Mitsubishi Electric Group
Environmental Sustainability Vision 2050
Image of How We Must Think of Future Societies

**Convenience/Abundance**
- Safe, comfortable lifestyles
- Expanding fields of activity
- Wide-ranging contact with others
- Living longer
- Improving productivity

**New values/lifestyles**
- Seeking sustainability

**What we have sacrificed**
- Contamination due to emissions
- Global warming
- Abnormal climate
- Depletion of resources
- Extinction of animals/plants

**Seeking material abundance**

**2019**
- Intensification of natural disasters
- Increased water shortages
- Stagnant economies due to resource depletion
- Biodiversity destroyed due to dramatic increase in garbage

**Improvement/Recovery**
- Emerging countries
- Advanced countries
- Industrial revolution
Aggravating Various Environmental Issues

Intensification of natural disasters due to increasing frequency of massive typhoons

Enormous influence of water shortages on general health and industries

Economic impact due to depletion of fossil fuel resources

Destruction of biodiversity due to dramatic increase in garbage
Various Social Changes and Issues Expected in the Future

1. Increasing pollution in emerging countries
   - Growth and change in geographical distribution of world population
   - Increasing food production and change in geographical distribution
   - Advancing technologies for DNA data storage/editing

2. Increasing water shortages
   - Frequent traffic accidents due aging society
   - Progress in technologies for communication/monitoring remote areas

3. Impact on economic growth due to resource depletion
   - Increasing number of chronic disease patients

4. Environmental deterioration in urban areas
   - Aging infrastructure in Japan, rising maintenance costs, and deterioration
   - Hollowing out of cities (sponge-like)

5. Dissemination of circular economy
   - Global development of urban housing and changes in the type of residence

6. Intensification of natural disasters leading to increasing economic loss worldwide
   - Development of emerging economies, and improving labor productivity

7. Impact of biodiversity destruction on primary industries
   - Development of scientific technologies, market expansion, and changes in industrial structure

8. Requiring recycling measures and expansion of urban mining
   - Damage to the environment due to tourism

9. Various Social Changes and Issues Expected in the Future
   - Frequent traffic accidents due aging society
   - Expanding middle-class groups
   - Changes in corporate management due to economic globalization
   - Diluting concept of nations and nationalities

10. Progress in technologies for communication/monitoring remote areas

11. Environmental deterioration in urban areas
    - Global development of urban housing and changes in the type of residence

12. Dissemination of circular economy
    - Changes in corporate management due to economic globalization

13. Impact of biodiversity destruction on primary industries
    - Development of emerging economies, and improving labor productivity

14. Intensification of natural disasters leading to increasing economic loss worldwide
    - Environmental deterioration in urban areas

15. Requiring recycling measures and expansion of urban mining
    - Damage to the environment due to tourism
Important Points for Future Environmental Activities

<table>
<thead>
<tr>
<th>Past</th>
<th>Future</th>
<th>Environmental Activities to Target</th>
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| **“Direct” viewpoint**  
Towards immediate environmental problems | **“Comprehensive” viewpoint**  
Overlooking various factors that cause environmental problems | Gather internal and external capabilities to solve complex issues |
| **“Short-term” satisfaction**  
Pursuing immediate convenience-profit | **“Long term” satisfaction**  
Looking ahead to future generations | Develop technologies and human resources that contribute to society on long-term basis |
| **Efforts focused on companies and organizations** | **Everyone on Earth takes initiative** | Share new values and lifestyles with all those involved |
Environmental Sustainability Vision 2050

Environmental Declaration

Protect the air, land, and water with our hearts and technologies to sustain a better future for all.

Three Environmental Action Guidelines

1. Apply diverse technologies in wide-ranging business areas to solve environmental issues
2. Challenge to develop business innovations for future generations
3. Publicize and share new values and lifestyles

Key Initiatives

- Climate Change Measures
- Resource Circulation
- Live in Harmony with Nature
- Long-term Activities
- Innovation
- Nurturing Human Resources
- Understanding Needs
- Co-create and Disseminate New Values
- Live in Harmony with the Region
Environmental Declaration

Protect the air, land, and water with our hearts and technologies to sustain a better future for all.

To solve various factors that lead to environment issues, the Mitsubishi Electric Group shall unite the wishes of each and every person, and strive to create new value for a sustainable future.
Three Environmental Action Guidelines

1. 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 recycling and coexisting harmoniously with nature.

2. 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.

3. 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.
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.

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 long-term goals based on international agreements, we will promote the reduction of greenhouse gases throughout the value chain, from procurement of raw materials and production through sales, distribution, use and disposal. At present, our target is to reduce CO₂ emissions 30% by 2030 and more than 80% by 2050.

3) Observing changes in the global environment, we will provide solutions that contribute to minimizing the risks of natural disasters.

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.

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.
Key Activities

2 Challenge to develop business innovations for future generations

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.
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.
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.

3 Publicize and share new values and lifestyles

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

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.
How the Mitsubishi Electric Group can contribute to a sustainable future
Business Group Contribution to a Sustainable Future

Three Environmental Action Guidelines

1. Apply diverse technologies in wide-ranging business areas to solve environmental issues
   - Power generation systems
   - Supervisory control systems

2. Challenge to develop business innovations for future generations
   - Factory automation equipment
   - Satellites
   - Power semiconductors

3. Publicize and share new values and lifestyles
   - Automotive equipment
   - Reduction of environmental burden from production

Mitsubishi Electric Business Groups

- Home electrical appliances
- Transportation systems
- Home appliance recycling
- Building facilities/systems
- Image-analysis solutions
Environmental Activities for a Sustainable Future

1. Apply diverse technologies in wide-ranging business areas to solve environmental issues

Mobility

- Safe and comfortable car life free from traffic accidents and congestion
- Safe and effective railway systems with high energy efficiency

Lifestyles

- Space harmonious with nature where high energy efficiency and amenity coexist
- Support next-generation communications with advanced technologies

Infrastructure

- Buildings and cities equipped with environment-friendly infrastructures
- Contribute to the supply of clean, safe water for all

Industry

- Thorough reduction of CO₂ and emissions from manufacturing processes
- Manufacturing that optimizes productivity, quality improvement, energy use, etc.
2 Challenge to develop business innovations for future generations

**R&D as a Result of Social Issues**

Well balanced short-, mid- and long-term R&D

**Next-generation Energy Systems**
(including virtual power plants, VPP)

- Wind-power generation
- Large-scale batteries
- DC power transmission
- Ocean-based wind power
- Interlinked batteries
- Stable substation frequency
- Power-stabilization equipment (EV, PHEV, FCV)
- DC power-supply systems
- Factories
- Railways
- ZEB
- V2B
- V2H
- ZEH

**Observation of global environment by satellite**

Observation for GHG, Air pollution

**Environmental contribution utilizing AI**

Study on AI utilization for diversifying environmental issues

**Development of high-level recycle technologies**

Effective use of plastics

*The Greenhouse gases Observing SATellite-2 "IBUKI-2" (GOSAT-2)*

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Environmental Activities for a Sustainable Future

3

Publicize and share new values and lifestyles

Environmental exhibitions

Communication with local communities

Discussions with experts

School visitation/lecturer dispatch

Satoyama conservation