



Report on the Environment 2002

Contact: _____

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Hitachi Kokusai Electric Inc.

Company's Management Policy

Hitachi Kokusai Electric Corporate Action Standard

1. Purpose

Hitachi Kokusai Electric has established a corporate action standard with the aim of continuing the company's evolution while fully recognizing the missions and roles that it should fulfill both nationally and internationally.

2. Basic Philosophy

Hitachi Kokusai Electric will make "respect for humans," "the pioneering spirit," and "harmony" its fundamental goals for business. We will also deeply recognize that we are members of society, commit ourselves to conducting fair and transparent corporate activities, be true to our convictions and principles, and strive to contribute to society by developing original and superior technologies and products.

3. Guidelines for Action

All employees will take the initiative to adhere to the following guidelines and embody the basic philosophy described above:

1. We will strive to deepen the understanding between ourselves and peoples around the world, accurately take into consideration the new needs of the international community, develop advanced original technologies and reliable products with a pioneering spirit, and establish ourselves as a leader in the world of technology.
2. We will continue to search for new knowledge both domestically and abroad to make ourselves more discerning and strengthen our moral character.
3. We will earnestly fulfill our social missions and responsibilities and always act in conformity with all applicable laws. We will also strictly observe the proper corporate ethics and be faithful to the philosophy of fair and orderly competition.
4. We will always have a customer-focused vision, prove ourselves worthy of our customers' trust and expectations through faithful business operations, and offer them satisfactory products and services.
5. We will show respect to the management and technical expertise of other companies, fully recognize the value of the management and technical expertise of our company, establish a strict administrative structure for managing that information, and carry out thorough management of the information.
6. We will always remember that international cooperation is a key requirement for upholding the reputation of Japanese industrial circles and also Japan as a whole. We will therefore fully abide with the international trade regulations
7. We will make strong efforts to preserve the global environment and improve local environments through corporate activities.

<Scope of objects>

The Report on the Environment describes the environmental activities (from April 2001 to March 2002) of Hitachi Kokusai Electric Inc. This is the second issue of the Report on the Environment. The first issue was published in 2001.

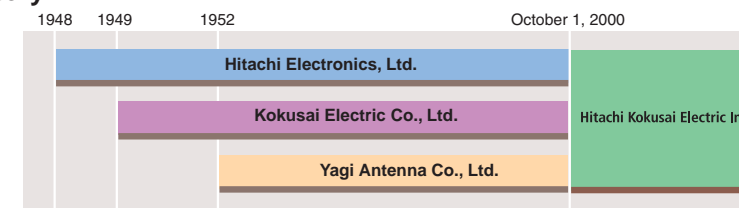
<Object business institutions>

The factories at Chitose, Hamura, Toyama, Koganei, and Omiya and the Yagi Memorial Information Communications System Laboratory

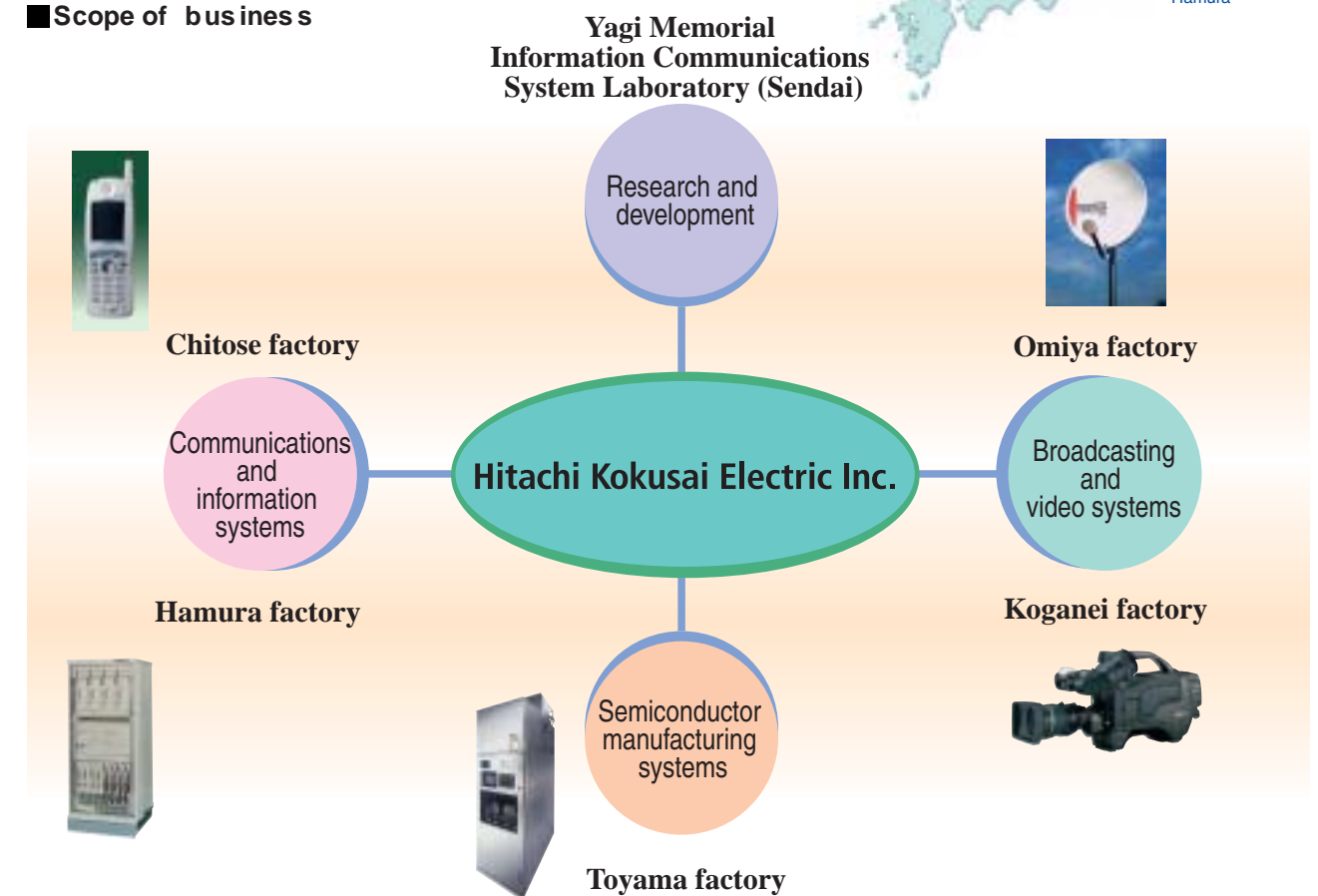
■ Corporate profile (as of March 31, 2002)

Company name : Hitachi Kokusai Electric Inc.
 address : 3-14-20, Higashi-Nakano, Nakano-ku, Tokyo, JapanHeadquarters
 Capital : ¥ 10,058 million
 Sales : ¥ 151,200 million (consolidated)
 No. of employees : 5,491 (consolidated)
 Business areas : Communications and information systems, broadcasting and video systems, and semiconductor manufacturing systems

■ History



■ Scope of business



Pass on the precious earth to the next generation Let's protect our beautiful environment.

Message from the President

I would like to outline the environmental protection activities that Hitachi Kokusai Electric conducted in fiscal 2001.

In October 2000, three companies, Kokusai Electric Co., Ltd., Hitachi Electronics, Ltd., and Yagi Antenna Co., Ltd., were merged into Hitachi Kokusai Electric Inc.

Before the merger was completed, all the factories of the three companies had already been certified with ISO14001, which is the international standard for environmental management systems, and had promoted environmentally-oriented production. At the time of the merger, we established the Hitachi Kokusai Electric Global Environmental Charter to state that the environment issue has a very high priority in our corporate management. We are also making continuous improvements in all environmental areas, for example, energy, waste, and the quality of the air, water, and soil.

We are promoting a wide range of environmental activities throughout the company in cooperation with our customers, local communities, and concerned organizations with emphasis placed on the following:

To offer our customers ecologically friendly products, we will design all new devices as environment-aware products while exchanging technologies between our factories through case presentation meetings. Through these activities, we are promoting the development of energy-saving equipment and other products that are suitable for a resource recycling society.

We are promoting energy conservation, waste reduction, and chemical substance management at our production facilities. The energy conservation activities at our factories are being carried out with the goal of reducing the primary unit of carbon dioxide emission to 25% below the 1990 levels by fiscal 2010.

We have already reduced the amount of disposed waste to 14% or less of the 1991 levels. By carrying out these activities, we will be able to achieve zero-emissions in the near future. Although we only use small amounts of chemicals, we are making efforts to further reduce the amounts and types that we use.

In environmental issues, fusion and communication with local areas and communities are especially essential. On the premise that each works and employee is a part of society, we push forward to coexist and co-prosper within the communities to which we belong.

It is our sincere wish that this report will lead to a deeper understanding of the policies and activities of the Hitachi Kokusai Electric group regarding environmental preservation. Any suggestions you may have regarding these policies and activities would be highly appreciated.



October 2002

M. Endo

Dr. Makoto Endo
Chairman Of The Board
President & CEO

3 Guideline for Environmental Protection Action

We established the Hitachi Kokusai Electric Global Environmental Charter in March 2001. This charter is based on the basic philosophy of the Hitachi Kokusai Electric Corporate Action Standard. We are also very active in a wide range of environmental preservation activities.

Hitachi Kokusai Electric Global Environmental Charter

Basic Philosophy

Hitachi Kokusai Electric will enhance "Respect for humans" and the "Pioneer spirit" to deeply recognize that we are members of society, devote ourselves to fair and transparent corporate activities, and strive to preserve the global environment and improve the local living environment.

Guidelines for Action

1. Fulfillment of Our Social Obligation

Harmony with the environment is one of our highest priorities. We are committed to solving global environmental problems because we realize they are important problems common to all of humanity.

2. Reduction of Environmental Load

The environmental load caused by research, development, production, distribution, use, and disposal will be reduced to help build a resource recycling society.

3. Complying with Laws and Regulations

International, national, and local environment regulations will be obeyed, and a voluntary control standard will be set up to help prevent environmental pollution and improve the environment management level.

4. Linkage with Local Communities

Efforts will be made to preserve the global environment, improve the local environment, and have all employees receive a comprehensive environmental education to enhance awareness of the environment.

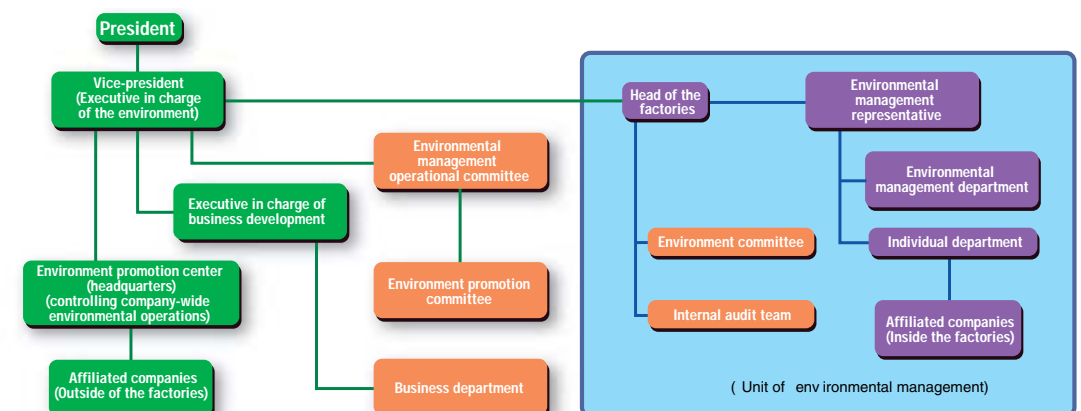
5. Preparation of Intracompany System

An executive in charge will be appointed to prepare an environment management organization system and help promote continuous activities for the environment, both internationally and nationally.

Drawn up in March 2001

Environment Management System

The figure shows the Environment Management System



4 Ecological Products

Examples of Environment-Friendly Products

1 Optical transmission equipment for cellular phones (Chitose factory)

This optical transmission equipment was developed especially for indoor use as part of the infrastructure for the cellular phone system. It performs batch transmission of PDC and IMT-2000 signals from a master station to substations via optical fibers. This equipment helps to reduce resource consumption and protect the environment because it is smaller and lighter than previous equipment and also because it can be operated using existing optical fibers and power lines.



Conventional equipment



Developed equipment

Item No.	Environment item	Conventional equipment	Newly developed equipment	Effect	
1	Function improvement	Conforms to PDC (800 MHz and 1.5 GHz)	Conforms to PDC (800 MHz and 1.5 GHz) + IMT-2000		
2	Low power consumption	316 W (including feed loss)	344 W (including feed loss)	27% reduction per band	
3	Resource saving	Weight	9.1 kg	6.8 kg	25% reduction
		Size	508(W)X470(D)X200(H) mm	508(W)X420(D)X98(H) mm	56% reduction

2 Middle-wave digital broadcasting equipment (Hamura factory)

This product is digital broadcasting equipment designed for middle-wave radio broadcast services. Unlike the conventional equipment, which uses analog amplitude modulation, this equipment uses a new fully digital amplitude modulation method to achieve a high power efficiency, a compact and lightweight design, and improved operational stability.

Item No.	Item	Environment item	Conventional equipment	Newly developed equipment	Effect
1	Low power consumption	Energy saving	963 W	782 W	17% reduction
2	Small size/light weight	Volume reduction	695 liters 250 kg	514 liters 180 kg	26% reduction 28% reduction
3	High stability	Extension of operating life	FET voltage derating of 60%	FET voltage derating of 25%	



3 Ground-based digital broadcasting equipment (Koganei factory)

This equipment is designed for the digital terrestrial broadcasting that will be initiated in fiscal 2003 under the guidance of the Ministry of Public Management, Home Affairs, Posts and Telecommunications. The purpose of this project is to use the allocated bandwidth efficiently, improve the picture quality, and enhance the viewers' convenience. The design of this equipment is focused on compactness, energy saving, and cost reduction.

Item No.	Environment item	Conventional equipment (analog)	Newly developed equipment (digital)	Effect	
1	Function improvement	SDTV (1 channel)	HDTV (1 channel) or SDTV (3 channels)		
2	Low power consumption	30kW	8kW	75% reduction	
3	Environmental improvement (noise)	65dB	45dB	20 dB reduction	
4	Resource saving	Weight	4,000 kg	1,500kg	62.5% reduction
		Floor area	7.5 m ²	4.3 m ²	42.5% reduction

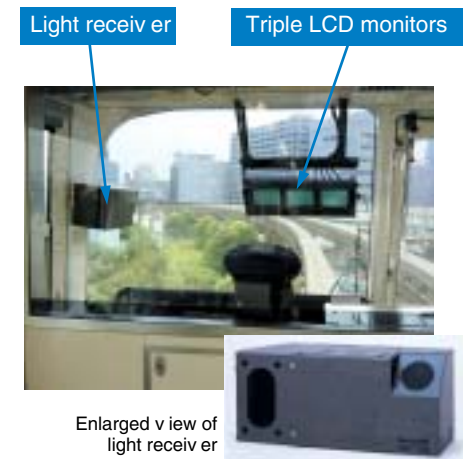


4 Free space optical transmission system from wayside to train (Omiya factory)

This system transmits a real-time view of a train platform by optical free space transmission from cameras on the platform to the train driver's cab to support single-person operation of trains.

This system is small and light enough to be easily installed in both a standard operator's cab and in the operator's cab of an advanced train.

Item No.	Environment item	Conventional equipment	Newly developed equipment	Effect	
1	Resource saving	Weight	22 kg	3.8 kg	82% reduction
		Volume	14.7 liters	6.6 liters	55% reduction
3	Low power consumption	25W	13W	48% reduction	



Enlarged view of light receiver

5 Single Wafer Oxidation/ CVD System (Toyama factory)

With the spread of QTAT, more and more emphasis is being placed on the Single Wafer Oxidation/CVD System for semiconductor manufacturing. We have improved the throughput of the wafer processing and reduced its power consumption to contribute to energy conservation in semiconductor manufacturing lines.

Item No.	Environment item	Conventional equipment (ZESTONE-VII [A])	Newly developed equipment (ZESTONE-VII [C])	Effect	
1	Function improvement (improvement of wafer processing throughput)	20 (wafers/hour)	40 (wafers/hour)	50% reduction of processing time	
2	Low power consumption	Power consumption by furnace heater	100 (index)	73	27% reduction
		Power consumption by pumping and control	100 (index)	80	20% reduction



5 Ecological Factory

1 Global warming prevention (energy conservation)

To help achieve the Kyoto-Protocol objective of reducing greenhouse gas emissions in Japan by 6%, we have set ourselves the goal of reducing our primary unit of carbon dioxide emission by 25% from the 1990 levels by fiscal 2010 and have also taken various energy-saving measures. We reduced our carbon dioxide emissions in fiscal 2001 by 4% from the 2000 levels. However, the index of the primary unit has worsened by 19% because of a sharp reduction in production.

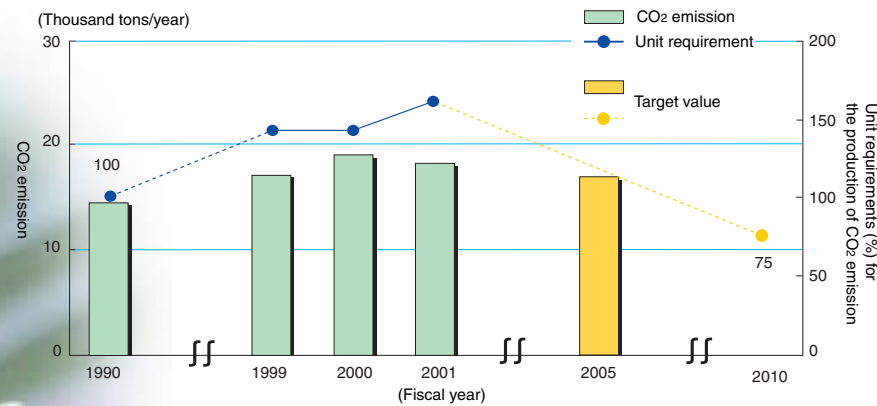
<Major energy-saving measures taken in fiscal 2001 and before>

1. Demand control of air-conditioners
2. Use of inverters in cooling pumps and air blowers
3. Reduction in power consumption of personal computers (use of LCD monitors)

<Energy-saving measures to be taken in the future>

1. Diagnosis of energy-saving systems by external experts (application of NEDO and ESCO)
2. Fundamental improvements in production processes

Trends in CO₂ emission and primary unit index



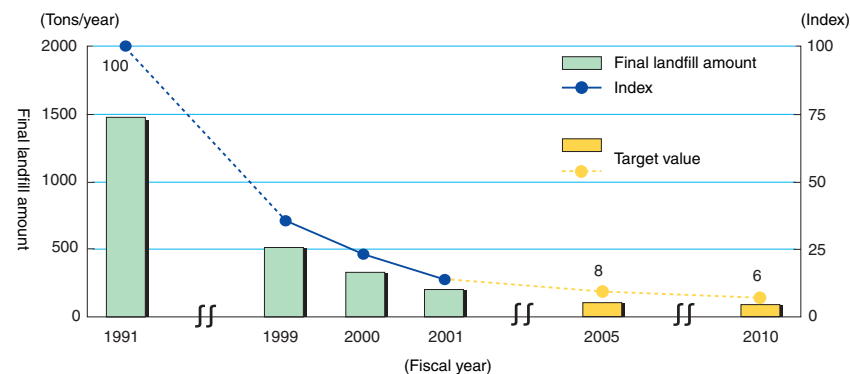
2 Waste reduction

We have steadily achieved results in our efforts to reduce the waste produced by business activities and have set ourselves the goal of zero emissions in fiscal 2010. We reduced our final landfill amount in fiscal 2001 to 14% of the 1990 levels. This reduction was due to the company-wide effort to reduce waste and a decrease in the company's production output. We will continuously strive to take aggressive measures to achieve zero emissions as soon as possible.

<Major measures taken in fiscal 2001 and before>

1. Recycling of waste acid, waste alkali, and sludge
2. Thermal recycling (RDF) of waste plastics
3. Improvement in the yield rates of production lines

Trends in final landfill amount



3 Chemical substance management

The PRTR (*) system was enacted into Japan law in July 1999. Therefore, it is now important for companies to strictly control chemicals and exercise strong disaster management in their business operations. The PRTR Act stipulates that all companies that used 5 tons or more of any of the 354 first-category chemicals in fiscal 2001 must report the fact to the appropriate regulating authority. Because of our commitment to protecting the environment, we have reduced to below 5 tons or completely eliminated our consumption of these chemicals, and as a result we did not need to make such a report for fiscal 2001.

* PRTR: Pollutant Release and Transfer Register

unit:kg/year

Chemical	Handled amount	Consumed amount	Recycled amount	Transferred amount (waste)	Released amount (atmosphere and water)
Lead solder	730	89	641	0	0
Hydrogen fluoride	550	0	0	540	10
Xylene	384	7	0	20	357
Toluene	226	0	0	10	216
Dichloromethane	160	0	0	30	130

At the end of fiscal 2001, we completely abolished the use of dichloromethane, which is designated as a hazardous air pollutant, at all of our factories by replacing it with an alternative.

4 Water pollution prevention

We have not only complied with the laws and ordinances regulating water discharge from factories to public water areas but have also set even stricter voluntary control standards for all of our factories to further protect water quality. There has not been a single violation of these voluntary control standards.

5 Air pollution prevention

To prevent air pollution, we have set voluntary control standards that are more strict than the regulations stipulated by law for atmospheric release of dust, sulfur oxides (SO_x), and nitrogen oxides (NO_x). As with our voluntary water pollution control standards, there has not been a single violation of our voluntary air pollution control standards. Also, we have abolished the use of all incinerators.

6 Prevention of noise, vibration, and odors

The levels of noise and vibration at our factories are below the standard limits set by the pertinent laws and ordinances. In cases where there is no public regulation regarding odors, we have voluntarily set our own control standards to protect the local residents.

7 Research on natural energy

We have introduced compact hybrid devices for solar cells and wind power generation. Also, in the near future we will collect basic data to study the power generating capacity of Hokkaido.

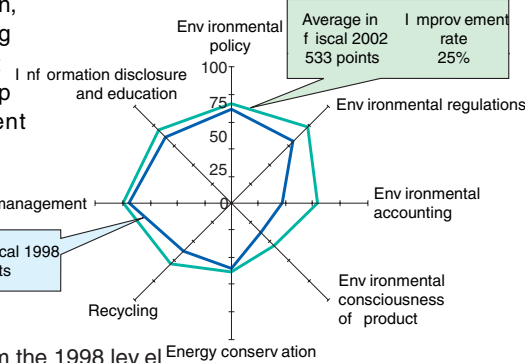


6 Environment Management

1 GREEN 21 operation

We have implemented our GREEN 21 operation in step with the environmental action project of the Hitachi group. In this operation, we voluntarily evaluate each of our environmental activities using specified evaluation standards to promote continuous improvement in each activity and enhance the overall level of improvement. Top executives can use the evaluation results for more efficient environmental management. This operation is strongly supportive of corporate activities that are in harmony with the environment.

- Evaluation target : 43 items in 8 categories
- Calculation method : The perfect score in each category is 100 points, and the total perfect score in the 8 categories is 800 points. (Green point [GP] system)
- Objective : To increase the GP in fiscal 2001 by 21% from the 1998 level



■ Evaluation items (43 items in 8 categories)

No	Category	Main evaluation item
1	Environmental policy	Degree of development, mechanism of implementation, consistency, and thoroughness of environmental policy
2	Environmental regulations	Arrangement and management of regulation lists and voluntary standards and sufficiency of legally qualified persons
3	Environmental accounting	Capital investment, expenditure, and management process
4	Environmental consciousness of product	Implementation of product assessment and the green procurement plan
5	Energy conservation	Rate of improvement in energy conservation, amount of conserved energy, and coverage of measurement
6	Recycling	Recycling and proper disposal of waste at the factory, and collection and recycling of used products
7	Chemical management	Preliminary review system for new chemicals, PRTR, chemical reduction plan, and chemical abolishment plan
8	Information disclosure and education	External disclosure of information, internal and external awards, community programs, and education

Parts of this page are quoted from the Report on the Environment 2002 issued by the Hitachi group.

- **Result report** The final target year for the GREEN 21 operation was fiscal 2001. We showed 25% increase in GP even though our original target was only 21%. We will prepare the second version of the GREEN 21 operation and continue to reinforce our environmental activities.

2 Environmental accounting

■ Costs

Item	Cost (in million yen)		Main content
	Fiscal 2000	Fiscal 2001	
1. Costs within the factory area	199.0	134.6	Costs for maintenance and management of environmental load reduction facilities
2. Upstream and downstream costs	0.1	0.1	Costs for green procurement and recycling
3. Management activity costs	126.6	137.9	Personnel expenditures for environment management and maintenance costs for environment management system
4. Research and development costs	19.4	348.3	Costs for research, development, and design of products that reduce the environmental load
5. Social activity costs	33.5	4.1	Costs for environment improvements (e.g., greening and landscaping), PR, and publicity
6. Costs related to environmental damage	52.9	0	Environment-related compensation, contributory money, and surcharges
Total cost	378.6	625.0	
Total investment	81.6	64.6	

■ Effects

Item	Value of effect (in million yen)		Main content
	Fiscal 2000	Fiscal 2001	
1. Effect on real income	1.8	0.8	Profit on sale of recycled waste, etc.
2. Expenditure reduction	7.7	1.4	Power cost reduction due to energy conservation, etc.
3. Material cost reduction	0.8	59.1	Resource cost reduction due to resource saving, etc.
Total	17.9	61.3	

- **Result report** Compared with fiscal 2000, the total cost in fiscal 2001 increased by 65% and the economic effect in fiscal 2001 increased by 242%. We will strive to construct an environmental accounting system that can be effectively used for internal management to further improve cost effectiveness.

7 Communication with Local Communities

For harmonious coexistence with local communities, our factories are cooperating with local governments and organizations in various social action programs, including various natural environment conservation activities.

Volunteer activities for environmental education (Chitose factory in Hokkaido)

○ Nature observation instructors

Employees who are qualified as nature observation instructors by the Nature Conservation Society of Japan are hosting nature hikes and educational campaigns for nature conservation. On these hikes, the instructors guide local people around fields and wild areas so they can learn about the natural environment in which they live.



○ Leaders for juvenile nature-based experience programs

Employees who have completed the training course for the Leaders for Juvenile Nature-Based Experience Programs held by the Board of Education of Hokkaido and have qualified as leaders are working as instructors in camping schools and other programs in liaison with local boards of education.



Paper recycling activity in cooperation with the Toyama Used-Paper Recycling Circle (Toyama factory)



Support of traditional local events (Toyama factory)



YAGI football club wins the Saitama Prefectural Governor's Cup Five Aside (Futsal) Tournament (Omiya factory)

