

Environmental Management

We at Fuji Electric are united in tackling environmental issues based on our policy of contributing to society by developing our energy-related business globally.

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Message from the Environmental Officer

The main pillars of Fuji Electric's Environmental Vision 2020 are to stop global warming, create a recycling-oriented society, and meet our corporate social responsibilities. To achieve these aims, we will promote environmental management, and contribute to the protection of the global environment by providing energy-conserving and energy-creating products and technologies. We will also undertake proactive measures to reduce environmental impact through our own production activities.

We started the Smart Factory Initiative in fiscal 2012 to optimize energy use through coordination of electric and thermal energy technologies and production planning. Systems have been built for optimal coordination and control of production planning, multiple manufacturing facilities and multiple energy supply sources at four model factories in Kawasaki, Tokyo, Yamanashi and Mie. In fiscal 2014, we continued demonstrating the effectiveness of this new optimization system for energy consumption at the model factories and worked to steadily implement it at other plants in Japan.

At the Yamanashi Factory, we have been giving customers facility tours to introduce them to the new system. Customers get to see the actual system on site, and this has allowed us to make proposals based on field demonstration in line with the customer's particular requirements. As a result, this has produced a large number of formal inquiries and several orders.

Fuji Electric will pursue innovation in electric and thermal energy technologies to create energy-conserving and creating equipment and promote them globally, as well as contribute to the realization of a sustainable society.



Michio Abe
Corporate General Manager of
Production and Procurement Group
Director and Senior Managing
Executive Officer
Fuji Electric Co., Ltd.

Fuji Electric's Material Issues for Environmental Management

Fuji Electric brought together staff from its management planning, technology development and business divisions to identify and prioritize material issues in promoting environmental management based on our Basic Policies on Environmental Protection, from both stakeholder and corporate viewpoints.

In 2009, we established Environmental Vision 2020 to guide our medium-term activities. The vision sets forth the three important themes below, and establishes specific measures and targets for addressing them.



Viewpoints Incorporated in Identifying Material Issues



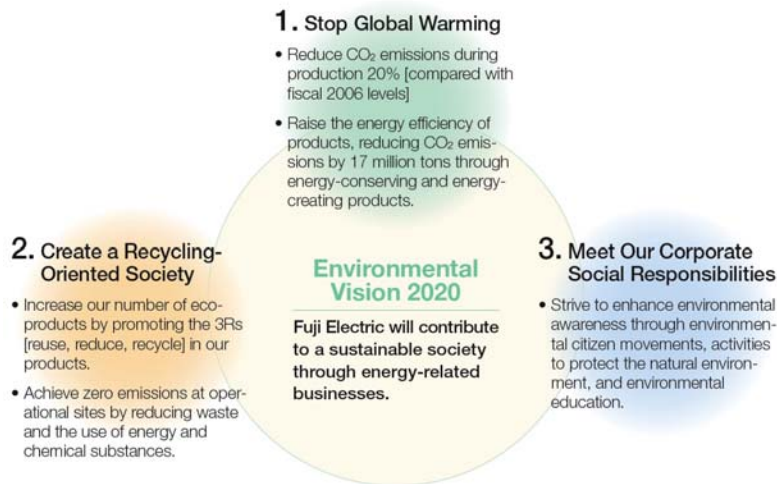
Environmental Vision 2020

This vision is centered on three specified material issues of stopping global warming, creating a recycling-oriented society, and meeting our corporate social responsibilities. In addition to reducing the environmental load of our own production activities, we also seek to achieve a sustainable society by providing products and technologies that leverage our strengths in energy technologies. Our main initiatives under the issue of stopping global warming are to reduce CO₂ emissions during production by 20% in fiscal 2020 compared with the fiscal 2006 level of 381,000 tons, while reducing society's CO₂ emissions by 17 million tons by expanding sales of energy-saving and energy-creating products.

The cutting-edge technology of energy management efforts realized through CO₂ emission reduction activities at our factories will be incorporated into products in order to aid customers in their own CO₂ emission reduction activities.

Meanwhile, we continue to address to two major tasks with regard to production materials as part of our efforts for creating a recycling-oriented society. The first task is to realize overall reductions in the amounts of materials and parts used and waste emitted during production activities. In order to accomplish this objective, we are working to make product designs more compact, lightweight, and efficient while simultaneously reducing the amount of defective products created through manufacturing processes by implementing quality management initiatives. The second task is to achieve zero emissions by improving recycling rates. To address this task, we strive to guarantee that waste is properly separated in order to increase the portion of waste that is recycled and thereby work to reduce the amount of waste sent to final disposal to zero.

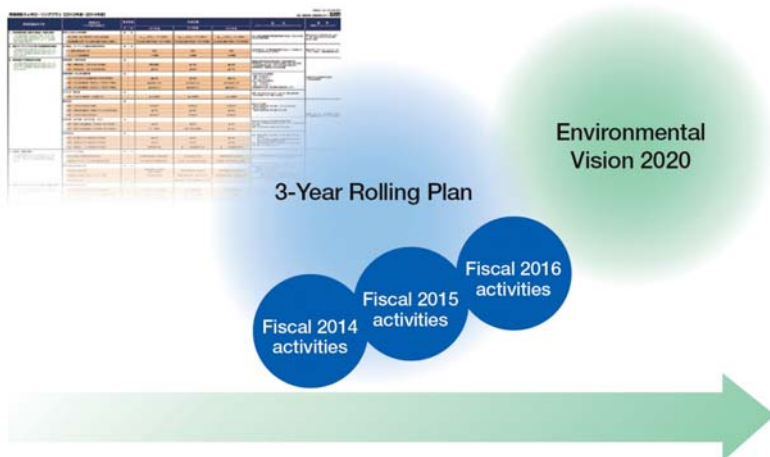
At the same time, effectively utilizing water resources has been positioned as a high-priority task as the risk of these resources being depleted is present on a global scale. We therefore aim to reduce the amount of water resource input per unit of production. In particular, we are stepping up efforts to increase water reuse rates at manufacturing sites that consume a lot of water and at overseas sites where there are significant water supply risks. Initiatives for meeting our corporate social responsibilities include implementing environmental education programs at Fuji Electric bases and conducting social contribution activities related to environmental perseverance at various manufacturing sites.



Environmental Management 3-Year Rolling Plan

To achieve the goals of the Environmental Vision 2020, Fuji Electric has formulated an Environmental Management 3-Year Rolling Plan, designed to promote ongoing efforts.

The objectives of the plan are to verify each year that the environmental management strategy is addressing societal changes, and to establish detailed targets in line with the Fuji Electric Basic Environmental Protection Policy in various areas, such as the enhancement of environmental management governance and the establishment of measures to address the use of chemical substances and prevent global warming. Fuji Electric will continually make revisions to the targets and action plans for each fiscal year up to 3 years in advance, and aim to achieve the goals of Environmental Vision 2020 with certainty.



Related Link

[Environmental Management Targets and Achievements](#)

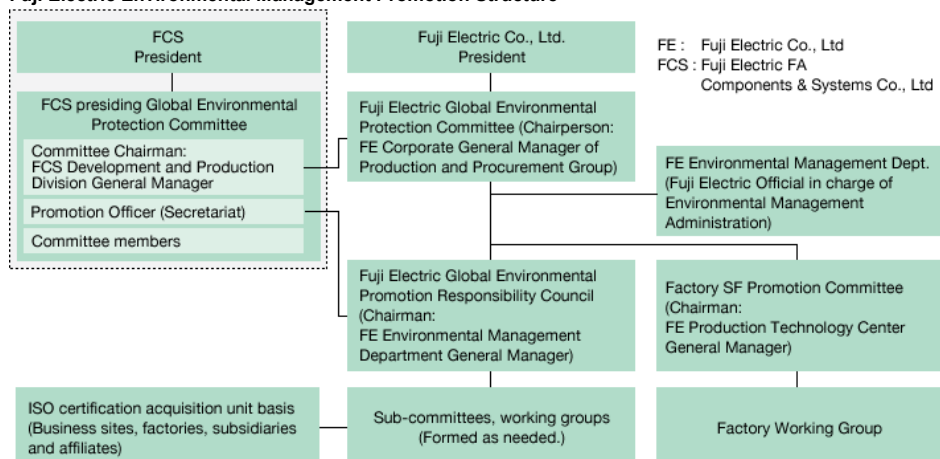
Environmental Management Organizational Framework

To promote environmental management, Fuji Electric established the Global Environmental Protection Committee, which is headed by the director responsible for the environment and which reports directly to the president, and deliberates and decides on basic and comprehensive policies.

Moreover, when necessary we also hold sessions of the Fuji Electric Global Environmental Promotion Responsibility Council, which is comprised of the officers responsible for environmental management at Fuji Electric's principal factories and affiliated companies, and which looks into the development of major policies, as well as examines solutions for new issues.

In fiscal 2012, we established the SF Promotion Committee to promote adoption of smart factory (SF) technologies in response to changes in power supply conditions. This effort is built around the concept of reducing energy use, and better visualizing, analyzing, and optimizing our consumption of power.

Fuji Electric Environmental Management Promotion Structure



Environmental Management in accordance with ISO 14001

Fuji Electric has put in place environmental management systems at all of its production operations and sales bases in Japan as well as all of its overseas production operations and is pursuing third-party certification.

The Status of ISO 14001 Certification

(As of March 31, 2015)

No. of Sites with EMS		Japan	Overseas
Total		26	12
	Acquired	24	9

No. of Sites with EMS	Japan	Overseas
Not yet acquired	2	3

Status of Sites Not Yet Acquired

Japan: The Yamanashi Factory is trying to acquire certification in fiscal 2015, and the Production Technology Center in Saitama Prefecture is currently preparing to obtain the certification in fiscal 2016.

Overseas: Fuji Electric France S.A.S is engaged in activities to acquire certification in fiscal 2015. Shanghai Fuji Electric Switchgear Co., Ltd. and Fuji Electric (Zhuhai) Co., Ltd. are planning acquisition.

Internal Environmental Audits

From fiscal 2012, we reviewed the frequency of patrols based on the degree of environmental burden, and in fiscal 2014 conducted patrol inspections at 15 sites in Japan and 3 overseas sites, including for the first time activities to make risks transparent using fact sheets*.

For this round of inspections, there had been revisions to the Water Quality Pollution Control Act, specifically clauses related to structural standards for storage facilities and inspection obligations, so modifications to facilities at each site were a particular focus of the inspections. The inspections found as a result that all relevant facilities had been brought into compliance with the structural standards as of the May 2015 deadline.

For those sites which were not subject to patrol audit this year, or not yet acquired ISO certification, we are making confirmation and instructions regarding compliance with environmental laws and regulations, and measures to reduce environmental risks, by using environment audit checklists and other tools.



Environmental site inspection in the Chiba Factory

*Fact sheets combine an environment risk map, for recording the location of environmental facilities at each site and relevant historical data, and an environmental performance sheet, which is used to record environmental performance at each site, including energy consumption, chemical substance discharge and waste volume.

Environmental Violations in Japan

	Fines, Penalties	Recommendation by government	Primary exceeding reference value, notice
2010	0	0	2: *1, *2
2011	0	0	0
2012	0	0	1: *1
2013	0	0	0
2014	0	0	0

*1. Wastewater exceeded pH standards at the Mie Factory, but the surrounding environment was not impacted (a voluntary report was submitted to the public administration).

Automatic neutralization tanks have since been installed.

*2. Clouded wastewater was expelled from the Fukiage Factory. Such wastewater does not constitute a regulated substance under the Water Pollution Control Act, but we collected and treated this wastewater nonetheless.

Environmental Risk Management

In promoting environmental management, we must reinforce environmental risk management at each of our production sites in order to maintain stable production.

Management via fact sheets was started in fiscal 2014 for all domestic production sites, and this has made it possible to conduct risk management for both facilities and equipment and environmental performance. We will continue to refine the fact sheet and use it not only for risk management but in energy and resource conservation activities as well.

Measures for Responding to Climate Change Risks

Risk factors	Manufacturing sites	Measure Details
Depletion of water resources	Shenzhen	We increased the water recycling ratio to 80% by introducing recycling facilities.
	Matsumoto, Zhuhai	We are purifying a portion of factory wastewater for everyday use and recycling water to meet the pure water requirements of manufacturing processes. [Related Risk : Initiatives at Matsumoto Factory]
Increases in water prices	Malaysia	As this sites uses the most water, we are stepping up water-saving measures to achieve our 30% usage volume reduction goal by 2020.
Floods	Thailand	When establishing a new factory to reinforce production systems, we chose location at high elevation to mitigate flood-related disaster risks

Risk factors	Manufacturing sites	Measure Details
Blackouts resulted from torrential rain	Matsumoto, Yamanashi	We implemented response measures through a monitoring system using early weather change alerts and took steps to ensure stable electricity supplies through UPSs and in-house generation facilities for crucial equipment.
Transportation congestion or disruption resulted from torrential rain	Mie	We have established a system allowing production to be shifted to different days when large-scale disruptions to transportation, distribution, or production are forecasted prior to torrential rain.

Development of Environmental Activities (Operating the Green Factory / Green Office Evaluation Systems)

Activities based on an environmental management system (EMS) are the focus of Fuji Electric's environmental efforts at each of its operating locations.

To increase the effectiveness of EMS activities for realizing the Environmental Vision 2020, we evaluate each domestic Fuji Electric operating site under the Green Factory / Green Office Evaluation System*and fiscal 2014 was the fourth year of implementation. The result was an assessment of a gold rating, the highest possible for all bases, and the 17 sites that have achieved gold ratings for three years were recognized as a Green Factory or Green Office. Going forward, we will continue to strive for all sites to achieve a Green Factory or Green Office rating.

*Green Factory / Green Office Evaluation System: The Green Factory / Green Office Evaluation System evaluates ongoing improvements to environmental activities. These include elements of our business activities that relate directly to our Environmental Vision 2020, which is a guidepost to our medium- to long-term environmental activities. Specifically, the system evaluates the number of environmental products developed, the percentage of sales derived from environmental businesses, and the contribution to a reduction in society's CO₂ emissions resulting from our products. Ratings of EMS activities in terms of environment performance are made in three stages of gold, silver and bronze. A site is certified as a Green Factory / Green Office when it achieves a gold rating for three consecutive years.

Green Factory/Green Office Evaluation Factors

- Environmentally friendly products and services (number of products and services developed, sales ratio, etc.)
- CO₂ reduction (contribution during production, and by products)
- Reduced waste and efficient use of resources
- Chemical substance management and reduction of toxic atmospheric emissions
- Reduction of environmental risk and compliance
- Communication with local communities



Green Factory evaluation at Fuji Electric Tsugaru Semiconductor

Water and Air Pollution Prevention

In order to prevent environmental pollution, Fuji Electric has installed treatment equipment at bases that utilize chemical substances and manages the quality of water used in these bases to ensure that chemical levels do not exceed established environmental standards. We also conduct periodic emergency response drills to guarantee that we are prepared should an abnormality be detected.

Furthermore, in order to ensure compliance with environmental standards, we have equipped in-house generation equipment (excluding emergency-use backup generators) with emission treatment equipment to limit the release of NO_x into the atmosphere. We also strive to prevent the release of SO_x into the atmosphere by using low-sulfur fuels.

Soil Purification

We were able to develop a complete understanding of the circumstances regarding soil and underground water pollution at all domestic production bases by fiscal 2007.

We then undertook the purification of soil at all 13 bases at which pollution levels exceeded standards. As of March 31, 2016, purification had been completed at nine of these bases, and we continue to push forward with purification measures at the remaining four bases*1. In addition, we conduct soil investigations at the timings described in the Soil Contamination Countermeasures Act of Japan*2.

Overseas, many countries are in the process of instituting laws and regulations equivalent to Japan's Soil Contamination Countermeasures Act, and we have thus begun to conduct land-use history assessments as dictated by such laws and regulations. Furthermore, we perform soil investigations prior to purchasing or selling land, whether in Japan or overseas, thereby confirming the inherent pollution risks.

*1. 4 sites: Kawasaki, Mie, Matsumoto, and Azumino (GE Fuji Meter)

*2. Timing for soil investigations: When abolishing specific facilities designated by the Water Pollution Control Act or when conducting land alterations of a defined level

Environmental Accounting

Fuji Electric introduced environmental accounting in fiscal 2000 as a key means of assessing environmental management performance. Using the 2005 guidelines released by Japan's Ministry of the Environment, we established in-house calculation methods for environmental preservation costs and benefits. Each year, we ascertain and analyze these costs and benefits and disclose this information to the public.

Stance toward Environmental Accounting Calculations

We calculate "direct benefits," such as revenue from sales of valuable items and energy conservation, as well as "estimated benefits," which is a conversion to monetary value of the energy-savings benefit from the use by customers of existing environmentally friendly products (such as vending machines and some inverters) and energy-creating products (such as solar cells and geothermal systems).

Fiscal 2014 Achievements

Environmental conservation costs totaled ¥16.17 billion, with investment at ¥1.31 billion and expenses at ¥14.86 billion. The environmental conservation benefit totaled ¥92.72 billion, including revenue from sales of valuable items at ¥1.29 billion, savings from energy conservation of ¥0.55 billion, and estimated benefits of ¥90.88 billion.

Of environmental conservation costs in fiscal 2014, environmental investment of ¥0.54 billion was made for compliance with the revised Water Quality Pollution Control Act, installation of energy efficient devices when upgrading air conditioning units and production equipment, and in other areas.

Of environmental conservation benefits, there was ¥0.55 billion in savings from energy and resource conservation owing to the Smart Factory Initiative and environmental investments. In addition, the estimated effects of reductions in electricity costs resulting from use of Fuji Electric products, calculated as economic benefits for customers, totaled ¥90.88 billion thanks in part to increased sales of inverters, mega solar power conditioners, solar power systems, and electronic devices.

Environmental Conservation Costs and Benefits (Fiscal 2014)

Period covered: April 1, 2014 to March 31, 2015

Scope: 10 business sites + 21 consolidated subsidiaries (nine subsidiaries in Japan and 12 overseas subsidiaries)

Environmental Conservation Costs (Fiscal 2014)

(Millions of yen)

Categories corresponding to business operations	Main Content	Total (Compared to the previous term)	Breakdown	
			Amount invested	Expenses
	Costs within the business sites	1,755 (-151)	542	1,213
1	Pollution prevention costs	374 (-32)	75	299
	Global environmental conservation costs	984 (-32)	465	519
	Materials recycling costs	397 (-31)	2	395
2	Upstream/downstream costs	10 (-4)	0	10
3	Management costs	510 (-101)	7	503
4	R&D costs	13,501 (-61)	764	12,737
5	Social activity costs	11 (+2)	0	11
6	Environmental damage costs	385 (+365)	0	385
	Total	16,172 (+50)	1,313	14,859

Economic Benefit of Environmental Conservation Measures (Fiscal 2014)

(Millions of yen)

Categories	Main details	Total (Compared to the previous term)

Categories	Main details	Total (Compared to the previous term)
Revenue	Amount received from sale of valuable items for recycling	1,285 (-62)
Savings	Reduction of expenses through energy conservation, reduction of waste disposal cost, reduction of water bill through water conservation	553 (+344)
Estimated benefit	Energy reduction through the use of environmentally friendly products by customers	90,878 (+48,072)
Total		92,716 (+48,354)

Note 1: The "estimated benefit" is calculated as the economic benefit of energy savings when products with improved energy efficiency are used by customers, and is converted using the following formula:

Benefit (¥) = Σ [(annual amount of electrical power consumed by former equipment - annual amount of electrical power consumed by new equipment) × Volume shipped annually in Japan × Electrical power standard cost] (electrical power standard cost: ¥10/kWh)

Note 2: The "estimated benefit" includes environmentally friendly products (such as vending machines, inverters), and energy creation products (such as solar cells, geothermal power generators).

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