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.

Message from the Environmental Officer

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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.

In fiscal 2016, the Energy Conservation Center, Japan awarded the Yamanashi Factory with the highest honor of its FY2016 Energy Conservation Grand Prize (in the energy conservation initiative category): the Grand Prize of Minister of Economy, Trade and Industry (electricity conservation field). This award was received based on the high evaluation of the Yamanashi Factory's efforts to conserve energy through the optimal usage of electricity and heat and to achieve 100% self-sufficiency in terms of electricity by utilizing a factory energy management system.

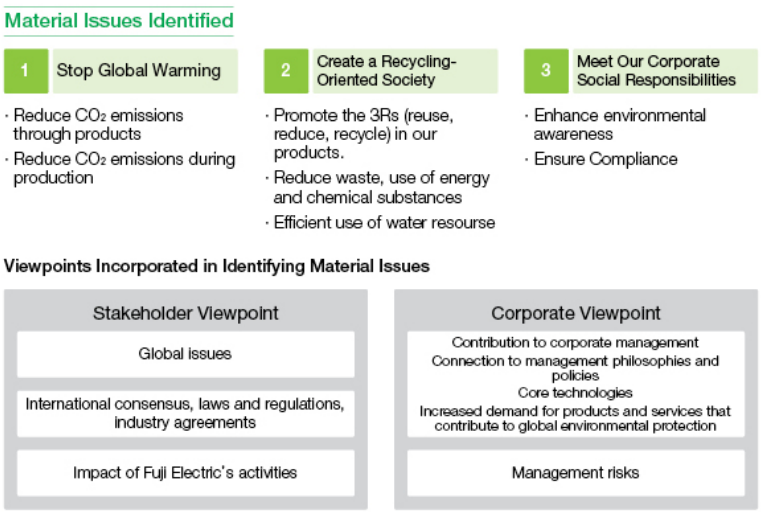
Such factory energy conversation initiatives represent prime opportunities for Fuji Electric, with its insight gained through its energy-related operations, to effectively utilize its technologies. We are therefore working to deploy these technologies at other Company factories. In addition, we are inviting customers to visit [factories at which such initiatives are in place / the Yamanashi Factory] in order to give them a chance to see Fuji Electric's energy conservation technologies in action and to encourage them to work together with us in preventing global warming. We believe that these activities make important contributions to society.

By innovating energy and environmental technologies, we are contributing to the realization of a sustainable society that is safe and secure.

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.



Environmental Vision 2020

Our Environmental Vision 2020, formulated in fiscal 2009, designates three important issues: stopping global warming; creating a recycling-oriented society; and meeting our corporate social responsibilities. Focusing on these issues, we aim to achieve a sustainable society by reducing the environmental impact of our manufacturing activities, while also using the electric and thermal energy technologies in which we excel to provide products and technologies.
Our main initiatives under the issue of stopping global warming are to reduce CO_2 emissions during production by 20% in fiscal 2020 compared with the fiscal 2006 level of 381,000 tons, while reducing society's CO_2 emissions by 30 million tons by expanding sales of energy-saving and energy-creating products.
The cutting-edge technology of energy management efforts realized through CO_2 emission reduction activities at our factories will be incorporated into products in order to aid customers in their own CO_2 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 will incorporate the 3Rs into product designs to expand our lineup of environmentally friendly products that use fewer resources, are lighter and more compact and efficient, and allow for easy disassembly and recycling of materials. In addition, we will work to reduce the amount of defective products created during manufacturing processes through quality management activities.
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 perseveration 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.

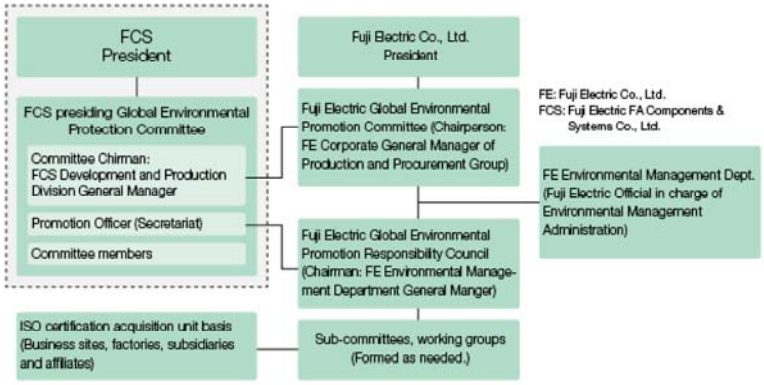
Related Link

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.

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. In addition, all employees take part in environmental education programs, and everyday environmental activities, such as those targeting reductions in energy and water use as well as waste production, have become an entrenched part of our corporate culture.

The Status of ISO 14001 Certification

(As of March 31, 2017)

No. of Sites with EMS		Japan	Overseas
Total		29	13
	Acquired	29	12
	Not yet acquired	0	1

Status of Sites Not Yet Acquired
Overseas: Fuji Electric (Zhuhai) Co., Ltd., aims to receive certification in fiscal 2017.

Internal Environmental Audits

Since fiscal 2003, the internal divisions responsible for environmental management administration have continued to conduct annual environmental site inspections, which double as internal audits, of ISO 14001-certified sites.
The frequency of inspections is based on the degree of environmental impact of each site. In fiscal 2016, on-site inspections were conducted at 16 domestic sites and one overseas site. During inspections, fact sheets* were used to track information related to environment risks in order to identify the environmental risks to which each specific is exposed. Collaboration is pursued with individual sites to reduce environment impacts and improve risk management with the aim of limiting exposure to the identified risks. In addition, since fiscal 2016, we have been conducting inspections via Internet-based video calls at sites that are not inspected. As this method makes it possible to confirm actual conditions at sites and offer specific guidance, it has allowed for inspections that are more effective than the previously employed check sheet method.

*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

Fiscal year	Fines, Penalties	Recommendation by government	Primary exceeding reference value, notices
2012	0	0	1: *1
2013	0	0	0
2014	0	0	0
2015	0	0	2: *2
2016	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. Waste Management and Public Cleansing Act: Requested transporter to handle products to be discarded outside transporter's authorized area. (internal construction divisions)
Waste Management and Public Cleansing Act: Discovered after the fact that work had been commissioned to unlicensed transporter. (a consolidated subsidiary)
Operational flow will be reviewed to ensure that orders cannot be placed without confirming approval status.
Overseas sites: No legal violations during fiscal 2016.

Status of environmental communication with local communities

Fiscal year	Briefing, Social get-together, Presentation, etc.	Opinions, Requests, Complaints, etc.	
			(of which, number remaining unaddressed)
2012	12	6	0
2013	13	6	0
2014	12	14	0
2015	18	5	0
2016	26	10	0

Fiscal 2016 examples

Briefing / Social get-together / Presentation, etc.: Forums for exchanges of opinion with local residents and companies, factory tours, and regular volunteer activities

Opinions / Requests / Complaints, etc.: Response to requests for clean-up activities around factories, cooperation with work-experience programs for junior high school students, etc.

Going forward, Fuji Electric will continue to engage in communication with stakeholders in local communities to contribute to environmental improvement.

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 Rink : 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
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

Risk factors	Manufacturing sites	Measure Details
		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.

Illustration of Environmental Risks

Fuji Electric establishes specific environment risk maps for each factory in order to guide environmental preservation activities and help reduce the impact on the environment should an accident occur. These maps provide diagrams that illustrate a clear picture of information regarding the facilities, equipment, and work processes with the potential to impact the environment as well as information related to the factory premise and buildings. Accordingly, these maps make it easier to share and communicate environmental risk information.
Environment risk maps were established for all 21 domestic factories leading up to fiscal 2015. Since then, we have proceeded to revise and update these maps each year to ensure the information they provide is up-to-date.
In fiscal 2016, we began constructing environment risk maps for factories in China, Thailand, Malaysia, and the Philippines, which entailed investigating the chemical substance usage and storage logs of these factories and gathering other information. This information will be combined with information on factory premises and buildings to create diagrams in fiscal 2017.

> Note: Details of environment risk maps Information contained includes histories of soil contamination surveys and purification measures; chemical substance storage and usage logs; details on environment-related facilities; diagrams of water intake and exhaust systems, steam supply systems, and power systems; building earthquake resistance levels; and buildings using asbestos.

Prevention of Emission of Pollutants into Water and Air

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 NOx into the atmosphere. We also strive to prevent the release of SOx 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, 2017, 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 (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 2016 Achievements

Environmental conservation costs totaled ¥17.84 billion, with investment at ¥1.46 billion and expenses at ¥16.37 billion. The environmental conservation benefit totaled ¥130.94 billion, including revenue from sales of valuable items at ¥1.82 billion, savings from energy conservation of ¥0.53 billion, and estimated benefits of ¥128.59 billion.
Environmental investment that went to environmental preservation costs totaled ¥0.73 billion in fiscal 2016. The main items in this effort to stop global warming and conserve energy were (1) Installation of LED lighting; (2) Replacement of air conditioners with more efficient models; and (3) Installation of inverters and other energy conserving equipment at production facilities.
These environmental preservation measures produced savings of ¥0.53 billion, the result of the Smart Factory Initiative and environmental investment for energy and resource conservation. In addition, we estimate that the economic effect from reductions in electricity charges at customers through the use of our products was ¥128.69 billion as a result of increased sales of inverters, mega solar power conditioners, solar power systems, and electronic devices.

Environmental Conservation Costs and Benefits (Fiscal 2016)

Period covered: April 1, 2016 to March 31, 2017
Scope: 12 business sites + 22 consolidated subsidiaries (nine subsidiaries in Japan and 13 overseas subsidiaries)

Environmental Conservation Costs (Fiscal 2016)

(Millions of yen)

Categories corresponding to business operations		Main Content	Total (Compared to the previous term)	Breakdown	
				Amount invested	Expenses
1	**Costs within the business sites**		1,686（-209）	734	952
	Pollution prevention costs	Cost of improving and maintaining atmospheric and wastewater emission treatment facilities and sound dampening equipment	487（+111）	259	228
	Global environmental conservation costs	Installation and maintenance of energy efficient equipment	688（-411）	418	270
	Materials recycling costs	Waste reduction, maintenance and management costs	511（+91）	57	454
2	**Upstream/downstream costs**	Cost of processing discarded products	5（-4）	0	5
3	**Management costs**	Costs of environmental education for employees, environmental management systems operation, monitoring and measurement of environmental impact, environmental conservation measures	522（-20）	14	508
4	**R&D costs**	R&D costs for environmental conservation, such as energy conservation	15,570（+2,126）	716	14,853
5	**Social activity costs**	Greenery preservation, greening costs, and the cost of supporting environmental activities	10（-1）	0	10
6	**Environmental damage costs**	Cost of excavation and processing of contaminated ground, charges for the impact of pollution	45（-2）	0	45
		Total	17,838（+1,890）	1,464	16,374

Economic Benefit of Environmental Conservation Measures (Fiscal 2016)

(Millions of yen)

Categories	Main details	Total (Compared to the previous term)
Revenue	Amount received from sale of valuable items for recycling	1,820（+878）
Savings	Reduction of expenses through energy conservation, reduction of waste disposal cost, reduction of water bill through water conservation	533（-15）
Estimated benefit	Energy reduction through the use of environmentally friendly products by customers	128,588（+15,264）
	Total	130,941（+16,127）

Categories	Main details	Total (Compared to the previous term)

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).