburbs
Environmental damage countermeasures		0.2	0.3	0.0	0.2	0.0	0.2	Purification of contaminated soil/groundwater, measuring contamination levels
Total		57	192	44	126	54	111	

Environmental Conservation Benefits

Unit: 100 million yen

	FY 2020	FY 2021	FY 2022	Main Costs
Earnings	35	37	68	Profit on sale of valuable materials (mainly metals)
Savings	9.8	6.8	13	Results of energy savings, reuse of materials/water, and introduction of equipment to reduce the input of resources
Total	45	44	81	