Message from the Environmental Compliance Administrator

Focusing efforts on preventing global warming and resource recycling

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The focus on the Sustainable Development Goals (SDGs) set by the United Nations and the Paris Agreement, through which a number of countries have allied together to work towards global warming prevention, indicates the seriousness of issues surrounding the environment and energy worldwide. In addition, Panasonic considers the declaration by the Task Force on Climate-related Financial Disclosures (TCFD), set up by the Financial Stability Board (FSB) in response to a request by the G20 Finance Ministers and Central Bank Governors. By carrying out scenario analysis and being aware of the effects of identifying risks and opportunities on climate change, Panasonic has confirmed the resilience of the Group’s strategy.

Since its founding, the Panasonic Group has had as its corporate philosophy the idea of contributing to the development of peoples’ lives and society, and has been actively addressing global environmental issues. In 2017 the Company formulated the Panasonic Environment Vision 2050, a goal that requires the Company to work towards the creation and more efficient utilization of energy that exceeds the amount of “energy used” in order to balance the demands for better lifestyles with the need to ensure a sustainable global environment. In addition, the Company formulated the Green Plan 2021 with focus on “energy” and “resources,” which are material to realize Environment Vision 2050. Panasonic will accelerate the development of products, technologies, and solutions related to the four viewpoints of energy creation, energy saving, energy storage, and energy management.

First, in the initiative for reducing “energy used,” Panasonic has made “the size of contribution toward energy savings” a goal within its main products, and is working on energy-saving designs. In production activities, the Company is working to achieve zero-CO₂ factories on a global basis. In fiscal 2019, plants in Japan, Belgium, and Brazil achieved zero-CO₂ factory status. Panasonic intends to build zero-CO₂ factories in other regions that will serve as models for those regions.

Next, in the initiative for expanding “energy created,” the Company is developing fuel cell technologies that use hydrogen as their energy source. At HARUMI FLAG, a new residential compound that will be built on the site of the Olympic Village for the Tokyo 2020 Games, pure hydrogen fuel cells will supply power for the street lighting, information infrastructure and security systems. In addition, city gas will be refined to create hydrogen that will be used to power household fuel cells in each residential unit (approx. 4,000).

On the other hand, for “resources,” as customers lifestyles change from “own” to “use,” the Panasonic Group is aiming to create circular economy businesses such as a sharing service whereby a single product is shared by multiple persons, and a repair/maintenance, refurbishing, and remanufacturing business that makes the maximum use of the functions, values, and lifespans of both products themselves and the parts used in them by recycling and reusing them.

Through initiatives like these, Panasonic is aiming to achieve Environment Vision 2050 by expanding and accelerating its initiatives related to energy and resources.
Initiatives towards the Environment

Environmental sustainability management

Vision and action plan
In the Panasonic Environment Vision 2050 formulated by the Panasonic Group, Panasonic will endeavor to make “energy created” exceed “energy used” toward the year 2050.

“Energy used” refers to the energy used in our operation, and energy used when products are used by our customers. “Energy created” refers to clean energy that is created and/or made available by Panasonic products and services, such as photovoltaic power generation systems, storage batteries, and energy solutions.

The Green Plan 2021, an environmental action plan formulated towards realizing Panasonic Environment Vision 2050, lays out clearly the targets that need to be achieved within the three years until 2021 and the action plan for all employees.

Panasonic Environment Vision 2050
To achieve “a better life” and “a sustainable global environment,” Panasonic will work towards creation and more efficient utilization of energy which exceeds the amount of energy used, aiming for a society with clean energy and a more comfortable lifestyle.

Environmental Action Plan “Green Plan 2021” (Extract)

<table>
<thead>
<tr>
<th>Category</th>
<th>2021 targets (fiscal 2022)</th>
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</thead>
<tbody>
<tr>
<td>Energy</td>
<td>Increase the ratio of total energy created to total energy used: Total energy created: total energy used = 1:8.5</td>
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<tr>
<td></td>
<td>Increase amount of energy created: Amount of energy created: 30,000 GWh or more</td>
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<td></td>
<td>Increase the size of contribution toward energy savings through products and services:</td>
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<tr>
<td></td>
<td>Size of contribution toward energy savings through products and services:</td>
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<tr>
<td></td>
<td>Direct: 25,000 GWh or more</td>
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<td></td>
<td>Indirect: 2,000 GWh or more</td>
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<td></td>
<td>Expand energy creation businesses</td>
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<td></td>
<td>Expand energy efficient products and service business, focusing on products and service utilizing IoT/AI</td>
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<tr>
<td>Factories</td>
<td>Promote zero-CO2 model factories:</td>
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<td></td>
<td>Establish model factory using advanced hydrogen technology</td>
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<td></td>
<td>Establish at least one zero-CO2 model factory in each region</td>
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<td>Increase the use of renewable energy through the generation of renewable energy on-site and procurement of renewable energy</td>
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<td></td>
<td>Renewable energy generated on our sites: 40,000 MWh or more</td>
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<td></td>
<td>Promote energy efficiency in production:</td>
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<td></td>
<td>Reduce energy loss through IoT</td>
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<td></td>
<td>Improve productivity through manufacturing innovation</td>
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<tr>
<td>Resources</td>
<td>Create circular economy business models</td>
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<td></td>
<td>Analysis of the development of circular economy options for existing businesses: 100%</td>
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<td></td>
<td>Reduce resource consumption and increase the use of sustainable materials:</td>
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<td></td>
<td>Recycled resin usage: 42,000 tons or more (2019 to 2021 total)</td>
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<td></td>
<td>Achieve Zero Waste Emissions from factories globally:</td>
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<tr>
<td></td>
<td>Factory waste recycling rate: 99% or more</td>
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Initiatives
In August 2019, Panasonic Corporation has joined RE100, the Climate Group’s global initiative bringing together the world’s most influential businesses committed to 100% renewable power. By 2050, Panasonic will switch the electricity used globally in its operations to 100% renewable energy, and aim for manufacturing that does not emit CO2.

Moreover, Panasonic is also participating in other initiatives. Based on the Recommendation by TCFD, Panasonic has identified climate change risks and opportunities, including for businesses that it judges are vulnerable to the effects of climate change, and analyzed our business based on the scenarios. The details are included in the Sustainability Data Book 2019.
Energy-related initiatives

Zero-CO₂ factories
In fiscal 2019, three manufacturing sites achieved zero-CO₂ factory status. By making these factories leading models and by gradually expanding the number of zero-CO₂ factories around the world, Panasonic will steadily promote manufacturing that does not emit CO₂.

Hydrogen energy
The Panasonic Group is using hydrogen as a new energy source as a way to bring about the carbon-free society the Japanese government has called for. To achieve a carbon-free society, Panasonic is contributing to creating a society that enjoys peace of mind because it uses clean energy.

HARUMI FLAG
The infrastructure of the urban area that will be built on the site of the Tokyo Olympic Village will be supplied with power from pure hydrogen fuel cells. Each future household will have its own fuel cell to generate power using hydrogen formed from city gas. Panasonic’s hydrogen energy technology will bring about a sustainable urban lifestyle.

Kusatsu Farm (Hydrogen station)
The hydrogen station in the grounds of the Kusatsu Factory produces hydrogen using electrolysis powered by renewable energy, then compresses and stores it. By supplying fuel-cell-powered forklifts, it contributes to making site logistics carbon-free.

Panasonic Energy Belgium
Panasonic Energy Belgium installed wind power generation systems in its factory, and has been utilizing electricity derived from renewable energy. It has also replaced purchased electricity with the electricity derived from renewable energy.

Panasonic Eco Technology Center
Panasonic Eco Technology Center has realized all operations using 100% electricity derived from renewable energy. The Panasonic Eco Technology Center also offsets the remaining CO₂ emissions derived from fossil fuel with carbon credits. Accordingly, Panasonic Eco Technology Center has become a zero-CO₂ factory.

Panasonic Brazil
Panasonic Brazil’s three factories in San Jose, Manaus, and Extrema have realized all manufacturing operations using 100% electricity derived from renewable energy, making them the first such for Panasonic.

Europe
Japan
South America
Resource-related initiatives

Cellulose fibers
As an initiative to reduce resin consumption, a compound resin that includes plant-derived cellulose fibers has been developed and commercialized.

An example of use in products is its use in the main body of the cordless stick vacuum cleaner that was launched in August 2018. By adding cellulose, it is possible to reduce the amount of resin used while maintaining both lightness and strength.

As an example of technical development, molding materials which contain a high 55% concentration of cellulose fibers have been developed. They can be easily made into different colors, and can be given a wood feel through the molding process. Panasonic is developing eco-friendly reusable cups in collaboration with Asahi Breweries, Ltd.

Circular economy
While evolving recycling-oriented manufacturing, Panasonic is engaged in creating circular-economy businesses.

The creation of circular-economy businesses, which aim for sustainable economic growth without having to rely on resource consumption, and initiatives to evolve recycling-oriented manufacturing through utilizing the latest in digital technology and new materials, are being promoted based on the concept of eco-design that maximizes value when used by customers. This will allow Panasonic to achieve both a better life and a sustainable global environment that are part of its Environment Vision 2050.

Refurbishing business
Panasonic Commercial Equipment Systems Co., Ltd. is constructing a refurbish scheme for refrigerators and freezers (showcases) installed in retail chains. Relatively new equipment that is discarded when a prosperous store is remodeled is refurbished and provided to aging stores within the same retail chain that still have older equipment.

This allows the overall retail chain to both increase its energy efficiency and effectively use resources.

![Showcases for supermarkets](image)

High-density cellulose fiber molding material

High degree of freedom of coloring

Low environmental impact beer cups “Tumbler in the forest”

Concept of activities for a circular economy

Achieving “a better life” and “a sustainable global environment”

Use

Production

Procurement

Design

Ecodesign

Creation of circular economy business

Sharing platform

Product as a service

Remanufacturing

Recycling

Evolution of recycle-oriented manufacturing

Utilization of sustainable materials

Reducing total resources used

Zero waste emission

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