

ENVIRONMENTAL REPORT 2000



TOKYO ELECTRON GROUP

Environmental Report 2000 Contents

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This report was prepared based on the results of the Tokyo Electron Group's environmental preservation activities, mainly in Japan, during fiscal year 1999 (from April 1, 1999 to March 31, 2000). We plan to issue this report annually.

Contact

Tokyo Electron Limited

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Message from the President

We human beings, were able to accumulate unprecedented prosperity and wealth by virtue of the technological progress and dramatic gains in productivity over the past several decades. The flip side of this success story is that we have been imposing a huge burden on our Mother Nature and the global environment. Unless we mend our ways, destruction of the global environment will soon come to such an extent that human life itself will be imperiled.



Being well aware of such reality and keeping it in mind, we, Tokyo Electron Group, aim to ceaselessly pursue prosperity in true harmony with the global environment.



This Environmental Report is our corporate pledge to preserve the environment. It explains our environmental policies, specific action plans for implementing those policies, and the results of such actions. We intend to issue an updated report on annual basis.



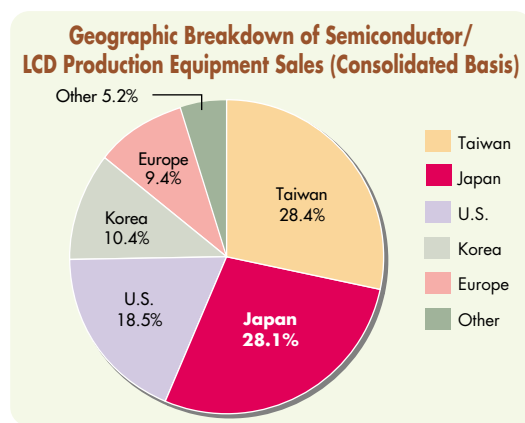
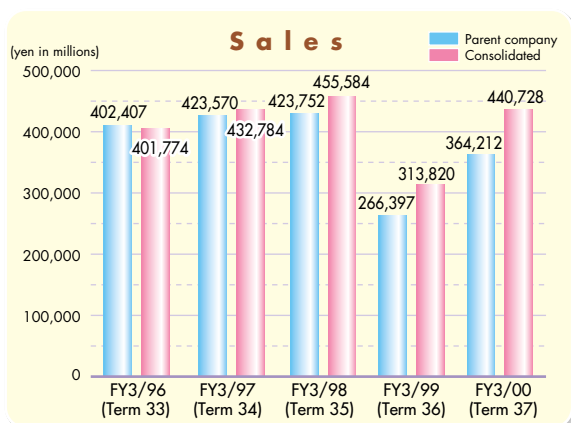
We hope you understand our commitment to environmental preservation and find this report informative. We welcome your candid comments and suggestions.

A handwritten signature in black ink, appearing to read 'T. Higashi'.

Tetsuro Higashi
C.E.O., President
Tokyo Electron Limited

Corporate Profile

Company name: Tokyo Electron Limited
 Address: TBS Broadcast Center, 3-6 Akasaka 5-chome, Minato-ku, Tokyo 107-8481
 Phone: 03-5561-7000
 Representative: Tetsuro Higashi, C.E.O., President
 Established: November 11, 1963
 Capital: ¥47,163,260,000 (as of March 31, 2000)
 Main products: Semiconductor production equipment (developed in-house and imported), LCD production equipment (developed in-house), computer system, computer networking equipment (imported), electronic components (imported)
 Employees: 1,244 (as of April 1, 2000)
 Group employees: 9,117 (as of April 1, 2000)
 Sales (consolidated): ¥440,728,000,000 (FY3/00)
 (parent company): ¥364,212,000,000 (FY3/00)



< Domestic Subsidiaries >

- Tokyo Electron Sapporo Limited (Hokkaido)
- Tokyo Electron Tohoku Limited (Iwate)
- Tokyo Electron Miyagi Limited (Miyagi)
- Tokyo Electron Yamanashi Limited (Yamanashi)
- Tokyo Electron FE Limited (Tokyo)
- Tokyo Electron Logistics Limited (Tokyo)
- Tokyo Electron Leasing Co., Limited (Tokyo)
- Tokyo Electron Agency Limited (Tokyo)
- Tokyo Electron EE Limited (Kanagawa)
- Tokyo Electron Device Limited (Kanagawa)
- Tokyo Electron Kyushu Limited (Saga)

< Overseas Subsidiaries >

- Tokyo Electron America, Inc. (Texas)
- Tokyo Electron Oregon, Inc. (Oregon)
- Tokyo Electron Massachusetts, Inc. (Massachusetts)
- Tokyo Electron Texas, Inc. (Texas)
- Tokyo Electron Phoenix Laboratories, Inc. (Arizona)
- Tokyo Electron Arizona, Inc. (Arizona)
- Tokyo Electron Europe Ltd. (England)
- Tokyo Electron Deutschland GmbH (Germany)
- Tokyo Electron Italia S.p.A. (Italia)
- Tokyo Electron Switzerland Ltd. (Switzerland)
- Tokyo Electron Nederland B.V. (Netherlands)
- Tokyo Electron España S.L. (Spain)
- Tokyo Electron Ireland Ltd. (Ireland)
- Tokyo Electron Israel Ltd. (Israel)
- Tokyo Electron France S.A.R.L. (France)
- Tokyo Electron Korea Ltd. (Korea)
- Tokyo Electron Taiwan Ltd. (Taiwan)



Tokyo Electron homepage: <http://www.tel.co.jp>

Tokyo Electron Group Credo on Environmental Preservation



Tokyo Electron Group (“TEL Group”) established the “Environmental Credo” and “Environmental Principles” on September 25, 1998 to exhibit its commitment to global environmental preservation activities. The respective plants of the group are to promote environmental preservation activities based on their own environmental policies, standards, manuals and procedures developed based on the above “Credo” and “Principles” of the Group.

<The TEL Group Credo on Environmental Preservation>

The Tokyo Electron Group believes that preserving the global environment and constantly improving it is one of the most important objectives for mankind as well as our business. Based on this credo, We are determined to expand our business by maintaining harmony with the global environment, and thus win the trust of our many customers, share holders, employees and society in general.

<The TEL Group Principles on Environmental Preservation>

1. Continuous Improvement

TEL is conscious that products manufactured by the TEL Group affect the environment, and based on this awareness, we, with our customers and suppliers, shall continually strive to minimize the impact of processes and operations on the environment.

2. Knowledge

TEL continually strives to enhance its understanding of the impact that the TEL Group has on the environment and the responsibility that this entails. In addition, TEL aims to gain a quantitative grasp of environmental factors, and the impacts resulting from TEL Group activities and operations.

3. Performance Criteria

As well as strictly observing mandatory environmental laws, treaties and agreements, TEL strives to enhance its own environmental management system and improve global environmental preservation programs by the proactive establishment of its own aggressive environmental performance criteria.

4. Disclosure

TEL shares information about its environmental concept, principles and the progress of our contribution toward environmental protection with employees and the general public.

5. Partnership

TEL actively participates in environmental protection activities practiced by our customers, suppliers and communities.

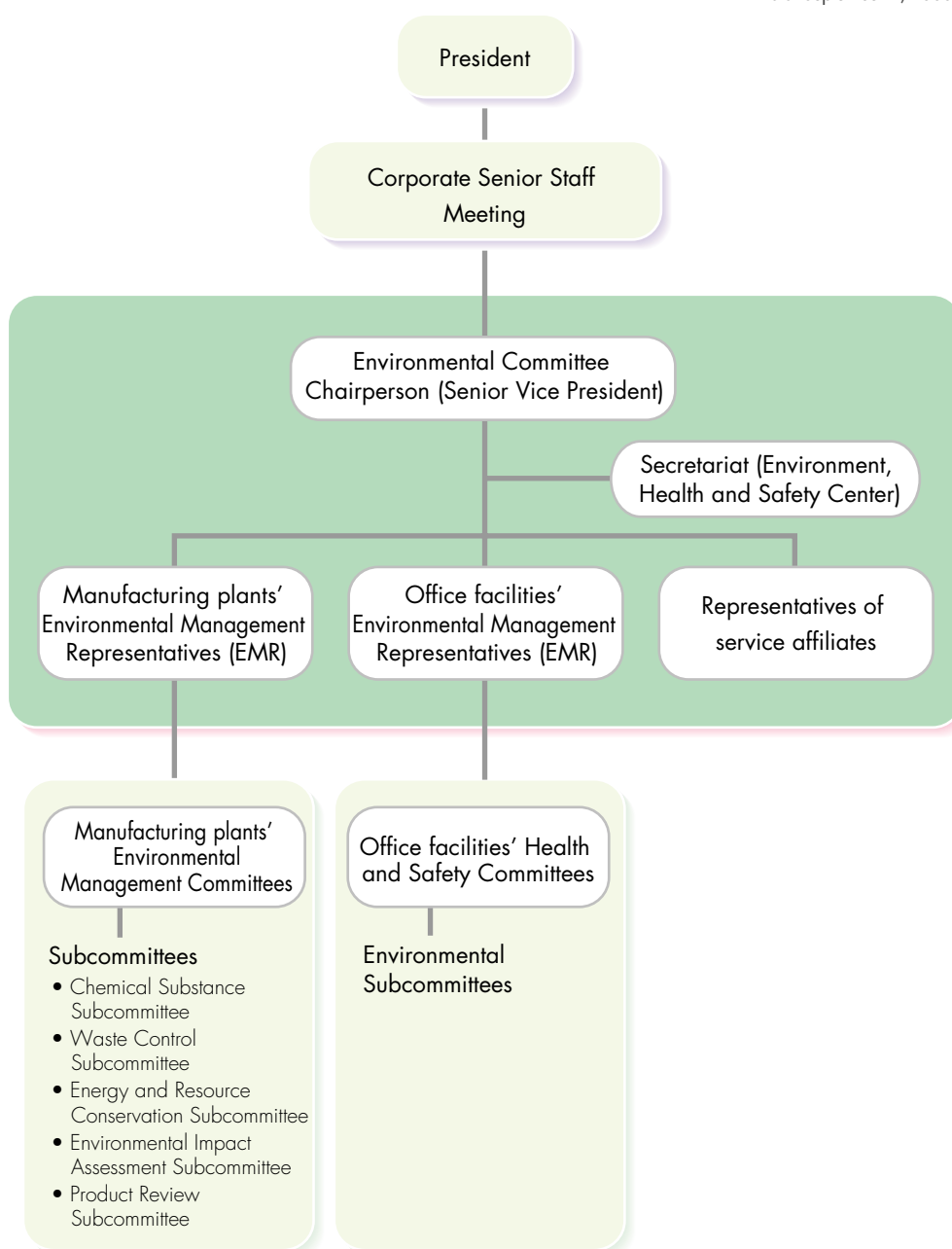
Date: September 25, 1998
Tetsuro Higashi
C.E.O., President
Tokyo Electron Limited

Tokyo Electron Group Environmental Preservation Activity Promotion Organization

The organization that drafts and finalizes the TEL Group's policies regarding environmental management activities and drafts, deliberates on, and approves targets and action plans is the TEL Group Environmental Committee, chaired by the board member in charge of environmental issues. The Environmental Committee addresses and resolves company-wide issues. The Environmental Management Committee, headed by the Environmental Committee Chairperson and Environmental Management Representative, promotes environmental preservation activities at each plant in cooperation with top management.

TEL Group Environmental Committee Organization

As of September 1, 2000

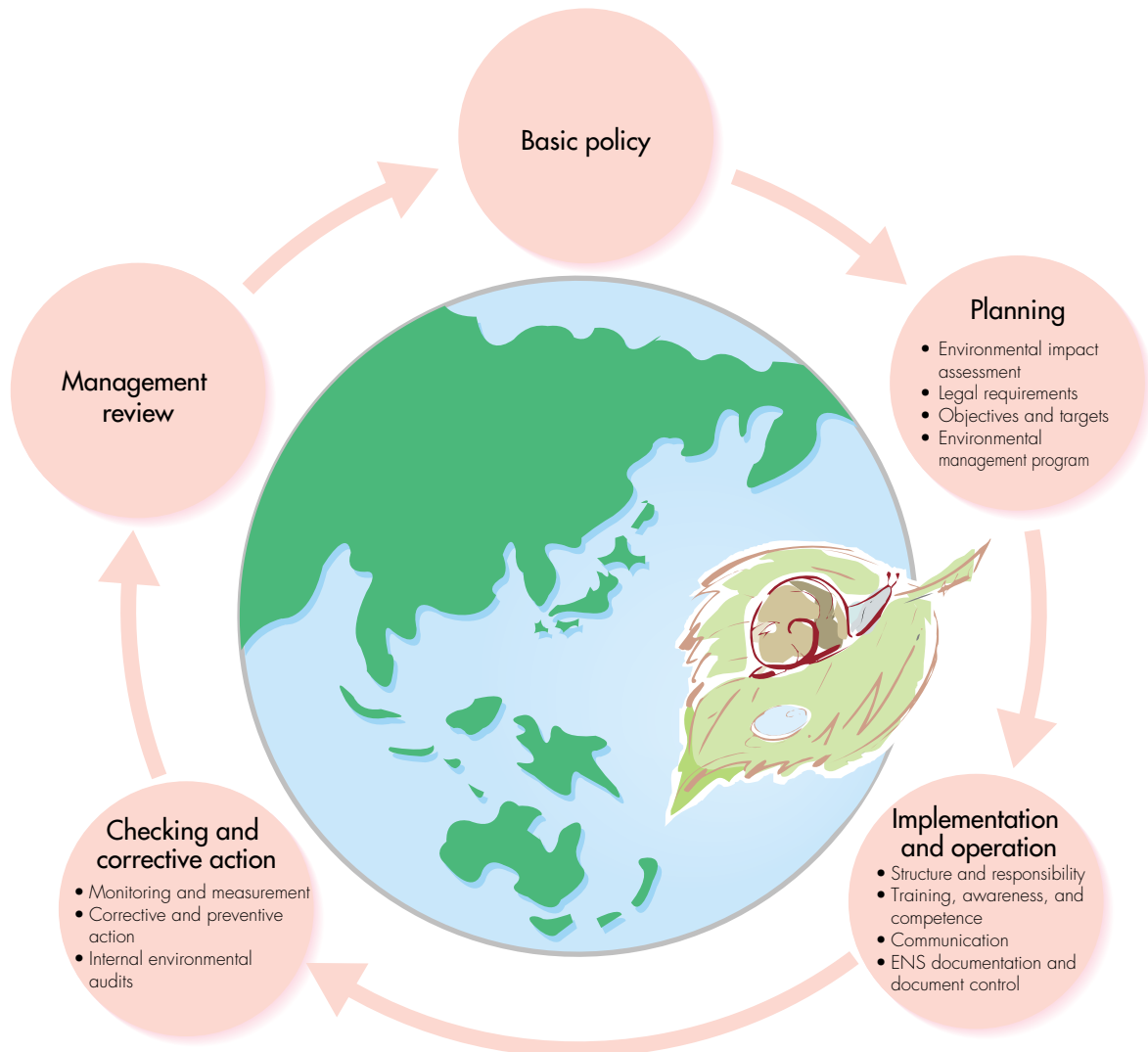


Environmental Management System



To continually promote environmental preservation activities, the TEL Group has developed and implemented an environmental management system based on the ISO14001 international standard. At present, we conduct internal audits of the environmental management system, primarily at ISO14001-certified facilities. Third party inspections of such facilities are also conducted periodically by the authorized external environmental certification organization.

■ Conceptual Diagram of the Environmental Management System



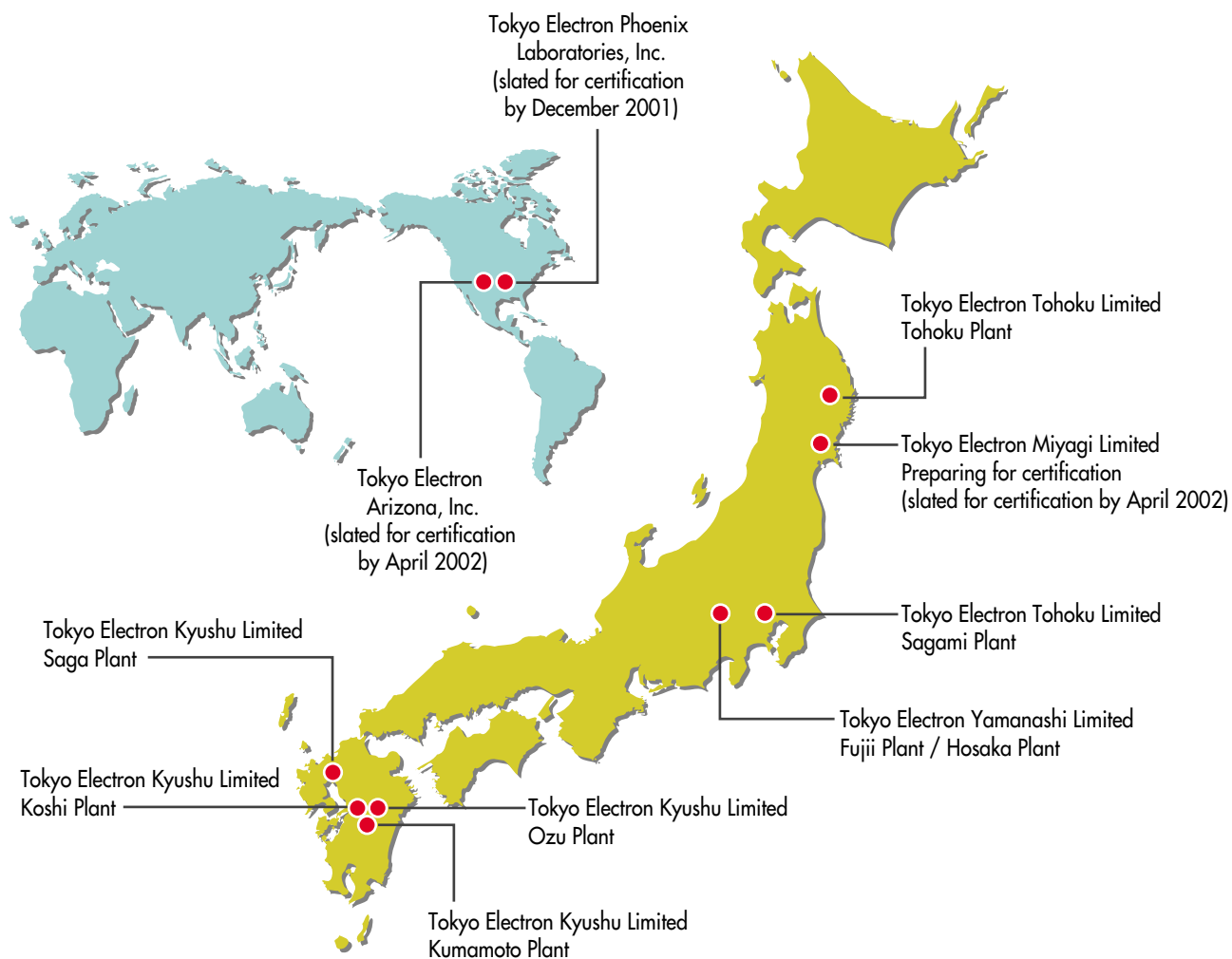
■ Establishment of the TEL Group Environmental Committee

In response to mounting global environmental problems, the TEL Group established the TEL Group Environmental Committee in 1996 as an offshoot of the existing Product Safety Committee. The Committee has been sequentially proceeding to promote ISO14001 certification of the seven major manufacturing and research facilities in Japan (Sagami, Tohoku, Saga, Kumamoto, Yamana-shi, Ozu, Koshi). As a result of such efforts, all seven facilities have been certified by third-party certification organizations during FY1997- FY1999. The Committee presently oversees the environment at TEL facilities and is promoting environmental preservation activities on a group-wide basis. Environmental issues pertaining to equipment and parts are overseen by the Worldwide Product Environment, Health, and Safety (WW product EHS) Committee.

■ External Certification (ISO14001)

Seven of TEL Group plants have been ISO14001-certified as of December 31, 1999. Additionally, Tokyo Electron Miyagi Limited aims to obtain ISO certification by April 2002.

Plant	Certification Date	Expiration Date	Certification No.
Sagami Plant	December 10, 1997	December 10, 2000	EMSC-1110
Tohoku Plant	February 19, 1998	February 19, 2001	EMSC-1118
Saga Plant	March 12, 1998	March 12, 2001	EMSC-1119
Kumamoto Plant	March 26, 1998	March 26, 2001	EMSC-1120 Rev. 1
Koshi Plant	September 9, 1999	March 26, 2001	EMSC-1120 Rev. 1
Yamanashi Plant	May 15, 1998	May 15, 2001	EMSC-1124
Ozu Plant	August 27, 1999	August 27, 2002	EMSC-1414



Environmental Audits



At TEL, environmental audits are one key activity for promoting the environmental preservation activities referred to in the “Credo.” We independently conduct internal environmental audits of every plant where an environmental management system has been implemented. The audit findings are reported to the top management at each plant and used for review and improvement of the environmental management system. To ensure that internal environmental audits are conducted reliably, they are conducted only by certified internal environmental auditors. An auditor certification system has been established at every applicable plant.

Internal Environmental Audit Implementation Status (FY1999)

Plant	Tohoku	Sagami	Yamanashi	Saga	Kumamoto	Koshi	Ozu
Month of Audit (First audit)	'99/8	'99/7	'99/10	'00/2	'99/12	'99/6	'99/4
(Second audit)	—	—	—	—	—	'99/12	'99/6
(Third audit)	—	—	—	—	—	—	'99/12

*The Koshi and Ozu Plants have been conducting internal environmental audits since fiscal year 1999.

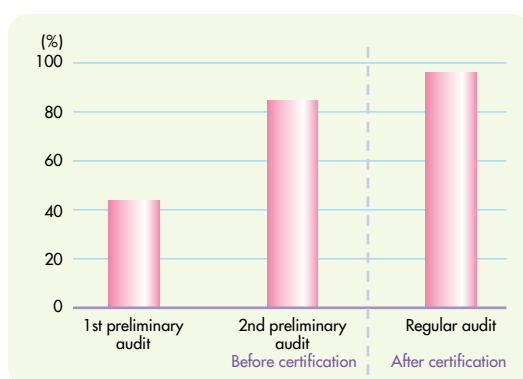
Number of Certified Environmental Auditors in TEL Group

(as of July 1, 2000)

Plant	Tohoku	Sagami	Yamanashi	Saga	Kumamoto	Koshi	Ozu	Total
Chief auditors	2	11	37	21	24	4	16	115
Auditors	24	16	94	5	54	13	18	224
Total	26	27	131	26	78	17	34	339

Topics (Audits conducted at Ozu Plant)

The Ozu Plant conducts internal environmental audits to continually upgrade its environmental management system. In April and June 1999, the plant conducted preliminary audits of all its organizational units. In December 1999, they conducted a regular audit. In August 1999, the plant was ISO14001-certified by an external certification organization. The audit results improved with each audit as the system steadily took root. The overall audit score was 42.3% for the first preliminary audit, 83.2% for the second preliminary audit, and 96.0% for the regular audit. As the graph at right shows, the audit results improved dramatically after certification.



Environmental Management System Objectives and Targets

At each plant, we first ascertained the type of impacts (environmental impacts) various environmental aspects (e.g., the plants operational activities, product manufacture, services) have or may potentially have on the environment. We then assessed such impacts (environmental impact assessment).

Through this process, we identified which environmental aspects have or may potentially have a major environmental impact (identification of significant environmental impact). To reduce the risk of these environmental impacts' occurrence, we clearly set objectives and targets.

The following lists the major objectives and targets established at ISO14001-certified plants.

- (1) Reduction of wastes and improvement of recycling rate
- (2) Promotion of energy and resource conservation
- (3) Proper control of chemical substances
- (4) Development of environmentally benign products

To achieve such objectives and targets, we have developed and are implementing an environmental management system. This entails preparing an Environmental Management Program (EMP) that specifies responsibilities, means, and schedules, among other matters; and periodically monitoring, measuring, and keeping records of key operational variables.

■ Key Environmental Objectives and Targets

Environmental Objectives	Environmental Targets
Reduction of wastes and improvement of recycling rate	<ul style="list-style-type: none"> • Thorough sorting of wastes • Implementation of plastic waste recycling • Improvement of recycling rate • Reduction of volume of waste per person • Implementation of recycling of all concentrated liquid wastes
Promotion of energy and resource conservation	<ul style="list-style-type: none"> • Reduction of paper usage • Reduction of water usage • Reduction of power usage • Development of energy management systems
Proper control of chemical substances	<ul style="list-style-type: none"> • Reduction of chemical substance usage • Preparation for compliance with the PRTR system • Ascertainment of status quo of exogenous endocrine-disrupting chemicals (environmental hormones) • Augmentation of chemical substance monitoring equipment and operation thereof • Conduct of emergency response drills for chemical substance safety
Development of environmentally friendly products	<ul style="list-style-type: none"> • Reduction of products' energy consumption • Identification of products' recyclable components • Establishment of product disposal procedures • Reduction of quantities of chemical solutions used by products • Complete disuse of regulated CFCs used by products

Waste Reduction and Recycling

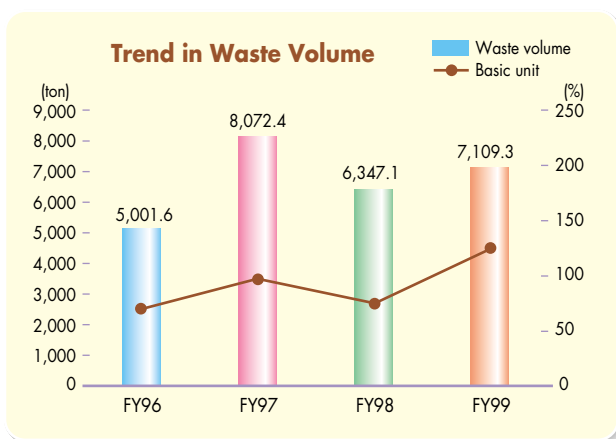


Waste reduction is an important issue in terms of both preserving the global environment and alleviating the burden on incinerators and other waste disposal facilities.

Our philosophy is, “Minimize waste generation, maximize recycling of wastes that are generated, and properly dispose of wastes that cannot be recycled.” In accordance with this philosophy, every TEL Group plant reduces the amount of waste it generates and sorts wastes to facilitate recycling.

■ Total Waste Volume

In fiscal year 1999, we started keeping a tally of the amount of waste generated by our non-manufacturing facilities in addition to our manufacturing plants. At manufacturing plants and research facilities, waste volume grew in tandem with a substantial rise in production and capacity utilization. In fiscal year 1999, the TEL Group’s total waste volume increased on a year-over-year basis. For reference, the graph below includes fiscal year 1996 data for certain manufacturing plants.

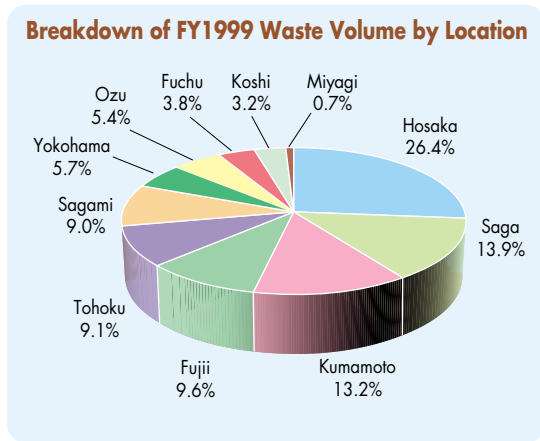
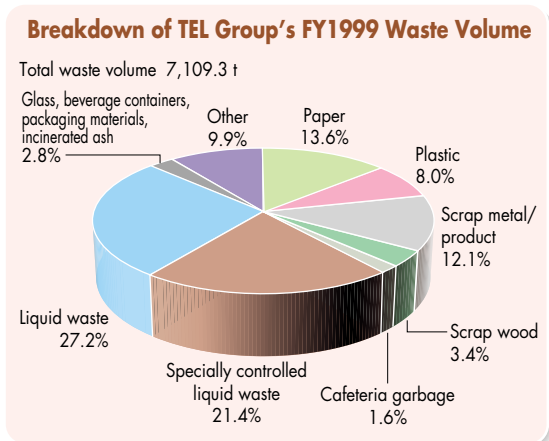


$$\text{Basic unit} = \frac{\text{Waste volume}}{\text{Sales}}$$

(FY1997 = 100%)

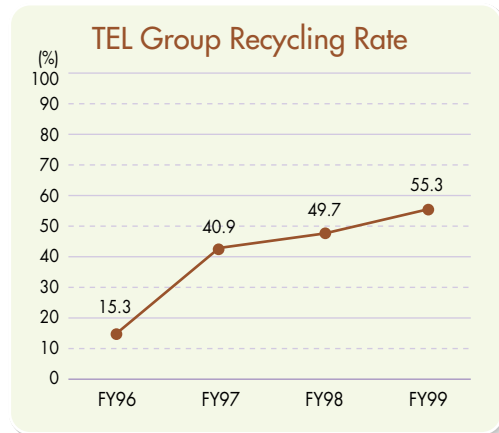
■ Breakdown of Waste Volume

Liquid wastes (including liquids classified as specially controlled industrial wastes) account for some 48.6% of waste volume, followed in order by paper, scrap metal/product, and plastic waste. All liquid wastes that cannot be disposed of in-house are collected and properly disposed of by outside contractors.



■ Recycling

We mainly recycle paper, beverage containers, scrap wood, glass, plastic waste, and metal. Over the past four years, the TEL Group's aggregate recycling rate progressively increased from 15.3% to 40.9%, 49.7%, and 55.3%, respectively.



■ Examples of Recycling Programs at Offices

At the Akasaka Headquarters and Fuchu Technology Center, we are now recycling even confidential documents that were previously shredded or incinerated. To do so, we have teamed up with a recycling contractor to implement a box shuttling system that maintains complete confidentiality.

■ Sorting

Sorting is essential for recycling to work. At every plant, we collect wastes sorted by their physical properties into 26–46 different classifications.



Waste storage facility (Tohoku Plant)

■ Supervision of Waste Treatment Plants and Contractors

At each of our facilities, we certify and oversee contractors that handle interim treatment and final disposal of wastes. Before contracting with a new contractor for waste disposal services, we conduct a certification check, including verification of its license status and on-site inspection of its facilities. We thus make sure that the contractor has the capability to properly and lawfully process and/or dispose of our wastes. Even after a contractor is certified, we conduct periodic on-site inspections to ascertain the status of its operations.

Energy Conservation

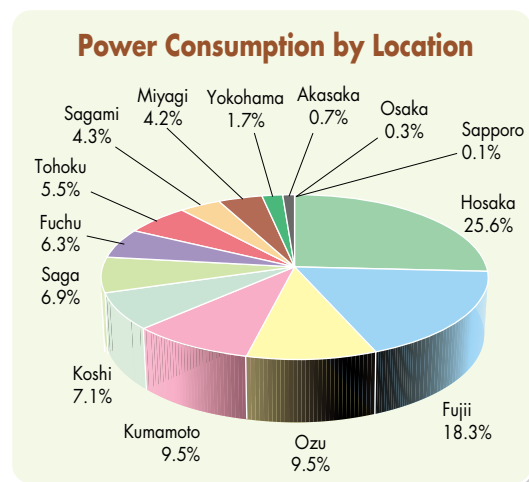
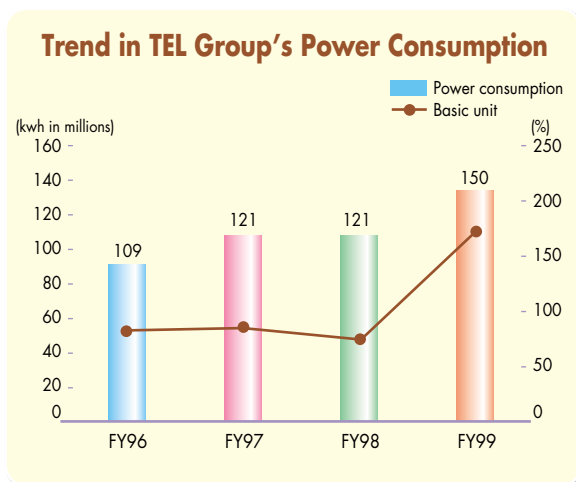


At the TEL Group, we promote energy conservation as a means preventing global warming. At all our facilities, we universally strive to reduce power consumption through such means as turning lights off during lunch hour and regulating air conditioners' temperature setting. At ISO14001-certified plants, we systematically promote energy conservation toward specific objectives and targets.

■ Main Energy Conservation Measures

- Reduction of power consumption by lighting and office equipment (at all facilities)
- Regulation of air conditioning temperature setting (at all facilities)
- Design and operation of capacity utilization reduction system for demonstration equipment (Yamanashi)
- Turning-off of vending machines at night (Osaka)
- Partial suspension of clean room use (Saga)
- Scheduled equipment shutdowns (Ozu, Yamanashi)
- Turning-off of compressors at night (Yamanashi)

In fiscal year 1999, we began keeping a tally of power consumption at non-manufacturing facilities in addition to manufacturing plants. At our manufacturing plants and research facilities, production and assessment equipment has continuously been operating at full capacity since the second half of fiscal year 1999. As a result, the TEL Group's aggregate power consumption increased substantially on a year-over-year basis in fiscal year 1999. Nonetheless, we will continue to promote energy conservation on an ongoing basis at all our facilities. For reference, the graph below includes fiscal year 1996 data for certain facilities.



$$\text{Basic unit} = \frac{\text{Power consumption}}{\text{Sales}} \quad (\text{FY1997} = 100\%)$$

■ Examples of Energy Conservation Initiatives

- In fiscal year 1999, the Saga Plant reduced its basic unit of power consumption per square meter by 20.4% relative to the fiscal year 1996 level, surpassing its target by 10%. The plants' energy conservation activities thus yielded substantial results, although the results were inflated by reduced production at the plant.
- At the Ozu Plant, we reduced power consumption by turning off lights during lunch hour throughout the plant and limiting use of air conditioning in certain areas. The result was a 9,000 kwh reduction in power consumption.
- At our Osaka Branch, we installed timers on beverage vending machines. The timers conserve energy by automatically turning the machines off at night.

Resource Conservation

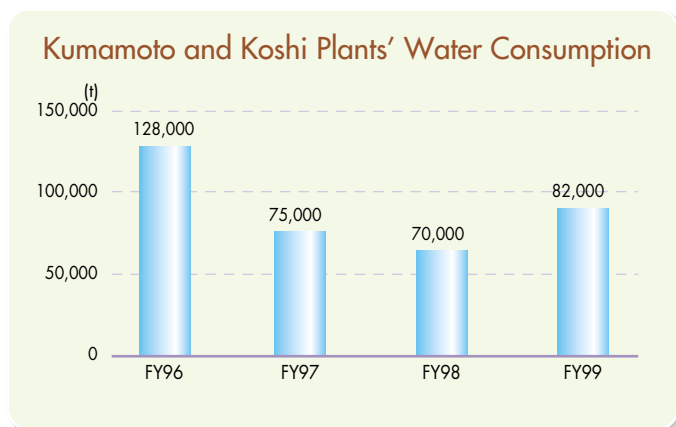
We are promoting reduction of paper use, mainly at ISO14001-certified plants, as a means of conserving natural resources. At all our facilities, we use recycled paper for everything except certain special uses. We have also reduced our water consumption through day-to-day water conservation activities and installation of cooling-water circulation systems and dry vacuum pumps.

■ Examples of Initiatives to Reduce Paper Usage

- At the Saga Plant, we reduced use of copy paper by 2.9 million sheets between fiscal years 1996 and 1999 (61% reduction), largely as a result of promoting use of electronic media in lieu of paper. To continue reducing paper usage, we consider it crucial to further promote conversion to electronic media and to place priority on revamping operating procedures and reducing use of forms.
- At the Ozu Plant, we switched over to completely recycled paper (i.e. 100% used-paper content) from April 1999. In August, we rebuilt our drawing printers so they would be able to accommodate completely recycled paper. As a result, we have achieved a completely recycled paper usage rate of 94% at the Ozu Plant.
- At the Koshi Plant, we reduced paper usage by copying on both sides of copy paper and making reduced-size copies. We are also proceeding with conversion to electronic media to further minimize paper usage.
- At the Sagami Plant, we reduced paper usage by some 1.4 million sheets (approximately 6 tons) in fiscal year 1999 through such means as using both sides of paper, making reduced-size copies, and streamlining document distribution. This is a 22% year-over-year reduction, which achieved the plant's target. The plant is also recycling all discarded copy paper. Moreover, recycled paper accounts for over 90% of its copy paper usage.

■ Examples of Initiatives to Reduce Water Consumption

- At the Saga Plant we reduced total municipal water consumption by 50% in fiscal year 1999, exceeding the target of 35%.
- At the Ozu Plant, we modified pure-water production equipment in March 1999 in the aim of reducing industrial water consumption. This has resulted in a 19% (9,200 m³) annual reduction in industrial water usage.
- The Kumamoto and Koshi Plants' aggregate water consumption had been rising since the Koshi Plant commenced operation in fiscal year 1998, but water consumption is now declining by virtue of water circulation equipment installed in the middle of fiscal year 1999. We think we can reduce these plants' water consumption by as much as 75,000 t per year.



Chemical Substance Control



■ Comprehensive Chemical Substance Control

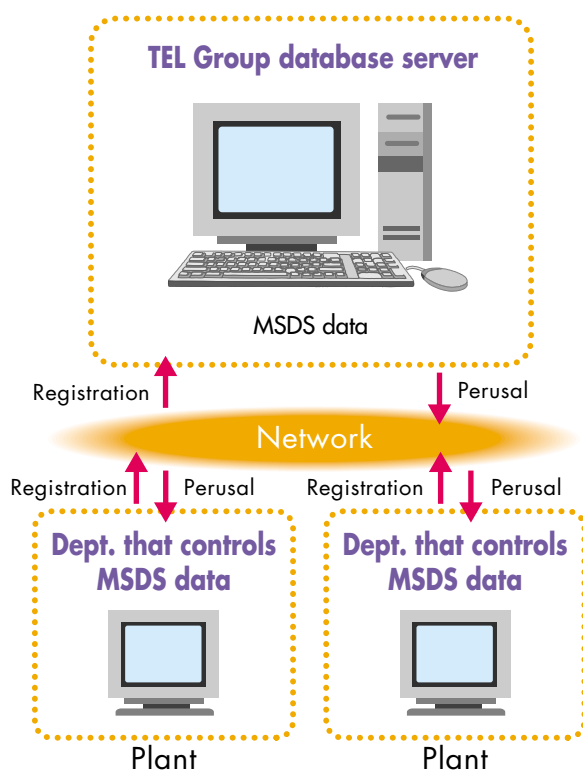
If chemical substances are not properly used and controlled, they can have significant environmental and health impacts through production or products. Chemical control requires not only legal compliance but also preparation based on risk assessment. At the TEL Group, we thoroughly and properly control the chemicals used for production and used in our products to prevent significant environmental and health impacts. Toward this end, we conduct risk assessments of chemicals' noxious properties based on an understanding of actual circumstances.

■ Compliance with the Pollutant Release and Transfer Register Law (Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management)

Pollutant Release and Transfer Register (PRTR) Laws originated as a means of ascertaining the extent to which chemicals are released into the environment. In Japan, the Environment Agency initiated a pilot PRTR program in certain regions in 1997. In 1999, Japan enacted the Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management, scheduled to go into effect in April 2001. At the TEL Group, we will control the material balance of substances subject to the PRTR Law and report to the government thereon.

■ Development of an MSDS Database

At the TEL Group, we control and use Material Safety Data Sheets (MSDS) through a computer system at each plant that reviews and registers chemical substances when they are first used. Henceforth, however, we will develop an on-line database that will enable group-wide access to MSDS data.



Products for Reduced Environmental Impact

At the TEL Group, we have endeavored to satisfy our customers around the world by offering services and products such as semiconductor and LCD production equipment and electronic components. Moreover, as stated in our Principles of Environmental Preservation, we will continuously endeavor in unison with customers to reduce TEL Group products' environmental burden. Specifically, every plant will undertake to develop environmentally benign products, setting product-specific targets for energy and resource conservation, reduction of chemical usage, and other such matters.

■ Examples of Key Initiatives

Business Unit	Description of Initiative
Etch systems (ES) Yamanashi Plant	<ul style="list-style-type: none"> • Reduction of power consumption
LCD systems (LCD) Yamanashi Plant	<ul style="list-style-type: none"> • Reduction of power consumption
LCD systems (LCD) Ozu Plant	<ul style="list-style-type: none"> • Reduction of chemical usage
Cleaning systems (CS) Saga Plant	<ul style="list-style-type: none"> • Reduction of chemical solution usage • Reduction of IPA usage • Reduction of pure water usage • Reduction of power consumption
Clean track (CT) Kumamoto Plant	<ul style="list-style-type: none"> • Reduction of chemical solution usage • Reduction of power consumption
Diffusion systems (DS) Sagami Plant Tohoku Plant	<ul style="list-style-type: none"> • Reduction of equipment's footprint • Reduction of vinyl chloride resin cable usage • Establishment of procedural guidelines for equipment disposal • Reduction of power consumption

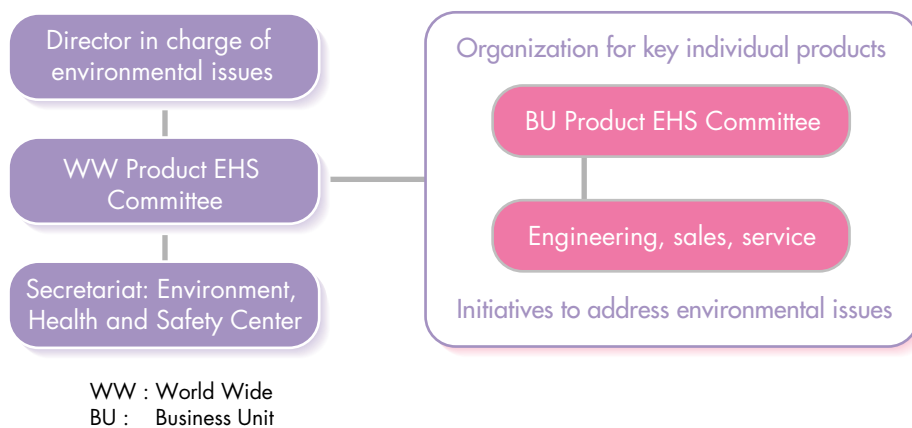
■ Measures for Reduction of Environmental Impact in Physical Distribution

For the packaging used to ship our products, we are investigating new reusable materials. Additionally, we reuse some of the packaging materials we use now. For cushioning, we use and reuse an environmentally benign, biodegradable material. At the Kumamoto Plant, we are studying the feasibility of packing parts in containers to reduce the packaging materials used to ship them. We have even made some prototype containers. Henceforth, we will test the containers repeatedly and make improvements in preparation for their use.



■ Organization for Rectification of Products' Environmental Problems

Common issues related to rectification of environmental problems involving the semiconductor or LCD production equipment manufactured and sold by the TEL Group are reviewed and decided upon by the WW Product EHS Committee chaired by the director in charge of environmental issues. For product-specific environmental problems, the concerned design/production, sales, and/or service department conducts activities to rectify the problem under the direction of the applicable BU Product EHS Committee.



■ Targets for Reduction of Product-related Emissions and Consumption

In product development, one of our aims is reduce products' environmental impacts such as gas emissions and power consumption. Toward this end, we have set targets for the 2002 models of our semiconductor production equipment for 200 mm and 300 mm wafers based on the 1997 models of our equipment for 200 mm wafers, as shown in the table below.

Product EHS Roadmap

Wafer Size	1997 Standard 200 mm	2002 Target 200 mm	2002 Target 300 mm
HAP emissions	1	0.4	0.5
VOC emissions	1	0.4	0.5
PFC emissions	1	0.4	0.5
Power consumption	1	0.8	1
Water consumption	1	0.8	1
Gas consumption	1	0.8	1

*Targets for 300 mm oxidation/diffusion, LP, CVD equipment are set at 1.5 times the standard data.

- HAP: Hazardous Air Pollutants
- VOC: Volatile Organic Compounds
- PFC: Per-Fluoro Compounds

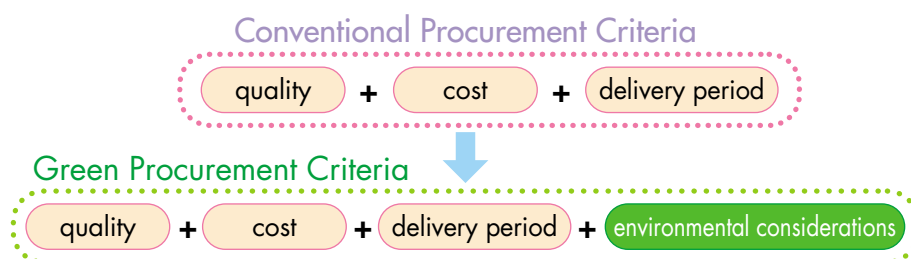
■ Fiscal Year 2000 Action Plan for Reducing Products' Environmental Impact

The table below shows the TEL Group's fiscal year 2000 action plan for developing environmentally benign products based on the Product EHS Roadmap.

Issue	FY2000 Action Plan	
Global warming prevention	Reduction of power consumption	Adequately reduce power consumption in fiscal year 2000 as one step toward achieving the Product EHS Roadmap's targets for 2002.
	Reduction of PFC emissions	Adequately reduce PFC in fiscal year 2000 as one step toward achieving the Product EHS Roadmap's targets for 2002.
Air pollution prevention, Safeguards against acid rain	Reduction of VOC emissions	Adequately reduce VOC in fiscal year 2000 as one step toward achieving the Product EHS Roadmap's targets for 2002.
	Reduction of HAP emissions	Adequately reduce HAP in fiscal year 2000 as one step toward achieving the Product EHS Roadmap's targets for 2002.
Prevention of ozone layer depletion	Restriction of use of ozone-depleting substances	Promote disuse of HCFC substances
Reduction of consumption of depletable resources	Promotion of recycling /reuse (dismantlement, labeling of materials, disposal)	Set targets for every product and commence action to achieve them. Determine feasibility of incorporating information into work procedures and manuals related to dismantlement and disposal.
	Prolongation of life span of equipment /parts	For every product, set targets for prolonging the life of equipment/parts and commence action to achieve them.
Purchased products	Adoption of "green" procurement	Form a green procurement organization, establish green procurement standards, begin asking suppliers to cooperate.
	Lead-use restrictions	Share information regarding substitutes for lead solder. Ascertain extent of lead usage in purchased products.
Life-cycle assessment (LCA)	Introduction of LCA	Establish the capability to continually assess and reduce products' environmental burden throughout their life cycle. For every product, select one or more issues from the above (including global warming prevention) and commence LCA.

■ Preparation for Implementation of Green Procurement

"Green procurement" means procuring parts based on environmental considerations in addition to the conventional procurement criteria of quality, cost, and delivery period.



TEL Group companies have obtained ISO14001 certification and implemented green purchase of office supplies, packaging materials, and other goods. We will also proceed to implement green procurement of parts used in our products. We will ask suppliers to cooperate with green procurement and will offer our customers products with a reduced environmental impact. In addition to conducting environmentally benign business activities, we will propagate this approach to our suppliers and collaborators, thereby contributing to activities to preserve the global environment.

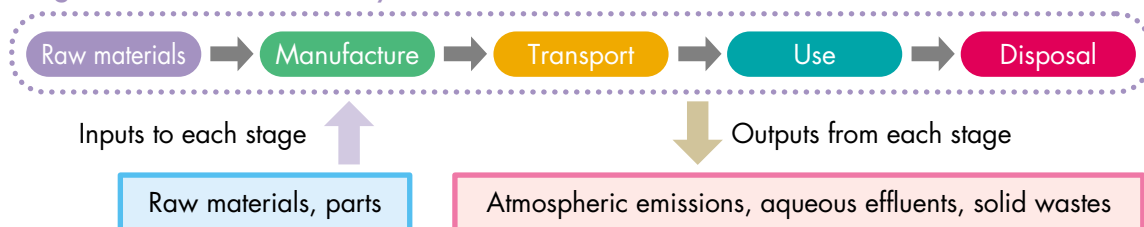


■ LCA Initiative

LCA (Life Cycle Assessment) is a technique for quantitatively assessing a product's environmental impacts during the course of its life from the raw material stage through manufacture, transport, use, and disposal. To make products with relatively minor environmental impacts, it is necessary to analyze and assess environmental impacts and to rectify on a priority basis problems that have major environmental impacts. In terms of the assessment method, there are many potential impacts to be considered, as shown in the table below. On the global level, global warming is regarded as a major environmental issue. For global warming, we assess environmental impacts in terms of CO₂ emissions. Many types of business activities contribute to global warming by generating CO₂. For instance, using electricity results in CO₂ emissions from power plants that burn oil. Driving a vehicle emits CO₂ as a product of gasoline combustion. Steel making emits CO₂ when coke is burned. Aluminum refining uses a lot of electric power, resulting in CO₂ emissions.

When we use LCA to assess global warming, we assess CO₂ emissions during a product's life cycle by adding up total CO₂ emissions throughout its life cycle. On the basis of the assessment results, we review the life-cycle stages with a lot of CO₂ emissions and investigate a broad range of corrective action such as substitution, design improvement, and process improvement. Through such a process of comprehensively reducing CO₂ emissions, we develop products that impose the smallest possible impact on the environment.

Stages of the Product Life Cycle



Environmental Issues Commonly Addressed in Environmental Impact Assessments

Environmental Impact	Global Environment	Regional Environment	Local Environment
Atmospheric	<ul style="list-style-type: none"> • Global warming • Ozone-layer depletion 	<ul style="list-style-type: none"> • Acid rain 	<ul style="list-style-type: none"> • Air pollution • Photochemical smog
Water quality	<ul style="list-style-type: none"> • Marine pollution • Discharge of noxious substances 	<ul style="list-style-type: none"> • Eutrophication of lakes and wetlands • River pollution 	<ul style="list-style-type: none"> • Ground water contamination
Soil	<ul style="list-style-type: none"> • Loss of rain forests • Desertification 	—————	<ul style="list-style-type: none"> • Soil contamination • Agrochemical contamination
Other	<ul style="list-style-type: none"> • Consumption of depletable resources • Impacts on ecosystems 	—————	<ul style="list-style-type: none"> • Impacts on human health

Environmental Accounting

“Environmental accounting” is a tool for ascertaining the cost and effect of a company’s environmental activities for use within the company’s routine operations. At the TEL Group, we have decided to adopt an environmental accounting system to quantitatively ascertain the costs associated with our environmental conservation activities and utilize them as gauges of corporate activities. Although there are currently no uniform international standard for environmental accounting definitions and classifications, Japan’s Environment Agency released Developing an Environmental Accounting System (Year 2000 Report) in May 2000.

In January 2000, we established an Environmental Accounting Working Group composed of TEL Group personnel from throughout Japan. The Environment, Health and Safety Center serves as the Working Group’s secretariat. At the same time, we also clarified (1) our approach to adopting environmental accounting, (2) the scope of our environmental accounting program, and (3) methods of tabulating environmental accounting data. In fiscal year 1999, we ascertained the cost of our environmental activities and implemented an environmental accounting system on a trial basis atop the foundation of the environmental management system. We intend to maintain such environmental conservation activities in the future as well.

■ Fiscal Year 1999 Results

Our fiscal year 1999 environmental costs (investments and expenses) are tabulated below. The numbers apply to the domestic plants and other facilities of TEL and its affiliates. Environmental conservation costs are classified as cost within the business area, management activity cost, and social activity cost. These costs do not include depreciation of capital equipment.

■ Future Issues

During the recent trial, we did not calculate costs such as cost of upper stream/lower stream, R&D cost, and environmental damage cost, but we consider it necessary to investigate and include such costs in the future. From the standpoint of effective utilization of management resources, it is also necessary to quantify improvements in environmental performance and ascertain their cost and effect. We plan to formulate an approach to ascertaining results and to undertake to quantify results in monetary terms based on this approach. We intend to disclose such issues as they are determined.

■ TEL Group’s Environmental Costs

(FY1999 results in thousands of yen)

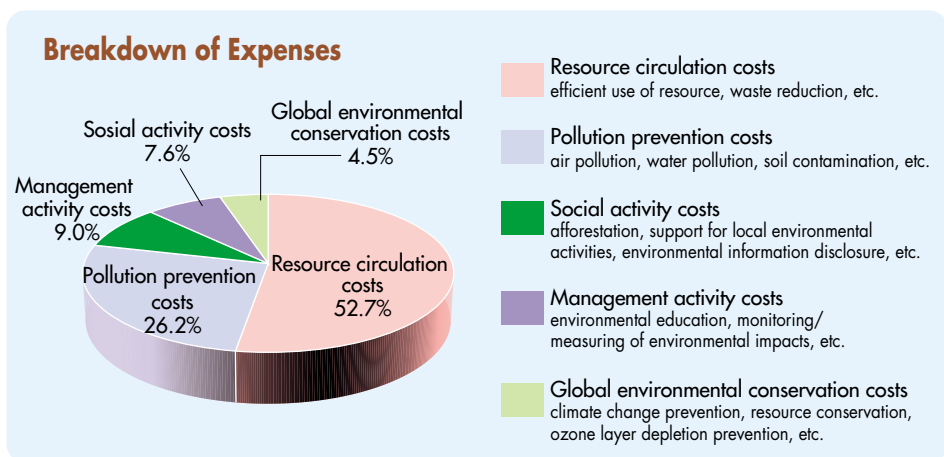
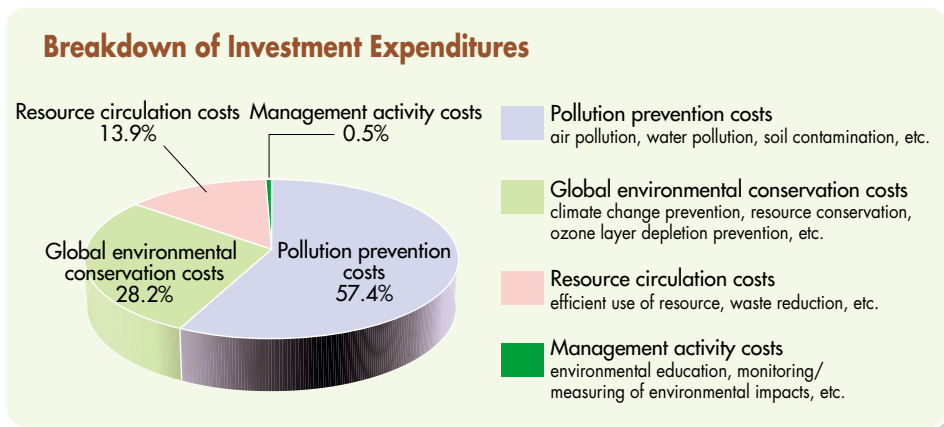
Environmental Preservation Cost Classifications		Main Activities	Investments	Expenses
Cost within the business area			133,114	454,598
Itemization	(1) Pollution prevention costs	air pollution, water pollution, soil contamination, etc.	76,718	142,617
	(2) Global environmental conservation costs	climate change prevention, resource conservation, ozone layer depletion prevention, etc.	37,775	24,791
	(3) Resource circulation costs	efficient use of resource, waste reduction, etc.	18,621	287,190
Management activity costs		environmental education, monitoring and measuring environmental impacts, etc.	630	49,242
Social activity costs		afforestation, support of local environmental activities, environmental information disclosure, etc.	0	41,487
Total			133,744	545,327



Major Environmental Costs

Below are several examples of the TEL Group's major environmental costs in the categories of cost within the business area, management activity cost, and social activity cost. Cost within the business area are further classified as (1) pollution prevention costs, (2) global environmental conservation costs, and (3) resource circulation costs.

- Cost within the business area:
 - (1) Pollution prevention costs: installation of filtering equipment, incinerator dismantlement and removal expense, construction of storage facilities for special material receptacles, installation of redundant plumbing for pure-water product equipment's liquid waste, environmental equipment maintenance expense, etc.
 - (2) Global environmental conservation costs: installation of unit cleaners for turbo freezers, installation of UV-blocking film on windows, rebuilding of vacuum pumps' cooling water circulation systems, etc.
 - (3) Resource circulation costs: construction and enlargement of waste storage facilities, recycling expenses, waste processing expenses, etc.
- Management activity costs: environmental education expenses, cost of periodic audits by third-party organizations, environmental measurement expenses (e.g., for air/water pollution, soil contamination, noise, vibration, etc.), purchase of LCA software, etc.
- Social activity costs: afforestation expenses, expenses to support environmental activities conducted by local residents, contributions to environmental groups, environmental announcement expenses



Societal Contribution and Environmental Education

■ Societal Contribution

To preserve, maintain, and improve the global environment, businesses, government, and local communities must work together to conduct activities in close communication with each other. At the TEL Group, we actively participate in environmental preservation activities conducted by customers and local communities, in accordance with our Principles of Environmental Preservation. Below is a listing of the some of the activities our plants have done to contribute to their local communities.

■ Examples of Notable Activities

Yamanashi Plant

- Cooperates with and conducts Japanese Red Cross blood drives (1987: received commendation from Governor of Yamanashi Prefecture; 1991: received a certification of appreciation from the Minister of Health and Welfare)
- Co-sponsors the Takedanosato Fireworks Festival
- Makes annual donations to a local newspaper's welfare and culture foundation. Donations are collected in collection boxes installed on the plant's premises
- Contributes to the Red Feather Community Fund
- Allows plant parking lots to be used for events held by Nirasaki City
- Offers summer internships for local junior high school students
- Conducts plant tours for local students
- Collects and donates used postage stamps and new year's towels
- Donates to and otherwise cooperates with Nirasaki City's street improvement projects
- Installed blinking intersection rivets on roads from the plant to intersections with major thoroughfares
- Co-sponsors and supports local festivals
- Donates to and otherwise supports local organizations (e.g., volunteer fire department)
- Conducts traffic safety activities under the auspices of the Nirasaki Police Department, including selection of Traffic Etiquette Ladies

Employees participated as Traffic Etiquette Ladies in the kickoff ceremony for Challenge 180 (a campaign aimed at achieving no traffic accidents or infractions for 180 days). Employees also participated in traffic safety week events and promoted traffic safety in the local community.



Challenge 180 kickoff ceremony



Tohoku Plant

- Participates in clean-up campaigns in the Industrial Park as a member of the Esashi Industrial Park's occupants committee

Every May and October, plant employees participate in a clean-up campaign sponsored by the Esashi Industrial Park's occupants committee. The campaign entails picking up trash along the roads inside the industrial park and otherwise beautifying the environment.

- Co-sponsors and participates in the Esashi Folk Music Festival
- Co-sponsors the Esashi Summer Festival
- Co-sponsors the Mizusawa Fireworks Festival
- Cooperates with and conducts Japanese Red Cross blood drives
- Organized the Young Drivers Club made up of employees under 25 years old

In 1994, the Plant formed the Young Drivers Club at the behest of the Esashi Police Department in the aim of preventing traffic accidents among drivers under the age of 25. The club's activities aim to elevate young employees' consciousness of traffic safety, prevent traffic accidents, and promote camaraderie among members. The club has published a newsletter, conducted traffic safety campaigns, posted traffic safety placards on the plant's premises, and solicited entries for the My Traffic Safety Proclamation contest in conjunction with the prefecture's traffic accident prevention campaign. The plant has also held traffic safety seminars.

- Stations personnel at the plant's two entrances during morning rush hour to remind employees to drive safely in conjunction with Traffic Safety Week in the spring and fall
- Promotes a campaign to discourage drivers from leaving their engines running while parked on plant premises in conjunction with ISO14001 certification
- Encourages employees to contribute to a year-end mutual aid fund donates the collected funds to charity
- Contributes to the Red Feather Community Fund
- Collects and donates used postage stamps
- Conducts plant tours for students from elementary school to college
- Offers plant internships for junior high school, high school, and vocational school students
- Provides parking spaces on company property for events such as the Esashi Fire Fighters Competition
- Dispatches athletes to the prefectural sporting events at the behest of the Esashi Physical Education Association



Commendations for the Young Drivers Club



Campaign to encourage seatbelt use during Traffic Safety Week

Sagami Plant

- Contributes to the Kanagawa Community Fund Association
- Cooperates with and conducts Japanese Red Cross blood drives
- Co-sponsors and contributes to the Lake Tsukui Cherry Blossom Festival
- Contributes to Kawajiri Hachiman Shrine
- Contributes to the Kanagawa Green Trust Foundation's Greenery Fund
- Offers internships to local junior high school students



local junior high school students

Ozu Plant

- Participates in the annual Ozu-machi Environmental Beautification Campaign

Plant employees pick up trash on and around the plant grounds at certain times and days during June (Environment Month).

- Cooperates with and conducts Japanese Red Cross blood drives
- Co-sponsors the Azalea Festival and Jizo Festival
- Participates in 180 Day Driving Safety Contest

The contest is sponsored by the Ozu Police Department for local companies. Employees enter the contest in teams of five. The object is for teams to go 180 days with no accidents or traffic

Saga Plant

- Participates in the Tosu City Trash Reduction/Recycling Business and Eco Office Commendation Program

In 1998, the Saga Plant was certified as an Eco Office in the Tosu City as a place of business actively involved in activities to reduce trash volume and recycle. The plant actively cooperates with waste reduction activities promoted by local government bodies.

- Conducts cleaning and lawn mowing in nearby public parks
- Promotes a campaign to discourage drivers from leaving their engines running while stopped as one measure to prevent global warming
- Cooperates with and conducts Japanese Red Cross blood drives
- Donated computers to the Tosu Library
- Collects and donates used postage stamps and telephone cards

Kumamoto Plant

- Conducts beautification activities on and around the plant grounds

During June (Environment Month) and October (Hygiene Month), plant employees clean up the plant grounds and its environs, led by members of the Safety and Hygiene Committee and Safety Promotion Committee.

- Cooperates with and conducts Japanese Red Cross blood drives
- Co-sponsors the Kikuyo-machi Summer Festival
- Promotes a campaign to discourage company bus drivers from leaving their engines running while stopped as one measure to prevent global warming



Employees involved in beautification activities



Koshi Plant

- Conducts beautification activities on plant grounds and adjacent roads
 Plant employees pick up trash on and around the plant grounds at certain times and days during June (Environment Month).
- Conducts plant tours for students from elementary school to college
- Exhibited at the Koushi-machi Industry Fair, an event held in conjunction with a National Athletic Meet held in Kumamoto Prefecture
- Participates in Driving Safety Contest
- Participates in athletic sponsored by the Koushi-machi Business Association
 Activities sponsored by the Koushi-machi Business Association primarily aim to promote friendship and harmony among its member companies. It aims to contribute to the local community's development through its own development.



Koushi-machi Industry Fair



Picking up trash

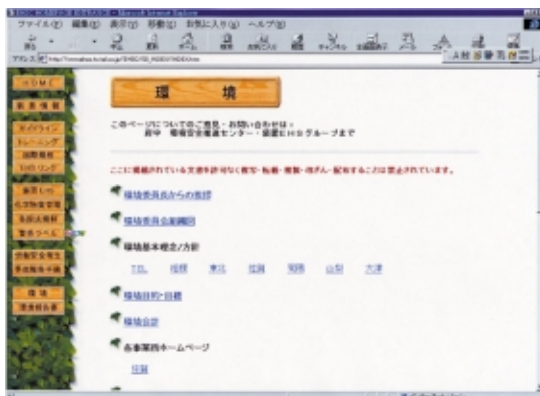
Environmental Education

At the TEL Group, we conduct environmental education for all grades of employees, including newly hired ones. In our advanced education program, we educate executives, managers and internal auditors, cultivating specialized knowledge. We also conduct special training in routine operations and management for employees involved with significant environmental aspects. We strive to increase their knowledge and emergency preparedness.



Other Education Activities

We also publish environmental information on the TEL Intranet Web site, including updates on the latest environmental trends and the status of our environmental initiatives. We are thus striving to share information within the TEL Group and further educate employees.



The Environment, Health and Safety Center's homepage

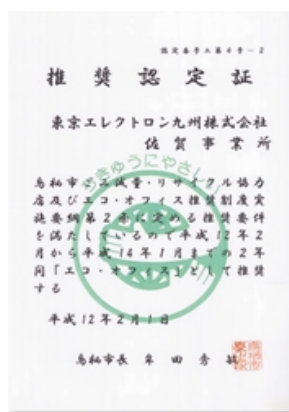
Other Activities

■ Eco Office Certification

In February 1998, the Saga Plant was awarded a certification by Tosu City under a program called the Tosu City Trash Reduction/Recycling Business and Eco Office Commendation Program. The certification was in recognition of the plant's previous efforts to address environmental issues. The plant will henceforth be inspected and recertified at two-year intervals.



Eco Office commendation



Eco Office certificate

■ Green Purchase

Led by our administrative departments, we are promoting purchase of environmentally benign products such as paper products, office supplies, and printed materials. Such products that we are currently purchasing include the following.

- Copy paper (recycled paper)
- Business cards (recycled paper)
- Company brochures, etc. (recycled paper)
- Toilet paper (recycled paper)
- Writing utensils
- File folders



Copy paper (70% reused paper, 70% whiteness) and publication printed on recycled paper.



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