For the Environment
Environmental Activities

The Fujitsu Group has pursued "operating in harmony with nature" since its founding in 1935. Environmental conservation is one of our highest priorities, and our environmental management is guided by Corporate Values enshrined in the Fujitsu Way, that "in all our actions, we protect the environment and contribute to society."

As a framework for the consistent practice of environmental activities in all business fields, we formulated the Fujitsu Group Environmental Policy, which clearly sets out our philosophy and guidelines for action. We also drafted the Green Policy 21 environmental concept that serves as the foundation for all environmental activities, as well as Green Policy 2020, our medium-term environmental vision with targets to meet by 2020. In addition, we are implementing Green Policy Innovation, an initiative to reduce environmental burden using Green ICT , along with the Fujitsu Group Environmental Protection Program (Stage VI). Through these measures we aim to reduce the burden the Fujitsu Group, its customers and society put on the environment.

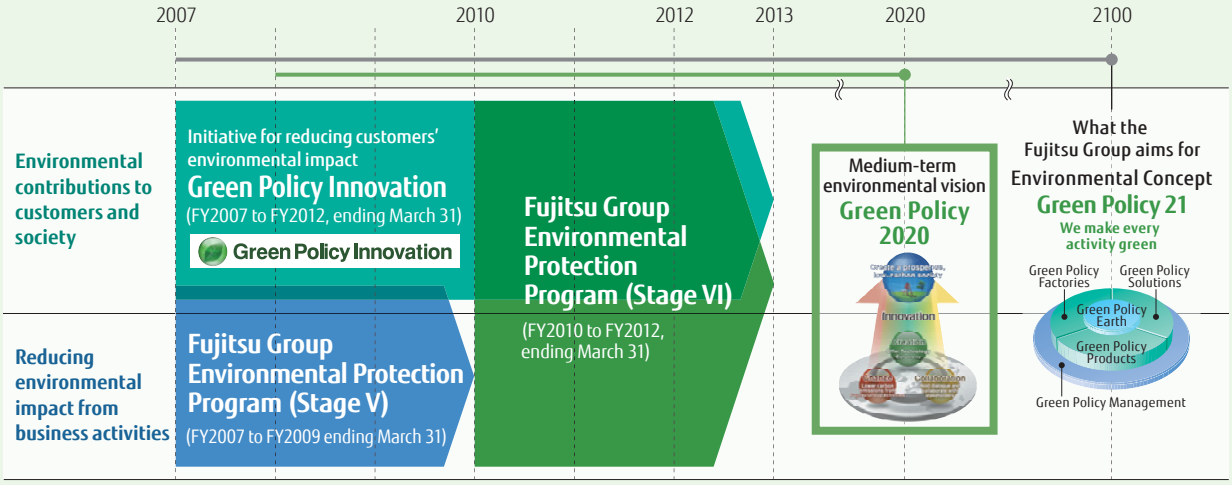
WEB
- Fujitsu Group Environmental Policy
  http://www.fujitsu.com/global/about/environment/approach/policy/
- Environmental Concept "Green Policy 21"
  http://www.fujitsu.com/global/about/environment/approach/greenpolicy21/

As a Global ICT Corporation, We Reduce the Environmental Burden of Our Corporate Activities and Those of Our Customers and Society

The realization of a low-carbon society is one of the central challenges for humanity in the 21st century, as reflected in the goal put forward during a recent G8 Summit to halve emissions of greenhouse gases worldwide by 2050. To achieve this, it will be necessary for society as a whole to find more environmentally friendly ways to work and live. Multifaceted support from ICT is an increasingly important part of these efforts.

As a global ICT corporation, the Fujitsu Group develops advanced environmental technologies, and makes products and services employing these technologies available throughout the world. Through the pursuit of this mission we not only lessen the environmental burden of our own business activities but also help to reduce the environmental burden of our customers and society.

Fujitsu Group Environmental Activities



The History of Fujitsu's Environmental Activities

- •1935 Park-style design adopted for new Kawasaki Plant at the suggestion of Fujitsu's founder, Manjiro Yoshimura
- •1938 Kawasaki Plant completed
- •1972 Environmental control sections established at each plant
- •1989 Environmental Committee established
- •1991 Environmental Engineering Center established
- •1992 Fujitsu's Commitment to the Environment formulated
- •1993 Fujitsu Environmental Protection Program (Stage I) formulated
- •1997 All domestic manufacturing sites certified ISO14001 compliant
- •2000 Corporate Environmental Strategy Unit established
- •2002 Fujitsu Group Environmental Policy established
- •2006 ISO14001 globally integrated certification acquired, including overseas Group companies
- •2007 Environmental Burden Reduction Project by Green ICT, Green Policy Innovation, started
- •2008 Green Policy 2020 medium-term environmental vision formulated
- •2009 2009 Biodiversity Action Principles formulated
- •2010 Fujitsu Group Environmental Protection Program (Stage VI) formulated

Green Policy 2020 Medium-term Environmental Vision for a Prosperous, Low-Carbon Society

We devised Green Policy 2020, a medium-term environmental vision that defines the role and direction of the Fujitsu Group to pursue in the realization of a prosperous, low-carbon society.

The keywords underpinning this corporate vision are "Creation" of innovative and advanced technologies and business solutions; "Collaboration" with customers and business partners; and "Change" within the Fujitsu Group itself. The three goals to achieve by 2020 are:

1. **Benefit our customers and society:** Reduce CO_2 emissions in Japan by around 30 million tons annually
2. **Pursue internal reforms:** Enhance overall energy efficiency in all business fields to world-leading levels
3. **Preserve biodiversity:** Implement all the objectives in the Leadership Declaration of the "Business and Biodiversity Initiative"*

In addition, Fujitsu has established a total of 20 themes for initiatives to realize these goals, including 13 themes for benefiting customers and society, five themes for internal reforms within Fujitsu and two themes for preserving biodiversity.

*** The Business and Biodiversity Initiative**
was launched by the German government during the 9th Conference of the Parties to the Convention on Biological Diversity (COP 9) in May 2008, calling on private corporations to become involved in conserving biodiversity. Fujitsu has signed the Leadership Declaration.

WEB Medium-Term Environmental Vision "Green Policy 2020"
http://www.fujitsu.com/global/about/environment/approach/greenpolicy2020/

Working with our customers and business partners, we will promote environmental innovation at Fujitsu and within society as a whole by fusing technologies and expertise, with the goal of realizing a prosperous, low-carbon society.

Environmental Burden Reduction Project by Green ICT, Green Policy Innovation

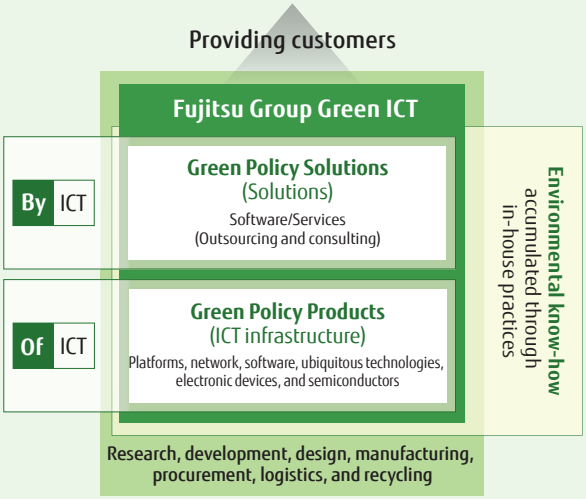
Since December 2007, the Fujitsu Group has been promoting the Green Policy Innovation initiative to reduce our customers' environmental burden using green ICT. Under the initiative, we provide customers with solutions and ICT infrastructure that leverage the accumulated technologies and expertise of the Fujitsu Group with the aim of lessening the environmental burden from companies and society in general.

In December 2009, Fujitsu set a global target of cutting CO_2 emissions by more than 15 million tons over a four-year period from fiscal 2009 to fiscal 2012. This target is intended to act as a step toward achieving the Green Policy 2020 vision, and for Fujitsu, as a corporate group with a global business, to make a significant contribution to cutting greenhouse gases worldwide. We plan to share and utilize green ICT solutions in regions around the world, and continually refine the Green Policy Innovation initiative to achieve its targets.

WEB
- Environmental Burden Reduction Project by Green ICT
http://www.fujitsu.com/global/about/environment/gpi/
- Press Release: Fujitsu Expands Green IT Initiative Globally
http://www.fujitsu.com/global/news/pr/archives/month/2009/20091207-01.html

Green Policy Innovation

Reducing customers' and societies' environmental burden by ICT
FY2009 to FY2012
Aiming to reduce CO_2 emissions worldwide by more than a cumulative 15 million tons



Fujitsu Group Environmental Protection Program (Stage VI) to Strengthen Our Global Environmental Activities

Establishing New Targets for Environmental Programs Between FY2010 to FY2012

In April 2010, we created Fujitsu Group Environmental Protection Program (Stage VI) to run from fiscal 2010 to the fiscal year ending March 31, 2013 (FY2012).

The program is based on the three targets established in the Green Policy 2020 of benefiting customers and society, pursuing internal reforms, and preserving biodiversity, and defines six key areas: strengthening advanced green ICT R&D, improving the environmental value of products and services and strengthening the development and provision of green ICT, strengthening efforts to reduce the environmental burden from the Group itself, strengthening our foundation for environmental management, promoting activities that make environmental contributions to society, and promoting activities that preserve biodiversity. Moreover, we have established a further 18 items to serve as specific program targets.

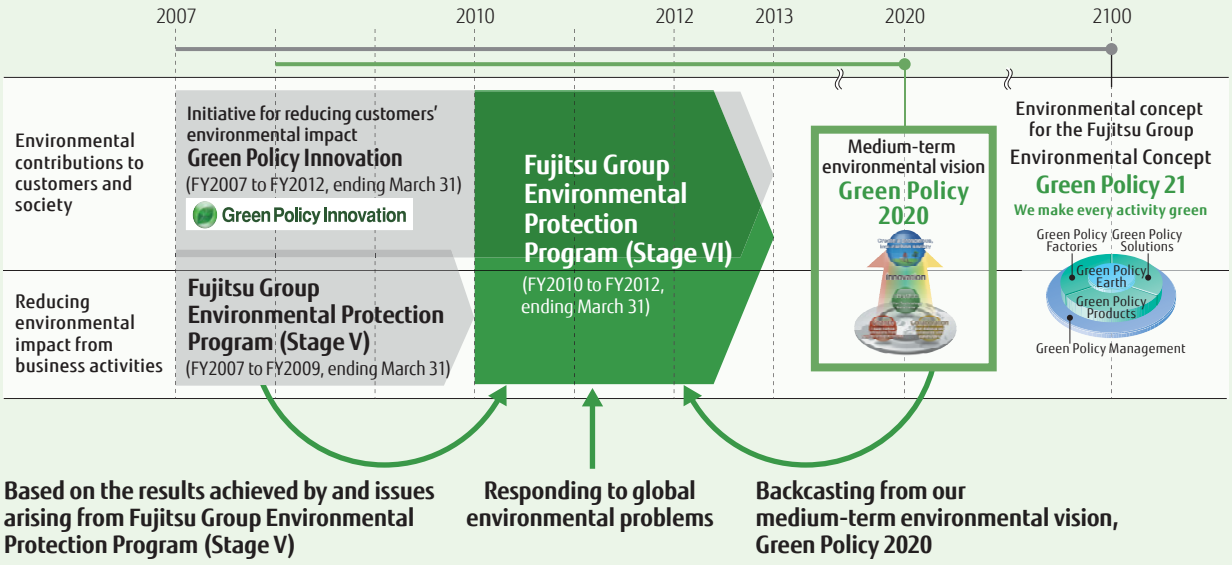
Aiming to Resolve Environmental Problems From a Global and Long-Term Perspective

Fujitsu Group Environmental Protection Program (Stage VI) has been created based on the backcasting of our Green Policy 2020—our medium-term environmental vision—and also the global environmental problems of recent years' such as climate change and vanishing biodiversity. In the Program, we have newly positioned "strengthening advanced ICT R&D" and "promoting activities that protect biodiversity" as our two priority areas.

Moreover, we have created the following new targets for the Program: advanced ICT R&D; based on scientific findings and forecasts until 2020, a 6% reduction in global greenhouse gas emissions from our business activities by the end of fiscal 2012 compared to fiscal 1990; and the creation and management of quantifiable targets to measure our business activities' impact on and contribution to biodiversity.

WEB
- Targets of Fujitsu Group Environmental Protection Program (Stage VI)
  http://www.fujitsu.com/global/about/environment/management/program/stage6/
- Press Release: Fujitsu Announces Fujitsu Group Environmental Protection Program (Stage VI)
  http://www.fujitsu.com/global/news/pr/archives/month/2010/20100415-01.html

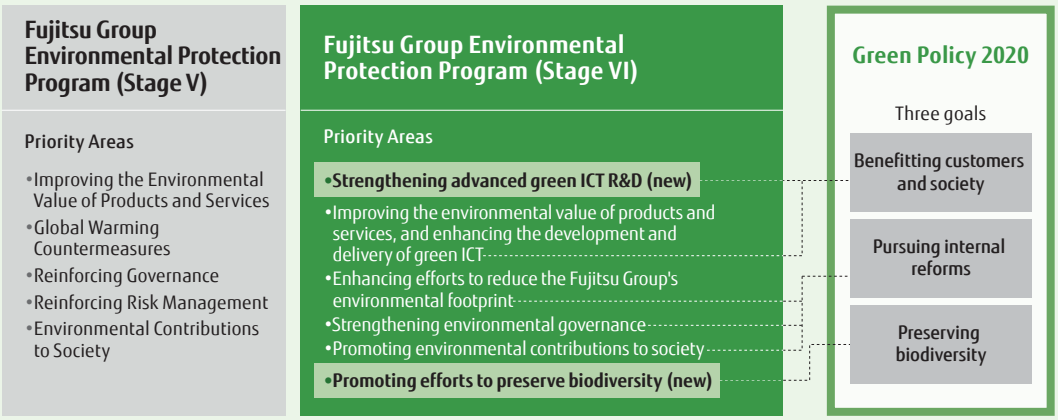
Fujitsu Group Environmental Protection Program (Stage VI) Concept



Based on the results achieved by and issues arising from Fujitsu Group Environmental Protection Program (Stage V)

Responding to global environmental problems

Backcasting from our medium-term environmental vision, Green Policy 2020



Fujitsu Group Environmental Protection Program (Stage VI)

Green Policy 2020 Three targets	Action plan Item	Item Breakdown	Targets (FY 2010)	Targets (FY 2011)	Targets (FY 2012)
Benefiting customers and society	Strengthening advanced green ICT R&D	**Strengthen advanced green ICT R&D** •Develop technologies for next-generation datacenters and networking that will double overall efficiency of ICT products by end of FY2012. •By end of FY2012, more than 35% of all technology developed will be solutions for reducing the burden on the environment.	•1.2 times •25%	•1.5 times •30%	•2 times •35%
	Improving the environmental value of products and services, and enhancing the development and delivery of green ICT	**Develop & deliver green ICT to contribute to customers and society** Provide green ICT that will reduce cumulative CO_2 emissions by 15 million tons over FY2009–12 period.	5.26 million tons	9.55 million tons	15 million tons or more
		Develop and provide Eco-friendly products (Super Green products) With respect to newly developed green products in all departments, Super Green products that contribute to reduced environmental footprints through low energy and resource demands must comprise 30% by end of FY2012.	10% or more	20% or more	30% or more
		Develop and provide Eco-friendly products (environmental efficiency factors) With respect to newly developed green products in all departments, the environmental efficiency must be raised to 2.5 times the FY2008 value by end of FY2012.	Raise to 1.5 times	Raise to 2 times	Raise to 2.5 times
		Promote product recycling Sustain 90% resource reuse rate of business ICT equipment globally at Fujitsu recycling centers.	Sustain 90%	Sustain 90%	Sustain 90%
		Develop and provide environmental solutions •Promote the development and provision of environmental solutions in all areas, including industry, transport, business, households, and energy conversion sectors. •Expand provision of environmental solutions in major regions, including Japan, Europe, Americas, and Asia/ Pacific.	Departmental and regional coverage rate: 70%	Departmental and regional coverage rate: 85%	Departmental and regional coverage rate: 100%
Pursuing internal reforms	Enhancing efforts to reduce the Fujitsu Group's environmental footprint	**Reduce greenhouse gas emissions** Reduce total greenhouse gas emissions associated with manufacturing globally to 6% below FY1990 levels by end of FY2012 (CO_2: 5% reduction, other greenhouse gases: 20% reduction).	2.5% reduction	2.6% reduction	6% reduction
		Reduce greenhouse gas emissions (renewable energy) Increase use of renewable energy sources to 3 times FY2007 levels by end of FY2012.	2.7 times	2.7 times	3 times
		Reduce CO_2 in transport and distribution Reduce CO_2 emissions from domestic transport to 11% below FY2008 levels by end of FY2012.	9% reduction	10% reduction	11% reduction
		Promote business partners greenhouse gas reduction Promote procurement from business partners that limit or reduce greenhouse gas emissions.	60% materials suppliers' procurement rate ('no. of companies' rate)	80%	100%
		Factory improvements (chemicals) Reduce output of priority chemicals to 10% below FY2007 levels by end of FY2012.	4% reduction	7% reduction	10% reduction
		Factory improvements (waste) •Reduce waste generation to 20% below FY2007 levels by end of FY2012. •Maintain zero waste emissions at factories in Japan.	11% reduction	13% reduction	20% reduction
		Office improvements Achieve four-star rating or better under the Green Office plan for every office by end of FY2012.	Japan: trials using new standard Internationally: field survey	Japan: 70% Internationally: draft evaluation standards	Japan: 100% Internationally: trial implementation
	Strengthening environmental governance	**Continuously improve globally integrated environmental management systems** •Promote further ICT deployment for environmental management, build smart environmental management systems. •To improve environmental performance, by the end of FY 2012 we intend to apply a framework of assessments for the extent of target achievement and the compliance situation of 100% of Group main domestic production companies.	•Customization and trial of remote communications •Establishment of performance assessment procedures	•Block application rate: 50% •Trial implementation	•Block application rate: 75% •Expand as far as domestic manufacturing group companies
		Promote environmental management through communications with stakeholders Promote environmental communication at all levels to improve environmental management	Improved communication of environmental information	Improved communication of environmental information	Improved communication of environmental information
	Promoting environmental contributions to society	**Increase environmental awareness among all staff through community-based environmental actions** •Launch Act-Local-System by end of FY2010 to globally share information on social contribution activities around the world. •Sustain environmental social contributions activities around the world and promote activities that will contribute more to local communities through utilizing Act-Local-System.	•Implementation at all business sites •Construction and management of a domestic network, Construction and management of an international network	•Implementation at all business sites •Management of the domestic network, Management of the international network	•Implementation at all business sites •Management of the domestic network, Management of the international network
Preserving biodiversity	Promoting efforts to preserve biodiversity	**Reduce impact of company's operations on biodiversity** •Develop numerical indicators to measure impact of operations on biodiversity and build system to expand contribution of ICT to reducing that impact. •Promote procurement from business partners that work to preserve biodiversity.	•Construction of the Fujitsu Group BD integration index to evaluate impact on biodiversity •60% materials suppliers' procurement rate ('no. of companies' rate)	•1.5% reduction in level of impact (in main business areas) compared to FY2009 as evaluated by the BD integration index •80%	•3% reduction in level of impact (in main business areas) compared to FY2009 as evaluated by the BD integration index •100%
		Contribute to community-building that preserves biodiversity •Build case studies that contribute to biodiversity through ICT in all major offices by end of FY2012. •Conduct biodiversity preservation/education programs in all offices by end of FY2012.	•Implementation of survey to construct a model to contribute to biodiversity •Japan: once a year Internationally: once every three years	•Pilot project based on survey results •Japan: once a year Internationally: once every three years	•Development at main business sites •Japan: once a year Internationally: once every three years

* Products with the highest level for both "Energy savings," and "Other Areas (resource savings etc.)", where standards were significantly raised in the Environmental Protection Program (Stage V)

Targets and Achievements

Performance of the Fujitsu Group Environmental Protection Program (Stage V)

Five Priority Areas	Stage V Targets (to be achieved by end of FY 2009)	Targets (FY 2009)	Performance (FY 2009)	Status *3	Related Pages
Improving the Environmental Value of Products and Services	**Increase the number of Super Green Products*1** Targeting the Green Products being newly developed in all business units, by the end of fiscal 2009 we aim to increase to over 50% the proportion of products that are Super Green Products with top-class environmental characteristics.	Super Green Products ratio: 50%	Certified 30 product families as Super Green Products. Achieved a 63% ratio of Super Green Products in all Green Products from FY2007	○	P57-
	Achieve an improved environmental efficiency factor By fiscal 2009 we will strive to achieve an environmental efficiency factor of "2" relative to products in fiscal 2005 for newly developed Green Products in all business units.	Achieve Factor: 2.0	Achieved a factor of 3.6 on average across the Fujitsu group newly-developed products in fiscal 2009	○	P59
	Maintain resource reuse and recycling rate of recovered end-of-life products*2 Maintain the resource reuse and recycling rate of business IT equipment achieved in the Fujitsu Group Environmental Protection Program (Stage IV) (at 90% or higher).	Resource reuse and recycling rate: 90% or higher	Resource reuse and recycling rate: 90.8%	○	P65-
	Expand environmental solution offerings We will strive to offer Environmentally Conscious IT Solutions in all areas of our business by fiscal 2009.	Expand to 28 the number of areas where our environmental solutions have been certified or registered in the SI and outsourcing areas.	Achieved in FY2008	○	P61-
Global Warming Countermeasures	**Reduce CO_2 emissions from energy consumption** •Global: Reduce CO_2 emissions per unit sales to 28% below fiscal 1990 levels by the end of fiscal 2010 •Japan: Limit energy consumption-related CO_2 emissions at our business sites to below fiscal 1990 levels by the end of fiscal 2010	•Global: Reduce by 73.8% from fiscal 1990 levels •Japan: Hold down to a 0.5% increase over fiscal 1990 levels	•Global: Reduced by 74.4% from fiscal 1990 levels •Japan: Reduced by 6.1% from fiscal 1990 levels	○	P67-
	Reduce greenhouse gases other than CO_2 We will work to reduce emissions of greenhouse gases other than CO_2 by 10% relative to fiscal 1995 emissions by the end of fiscal 2010.	Hold down to a 10.4% increase over fiscal 1995 levels	Held down to a 5.1% increase over fiscal 1995 levels	○	P67-
	Apply Green Factory and Green Office systems We seek to achieve a two star or higher ranking* in the Green Factory or Green Office systems at all our business sites by the end of fiscal 2009. * Specific achievement level under an original Fujitsu evaluation standard	Achieve two star (★★) or higher ranking at 100% of business sites	•Factories: achieved at 100% of sites •Offices: achieved at 100% of sites	○ ○	P69-
	Reduce VOC emissions We aim to reduce volatile organic compound (VOC) emissions by 30% relative to fiscal 2000 levels by fiscal 2009.	Reduce by 30% from fiscal 2000 levels	Reduced by 31% from fiscal 2000 levels	○	P70-
	Reduce waste generation We will strive to reduce waste generation by 3% relative to 2005 levels by the end of fiscal 2009.	Reduce by 3% from fiscal 2005 levels	Reduced by 18.3% from fiscal 2005 levels	○	P70
	Reduce CO_2 emissions during distribution and transport We will strive to reduce the volume of transport-related CO_2 emissions by 40% from fiscal 2000 levels by the end of fiscal 2010.	Reduce by 39% from fiscal 2000 levels	Reduced by 45% from fiscal 2000 levels	○	P74
Reinforcing Governance Reinforcing Risk Management Environmental Contributions to Society	**Improve our environmental management system (EMS)** We will strengthen environmental activities in our business by improving our globally integrated environmental management system.	1. Expand the application of EMS to subsidiaries and affiliates 2. Strengthen the environmental programs of main businesses by devolving responsibility to individual BUs (business units) 3. Improve quality of internal auditing by increasing number of publicly-certified auditors 4. Strengthen office environmental activities	1. Introduced EMS to a wider range of companies 2. Continuously implemented environmental activity councils at product BUs 3. Registered 54 publicly-certified auditors 4. Increased number of offices with Green Office status	○	P51-
	Advance green procurement activities We will strengthen environmental activities throughout our supply chain and support the activities of our business partners. •We will promote improvements in our business partners' environmental management systems, for example, encouraging them to obtain third-party certification such as ISO14001. •We will promote construction of chemical substance management systems (CMS) by our business partners.	1. Operate a level II (FJEMS) or higher EMS for 100% of structural material business partners 2. Construct CMS systems for 100% of structural material business partners	1. Operating rate for Level II or higher EMS: 100% 2. CMS construction rate: 98.2%	△ *4	P73
	Activities for environmental contributions to society We will carry out locally attuned activities that make environmental contributions to society and in which each of our employees can play an important role.	Number of activities that make environmental contributions to society implemented •Japan: One per year at all business sites •Overseas: One every three years at all business sites	•Japan: Implemented at all sites •Overseas: Implemented at all sites	○	P75

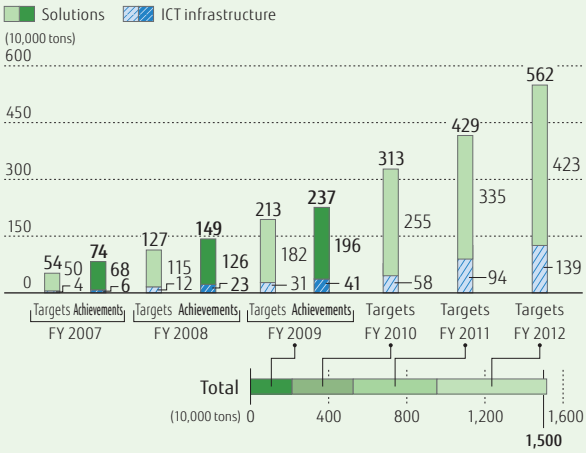
*1 As the level achieved in fiscal 2007 far exceeded the original target, the target was increased by 50% from FY 2008 on.
*2 Since the quantity of products recovered decreased as products were downsized, the target was changed in FY 2008 to 'maintain a resource reuse ratio of 90% or higher', and it was redesignated from an action-plan target to an internal management indicator.
*3 A circle (○) indicates full achievement of a target, while a triangle (△) indicates only partial achievement.
*4 100% achievement in the first half of FY2010.

Green Policy Innovation Project–Achievements in Reducing CO_2 Emissions

Since FY 2007, the Fujitsu Group has been promoting the Environmental Burden Reduction Project by Green ICT, Green Policy Innovation. In FY 2009, Fujitsu set a global target of cutting CO_2 emissions by more than 15 million tons over a four-year period from FY 2009 to 2012. During FY 2009, we exceeded our targets and contributed to a total CO_2 reduction of 2.37 million tons, comprising 0.41 million tons from providing Green Policy Products, which are eco-friendly IT infrastructure products, and 1.96 million tons from providing Green Policy Solutions, which are IT solutions that contribute to reducing environmental burdens.

*Please refer to page 38 for further details on Green Policy Innovation.

CO_2 Emissions Reduction Targets and Achievements Through Green Policy Innovation



The New Environmental Protection Program typifies the Fujitsu Group from the "Green ICT", "Global" and "Biodiversity" Viewpoints.

The UN Framework Convention on Climate Change (COP15) held in Copenhagen in December 2009 drew attention from around the world. Similarly, the Biodiversity Conference (COP10) to be held in Nagoya in October 2010 is expected to trigger a surge in interest in the responsibility of corporations for preserving biodiversity.

Meanwhile, the Fujitsu Group has been using ICT to help solve various environmental issues for its customers and for society, and to make the products and services it offers, as well as its business activities, more environmentally friendly.

Fiscal 2009 was the final year for Fujitsu Group Environmental Protection Program (Stage V). We managed to achieve our targets in nearly all categories. For example, we greatly exceeded our initial targets for development of "Super Green Products", and reductions in transport CO_2 emissions. The implementation of the Green Policy Innovation initiative, a Green ICT project, achieved cuts in CO_2 emissions amounting to approximately 2.37 million tons.

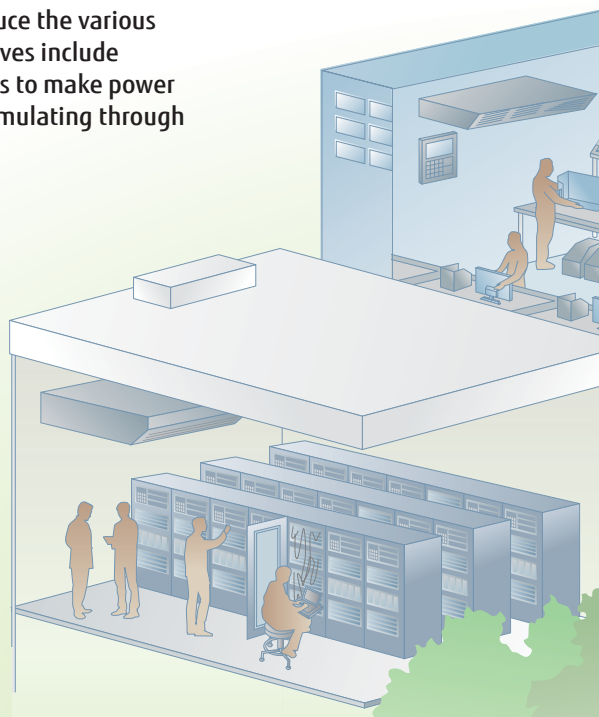
Fujitsu Group Environmental Protection Program (Stage VI) was launched in fiscal 2010, designed around the keywords "Green ICT," "Global" and "Biodiversity." The essence of Green ICT lies in successfully achieving both economical and environmental performance. Fujitsu has recognized this by strengthening the development of Green ICT from the upstream stage of R&D. Also, Fujitsu Technology Solutions, which possesses exceptional technologies, expertise, and product development capabilities for Green ICT, was brought into our corporate group from fiscal 2009. By sharing these technologies and expertise with those accumulated by the Fujitsu Group, we will take Green ICT to the next level on a global scale. Moreover, Fujitsu Group Environmental Protection Program (Stage VI) incorporates the new goal of preserving biodiversity as a foundation of sustainable corporate activity, reflecting our search for ways to make a contribution with ICT in the style of the Fujitsu Group.

Stage VI is the next step toward realization of the Fujitsu Group's medium-term environmental vision, Green Policy 2020. We will make a concerted effort as a corporate group to achieve this goal, and together with our customers and society, seek to realize a prosperous, low-carbon society.

President, Corporate Environmental Strategy Unit
Atsuhisa Takahashi

Reducing Environmental Burdens from Our Business Activities

At the Fujitsu Group, we are actively carrying out a range of initiatives to reduce the various environmental burdens that result from our business activities. These initiatives include introducing highly environmentally efficient equipment and utilizing systems to make power consumption visible. We are leveraging the expertise we are constantly accumulating through these activities to provide our customers with effective solutions.



In Data Centers

- State-of-the-art Eco-Friendly Data Center, New Annex of Tatebayashi System Center ▶Please refer to P12
- Global development of the Eco-Friendly Data Center ▶Please refer to P12
- The "London North" data center is utilizing the results of an in-depth survey to realize significant energy savings ▶Please refer to P47

Development Center Adopts Cloud Computing to Consolidate and Reduce by Half the Number of Servers

Fujitsu's Numazu Software Development Cloud Center

Reduction in CO_2 of about 1,340 tons

Since fiscal 2008, we have consolidated the development-environment servers previously scattered across six sites in Japan into the Numazu Software Development Cloud Center and made a cloud-based development environment. Our objective was to reduce the workload generated by the activities of our software developers and center operators. We are currently switching to cloud computing in three stages; virtualization, standardization, and automation. Through this initiative, we aim to reduce our environmental burden and our costs. We expect to decrease the number of servers in fiscal 2010 by approximately 50% compared to fiscal 2008, and to reduce CO_2 emissions by about 1,340 tons.

Evaluation based on the "Comprehensive Assessment System for Building Environment Efficiency (CASBEE)"

Fujitsu FIP Corporation Eco-Friendly Construction

Fujitsu FIP Corporation is currently constructing an Eco-Friendly Data Center that utilizes energy saving air-conditioning systems and also systems for recycling rain water and for generating solar power.

Thanks to these technologies, the new Data Center achieved higher evaluation results based on CASBEE*1 compared to the conventional Data Center.

In addition, Fujitsu Limited is providing support for the construction of a new plant for Fuji Ecocycle, which is a subsidiary of Fujitsu General Limited. The new plant will utilize highly efficient lighting, while materials for the plant interior have been chosen based on measures to prevent sick building syndrome. The plant is currently being evaluated based on CASBEE*2.

*1 FY2009: based on self-assessment report submitted to Yokohama City
*2 FY2009: based on self-assessment report submitted to Hamamatsu City

Introduction of the extremely energy efficient Turbo Chiller

Fujitsu Tatebayashi System Center

CO_2 reduced about 2,200 tons

The Turbo Chiller

We have significantly improved energy efficiency by introducing a Turbo Chiller, achieving a reduction in CO_2 emissions of about 2,200 tons a year.

Development of "spot" air-conditioning system

Fujitsu Opens New Annex of Tatebayashi System Center

Improving energy saving in operations by 25 %

We developed a "spot" air-conditioning system to target those locations within the data center where hot air tends to accumulate, achieving an approximate 25% improvement in energy saving compared to a conventional air-conditioning system.

Upgrading our environmental management through ICT

In the Fujitsu Group, we are positively leveraging ICT in order to further upgrade our environmental management

WEB Environmental Management Information Systems
http://www.fujitsu.com/global/about/environment/management/ems/information-sys/

Example of our utilization of ICT

Collecting and analyzing environmental-performance data on the Fujitsu Group's global activities
Global Environment Database System

Effective operation of environmental management systems
ISO 14001 Green Management System

Management of restricted chemical substances in products
REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) compliant chemical substances control system "PLEMIA/ECODUCE"

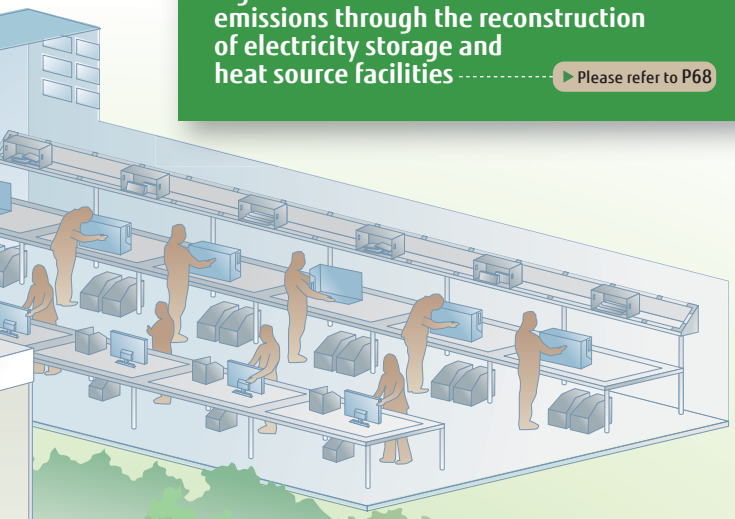
Traceability management for used ICT equipment
Integrated recycling information management system

Virtual manufacturing
Three dimensional visualization verification simulator (VPS: Virtual Product Simulator)

Chemical substance management in plants
Chemicals Control System (FACE)

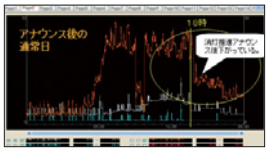
In Plants

- Compliance and air conditioner energy-saving initiatives ▶ Please refer to P68
- Significant reductions in CO_2 emissions through the reconstruction of electricity storage and heat source facilities ▶ Please refer to P68
- Improved efficiency for the air-conditioner-use cold water supply within the LSI packaging process ▶ Please refer to P70
- Reduction in sludge resulting from the silicon grinding waste-water treatment process ▶ Please refer to P70
- Reduction in IPA gas emissions ▶ Please refer to P71



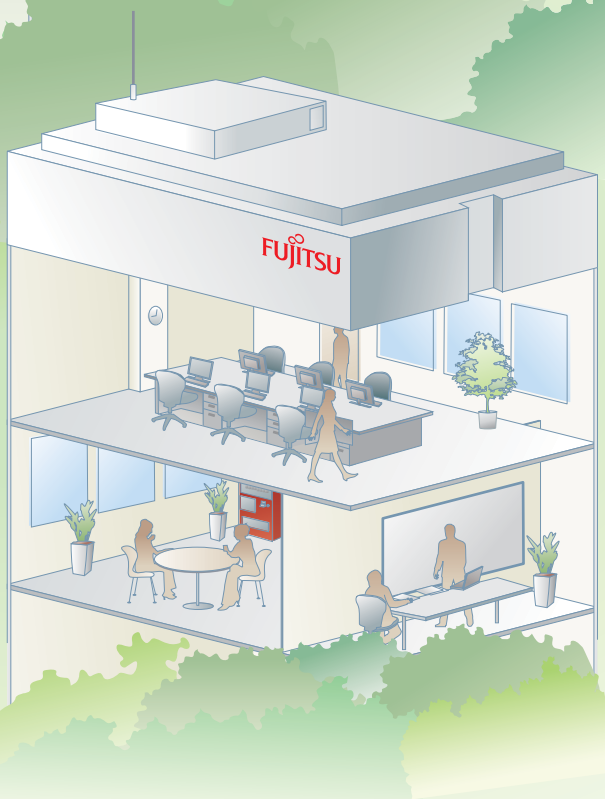
Making power consumption visible

Fujitsu Numazu Plant and PFU Ltd. Saving more energy



The Fujitsu Numazu Plant has been publishing the trends in its energy consumption on our intranet, which is helping to support its energy saving efforts such as encouraging employees to turn off lights

Also, PFU Ltd., has introduced a system that can monitor the energy being used on every floor on an hourly basis. The system, which is managed by the ProDeS Center (the production and development center), monitors power consumed by equipment such as lighting and air conditioners and the data it provides are utilized in energy-saving initiatives. Also, by publishing information on cost reductions and environmental burdens within the company, PFU is building a foundation on which it can promote environmental programs to all its employees.

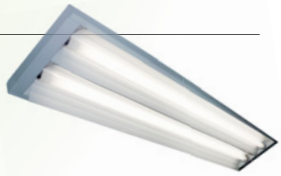


In Offices

- Achieving zero emissions of waste paper through a Nationwide Paper Recycling System ▶ Please refer to P72
- Reducing CO_2 emissions by expanding the application of modal shifts in distribution ▶ Please refer to P74

Installing highly efficient reflector plates that increase the brightness of fluorescent lights

PFU Ltd. Improving energy savings



The ProsDeS Center Office has achieved energy savings by installing highly efficient reflector plates, enabling it to reduce the number of fluorescent lights it requires. It has also saved energy by a campaign to make sure employees turn lights off.

Encouraging 'eco-commuting' by walking and cycling

Fujitsu Isotec (FIT) Reduced CO_2 by about 14.5 tons

Since July 2009, Fujitsu Isotec has been implementing a campaign to encourage employees to leave their vehicles at home and commute to work on foot, by bicycle, or by public transport. By March 2010, this initiative had achieved an approximate 14.5 ton reduction in CO_2 emissions.

Acquiring certification for measuring and reducing CO_2 emissions

Fujitsu Services Ltd. Reduced CO_2 by 1.7 %

Following the efforts made by Fujitsu Services Ltd. to reduce CO_2 in its business operations in fiscal 2008, in March 2010 Fujitsu was presented with the 'Carbon Trust Standard' for reducing its carbon footprint by 1.7% (1,483.7 tons), compared to its averaged emissions in fiscal 2006 and fiscal 2007. The Carbon Trust introduced the Carbon Trust Standard to evaluate the methods companies use to measure and reduce their CO_2 emissions.

CARBON TRUST STANDARD
REDUCING CO2 YEAR ON YEAR

Offices with the highest levels of environmental standards

Fujitsu Australia Ltd. (FAL) Saving resources

The Gauge Building where FAL has its offices has been awarded the 6 Star Green Star, which is the highest possible environmental rating in the commercial sector under Australia's environmental building design certification system. This building utilizes water recycling, co-generation, and a range of other technologies to achieve impressive energy and resource savings.

In Focus 2 Reducing the Environmental Burden from Customers and Society as a Whole

The Fujitsu Group's Green ICT Is Helping to Reduce the Environmental Burden from Society and the Entire World

Through its advanced environmental solutions, services, and products, the Fujitsu Group's green ICT is helping to reduce the environmental burden generated by all aspects of our daily lives and by society. We are continuously widening the scope of our efforts in this field so we can help more countries and regions and more people.

In Agriculture

Farmland Management System
Farmland Management GIS
CO_2 emissions reduced by about 50%*1

Agriculture Revitalization Promotion System
NetSeeds
CO_2 emissions reduced by about 59%*1

In Department Stores and Supermarkets

POS Systems for Mass Merchandisers
GlobalSTORE III
CO_2 emissions reduced by about 30%*1

Internet Shopping System
i . market
CO_2 emissions reduced by about 25%*1

In Factories

Environmental Information System (Contaminant emissions management)
e-FEINS
Environmental risk reduction

Facilities Management System
Futuric
CO_2 emissions reduced by about 47%*1

Production Scheduling System
GLOVIA/SCP FA
CO_2 emissions reduced by about 60%*1

Environmental Performance System Records Management System
SLIMOFFICE
Visualization of environmental performance data

In Networks

Real-Time Video Transmission Equipment
IP-900 Series
(IP900E/IP-900D/IP-910E/IP-910D)
CO_2 emissions reduced by about 24%*2

Network Server
IPCOM EX Series
CO_2 emissions reduced by about 55%*3

Optical Fiber Technology
FLASHWAVE 9500
CO_2 emissions reduced by about 60%*2

Gigabit Ethernet Based PON System
GE-PON ONU
CO_2 emissions reduced by about 41%*2

NGN Platform System
UB300
CO_2 emissions reduced by about 74%*2

In Medicine

Medical Electronic Records Solution
HOPE/EGMAIN-GX
CO_2 emissions reduced by about 30%*1

Medical Image Information System
HOPE/DrABLE-EX
CO_2 emissions reduced by about 21%*1

Health Management System
HOPE/webH@ins
CO_2 emissions reduced by about 55%*1

In Schools

SaaS-type e-learning
e-Learning Navigware
CO_2 emissions reduced by about 50%*1

Business System for Educational Institutions
Campusmate-J
CO_2 emissions reduced by about 54%*1

Service for Notification of Arrival at or Departure from School
Active RFID tags
CO_2 emissions reduced by about 28%*1

In Local and National Government

Public Works Operation Management System
Public Works Operation Management System
CO_2 emissions reduced by about 18%*1

Automatic ID Card Delivery System
Conbrio-J
CO_2 emissions reduced by about 66%*1

Web Creation Support System
GwebLink-Neo
CO_2 emissions reduced by about 90%*1

*1 Calculated using an environmental influence evaluation procedure developed by Fujitsu Laboratories Ltd.
*2 Compared to the power consumption of a conventional product when in use
*3 Reduction effect when a rack-type server as used about three years ago is concentrated in a blade unit (SAN boot structure)
*4 Compared to the power consumption of other models when in use
*5 Not for sale in Japan
*6. Maximum target value. Excluding the energy saving effects due to the ICT equipment (such as servers and storage units) itself.
*7 Compared to use by the manufacturer (annual) (actual results from April 2009 to March 2010)
*8 Fujitsu actual measurements for a five-server structure where four were not operational during the night
*9 A case using Fujitsu's Numazu Software Development Cloud Center. Deployment/operation of development/execution environments where ICT resources are virtualized and standardized is automated. Listing of business services and visualization of operational status support reduction of operational workload and reduce the number of servers.
*10 Results of trial calculations based on a example within Fujitsu involving 300 computers
Note that the values shown here are subject to variation with conditions of the measurement and calculation and with the way the products are used.

In Data Centers

Multipoint Temperature Management (optical temperature sensor)
Real-time multipoint temperature measurement technology
Visualization of temperature distributions

Server automation and visualization software
ServerView, Resource Coordinator VE
CO_2 emissions reduced by about 17%*8

Green Facility Construction Support
Green Infrastructure Solution
CO_2 emissions reduced by about 50%*6

Mission-critical IA server
PRIMEQUEST 1000 Series
CO_2 emissions reduced by about 66%*2

Blade Server
PRIMERGY BX900
CO_2 emissions reduced by about 40%*3

PC server for the data center
PRIMERGY CX1000
CO_2 emissions reduced by about 13%*4

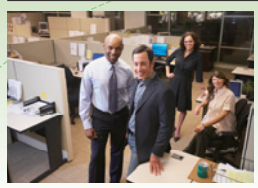
Disc array
ETERNUS DX60,DX80,DX90
CO_2 emissions reduced by about 43%*2

Energy saving and cooling technologies
Water-cooling unit+energy saving, low-noise fan
Cooling fan's electricity consumption reduced

Energy saving technologies for electronic and electrical equipment
Gallium nitride HEMT (High Electron Mobility Transistor)
Power loss in power-supply unit is less than one third that of a conventional unit

Private cloud environment construction software
Systemwalker Service Catalog Manager V14g
Systemwalker Software Configuration Manager V14g
Systemwalker Runbook Automation V14g
ServerView Resource Orchestrator
Supporting a number of servers reduced by about 50%*9

In Office Buildings



Software for PC power saving
Systemwalker Desktop Patrol V14g
Power consumption reduced by about 40%*10

Notebook PCs for corporations
FMV-LIFEBOOK
Compliant with the International Energy Star Program

Workflow System for Human Resources and General Affairs
GLOVIA Exchange USE
CO_2 emissions reduced by about 48%*1

A standby power requirement zero PC
ESPRIMO E7936
0-watt,P22W-5 ECO IPS
Standby power consumption zero watts*5

Electronic Forms Management Software
Interstage List Works
CO_2 emissions reduced by about 56%*1

Building Management System
Futuric
CO_2 emissions reduced by about 47%*1

ICT Resource Management System
SupportDesk Expert
CO_2 emissions reduced by about 35%*1

In Financial Institutions

ATM Systems
ATM Asset Distribution Package
CO_2 emissions reduced by about 38%*1

Credit Union Internal Information System
SB-Square
CO_2 emissions reduced by about 28%*1

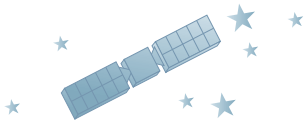
Foreign Exchange Image OCR System for Financial Institutions
KMASTER
CO_2 emissions reduced by about 59%*1

At Fishing Grounds

Fishery and Oceanographic Information Provision Service
Toredasu
CO_2 emissions reduced by about 20%*1
Used for sustainability of fishery resources.

In Outer Space

Greenhouse Gas Monitoring Technology Satellite
Contributions to the "IBUKI" project



In Environmental Management

Environmental management strategy proposals
Environmental management consulting services
Environmental management upgrades

Control Solutions for Chemical Substances in Products
PLEMIA/ECODUCE
Compliance with REACH regulations

Environmental Performance Records Control System
SLIMOFFICE
Making environmental performance visible, optimizing energy use

In Homes

PC Recycling
Recycling of Fujitsu PCs
Resource recycling

Green Power Certificate System Supported PCs:
The FMV-BIBLIO LOOX, U/C50N, and ECO models
The popularization of green power

In Traffic and Transportation

Traffic Eco-points System
'DESUCA' (Tosa Electric Railway Co. Ltd., and Kochi-ken Kotsu Inc.)
CO_2 emissions reduced by about 2,866 tons*7

Operations Support System
In-Vehicle Station (*Dejitako*)
CO_2 emissions reduced by about 19%*1

Distribution Center System
LOMOS/DJ
CO_2 emissions reduced by about 58%*1

Non-stop toll collection system
ETC Infrastructure System
CO_2 emissions reduced by about 24%*1

CO_2 emission calculation system
LOMOS/EC
Making visible the results of a modal shift

WEB Please refer to the Fujitsu homepage for other information on our environmental solutions.
http://jp.fujitsu.com/solutions/eco/

A Green ICT Case Study

Of ICT

Zero Power Consumption in Standby Modes: Zero-Watt Displays and PCs

The European Union has passed a law that requires electrical equipment in standby mode to consume less then one watt by 2010 and less than 0.5 watt by 2013. As a leading supplier of green ICT products, Fujitsu has already surpassed these regulatory requirements as its groundbreaking displays and PCs consume absolutely no power when in standby mode.

Fujitsu's original design technologies for displays have enabled us to achieve zero watt in standby mode without any loss of image quality. An Eco button and automatic brightness controls, enable an energy saving of 50% during use.

In addition to displays, our ESPRIMO E/P990 PC series, which was designed and manufactured by Fujitsu in Germany, do not consume any power while in standby mode. These PCs have acquired the Blue Angel (Germany) and Nordic Swan (Northern Europe) environmental accreditations, which are the equivalent to Japan's Eco Mark. They are also compliant with the United States ENERGY STAR® 5.0 and EPEAT environmental standards.

In future, as part of our range of initiatives to further improve our energy efficiency, we are working to optimize our standby-mode-zero-watt technologies and are now investigating their possible use with servers.

* Not for sale within Japan.

While zero-watt PCs differ from conventional PCs in terms of their power supply unit, motherboard, and BIOS, they do not represent an entirely new product. However, we had to completely remodel the BIOS and motherboard to achieve zero- watt power consumption. In particular, the circuitry was challenging to design and it took us over a year to complete their development.

Head of the Zero-Watt Development Team,
Peter Bush

By ICT

Energy Savings Achieved at the London North Data Center, with Groundbreaking Research

Fujitsu's "London North" data center in the suburbs of London has achieved compliance in line with both local and international legislation, such as the Kyoto Protocol, the European 'Code of Conduct' for data centers and the UK government's 'CRC Energy Efficiency Scheme'. As an energy-saving business and Eco-Friendly Data Center it is actively working to reduce greenhouse gas emissions and mitigate its burden on the environment.

After investigating such elements as best practices and legislation in its field, the London North Data Center was able to successfully save energy by leveraging Fujitsu's management expertise. For example, a machine room is normally kept at a temperature of between 21 to 22C°, but our research revealed that a temperature increase of 1 or 2C° would have no effect on the machines' performance. Similarly, while humidity had conventionally been kept at about 50%, our studies confirmed that a slight increase or decrease in humidity caused no problems in machine management. Other measures the center introduced included optimizing the floor layout so that air with different temperatures would not mix. Through these efforts, the facility has reduced its yearly CO_2 emissions by about 3,000 tons compared to a conventional data center.

Energy consumption is now a fundamental part of the costs of running a data center, contributing around 30-40% to the total cost. So achieving a sustainable reduction in energy bills is a key driver for our business. However, we felt that there was still plenty of room for improvement in energy usage. to achieve this sustainable reduction. Fujitsu has a clear definition and a methodology for measuring what constitutes an environmentally friendly product or service.

Operations Development Manager
Chris Flanagan

Of ICT Won the 2009 Minister of the Environment Award for the Prevention of Global Warming, Won Green IT Award 2009 Review Board Special Award.

Blade Server Reducing Power Consumption by about 40%: PRIMERGY BX900

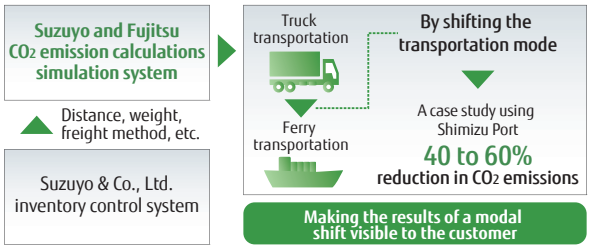
The PRIMERGY BX900 blade server system is designed for dynamically changing IT infrastructures, with superior performance per watt and virtualization capabilities, resulting in a blade server with low power demands and low operating costs. Through the thorough application of low power components and our efforts to improve cooling efficiency, we have been able to reduce electricity consumption by about 40% compared to the Rackmount Server (a Fujitsu product) of four years ago. Moreover, we have not only reduced power consumption but also contributed to reducing the burden on the air conditioning for the entire data center.

PRIMERGY BX900

By ICT Won Green IT Award 2009 Commerce and Information Policy Bureau Director-General Award

Carrying Out CO_2 Reduction Proposal Programs in Cooperation with Suzuyo & Co., Ltd., Via a Modal Shift Simulation

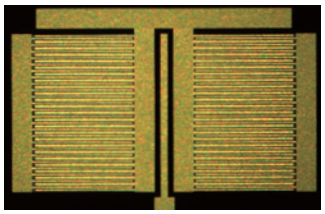
By combining Fujitsu's CO_2 emission calculation system (Logistics package : LOMOS/EC) with Suzuyo's inventory control system, we are able to calculate CO_2 emissions when using modes of transportation other than freight consolidation and trucks (a modal shift). We can then use this information to provide services that clearly identify the modes of transportation that are most environmentally friendly. A feature of this service is that it utilizes a vast range of data—about shipment origin and destination, product weight, and the type of transportation—to calculate CO_2 emissions, and it is supporting our customers' efforts to reduce CO_2 emissions and to draw up their own plans to achieve reductions.



Of ICT

Fujitsu Develops World's First Gallium Nitride HEMT for Power Supply

In June 2009, as a technology to reduce power consumption in electronic equipment such as ICT devices and home appliances, Fujitsu Laboratories Ltd. developed a new structure for gallium nitride high electron-mobility transistors (HEMT) that enables power loss to be reduced to one-third (1/3) that of power supplies based on conventional silicon transistors. Fujitsu's new GaN HEMT will be able to reduce total power consumption by 12%, thereby resulting in the effect of removing 330,000 tons of CO_2 in Japan as a whole. In the future, we will continue to push forward toward the practical application of this technology, and intend for it to be in use in power-supply units by around 2011 (see page 49).



Gallium nitride HEMT (surface micrograph)

By ICT

An Environmental Consulting Service That Helps Customers Improve Their Own Environmental Management

Centered on Japan and Australia, the Fujitsu Group provides its customers with an environmental consulting service that helps them improve their own environmental management. Fujitsu Australia Ltd., (FAL), a member of the Fujitsu Group, has been developing this environmental consulting service in Australia and providing customers with proposals tailored to their management policies and environmental targets. The service is based on two frameworks: first, the Enterprise Sustainability Framework for environmental change risk evaluation and environmental strategic planning and support; and second, the Green ICT Framework for the evaluation of ICT infrastructure efficiency.

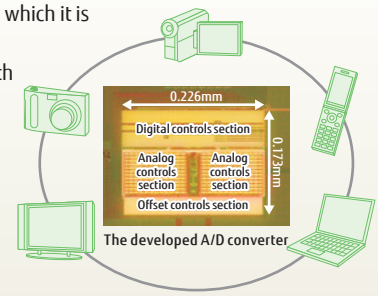
Green ICT evaluation tools (Australia)

Strengthening Our R&D in New Green ICT to Contribute to the Creation of a Low-Carbon Society

Centered on Fujitsu Laboratories Ltd., the Fujitsu Group is carrying out R&D into leading-edge technologies and implementing them. Our goal is to help build the next-generation low-carbon society by contributing to energy and resource savings and to evaluating environmental burdens.

Fujitsu Develops A/D Converter with 1/10th Power Consumption of Previous Models

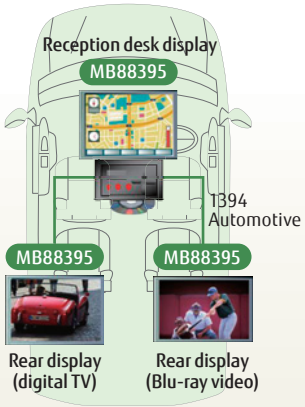
In February 2010, we completed the development of an A/D (analog to digital) converter with approximately 90% lower power consumption and surface area compared to a conventional device. This miniaturized, low power consumption A/D converter can significantly reduce the power consumption of any device within which it is installed, so we are pushing forward with further research toward its future adoption in a range of devices, such as digital home appliances and mobile phones.



The developed A/D converter

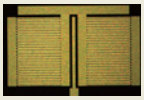
Development of the 1394 Automotive-Standard Compliant LSI, Which Contributes a Yearly 10kg Reduction in CO_2 Emissions

In April 2009, we completed the development of an LSI compliant with 1394 Automotive, the international standard for vehicle information networks. Using this LSI can help reduce the number of wire harnesses within a vehicle by up to 70%, helping to reduce weight and so fuel costs. We estimate that it will reduce annual CO_2 emissions by 10kg in a car traveling 10,000 km a year.



Fujitsu Develops Gallium Nitride HEMT, Which Contributes to a Yearly Reduction in CO_2 Emissions of about 330,000 Tons

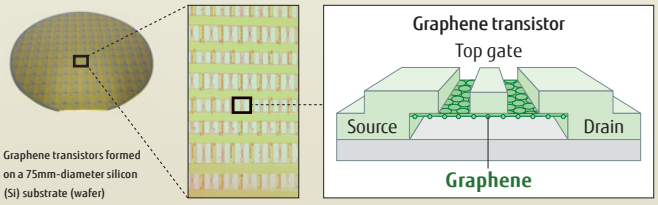
In June 2009, we developed a new structure for gallium nitride high electron-mobility transistors (HEMT) so that power loss can be reduced to one-third (1/3) that of power supplies based on conventional silicon transistors. Fujitsu's new GaN HEMT will be able to reduce total power consumption of internet data centers by 12%, thereby resulting in the effect of removing 330,000 tons of CO_2 from Japan as a whole. We are aiming to use it within our own power-supply units by about 2011. (Please refer to page 48.)

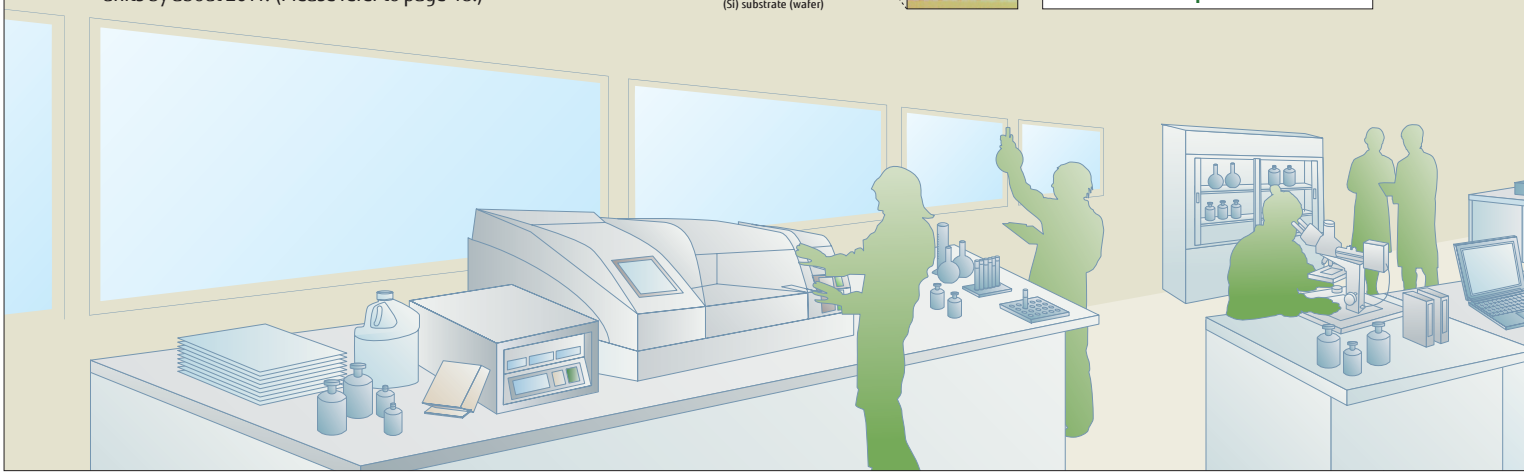

GaN-HEMT chip


Package element

Fujitsu Develops Technology for Next-Generation Low-Voltage, Low-Power Transistors

We developed a novel technology for forming graphene transistors directly on the entire surface of large-scale insulating substrates at low temperatures, as a world first. This technology represents a major step forward for realizing low power consumption LSIs and for reducing power consumption in the ICT devices that adopt them.

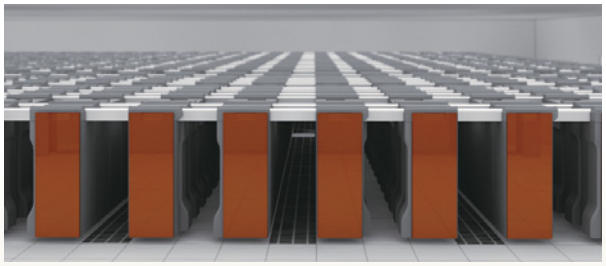




Participation in Japan's Next-Generation Supercomputer Project

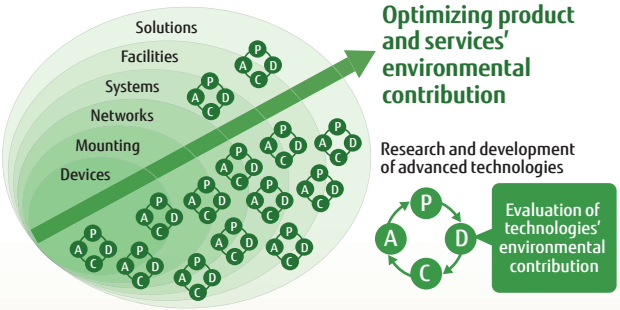
It is hoped that supercomputers will contribute significantly to developments in fields such as energy, science and technology, and medical treatment, as they are able to carry out the enormous and incredibly complex calculations required for tasks such as global warming forecasts and the development of next-generation energy sources.

Fujitsu has been participating in Japan's Next-Generation Supercomputer project—being sponsored by the Ministry of Education, Culture, Sports, Science and Technology—since fiscal 2006. Working together with Riken, we are pushing forward with this project and aiming to complete development of the Next- Generation Supercomputer by 2012.



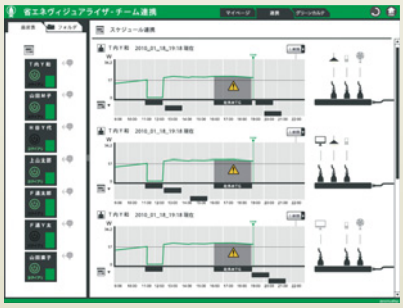
Evaluating CO_2 Reduction Potential from R&D to Use Stages

For all leading-edge technologies under development in our laboratories, Fujitsu Laboratories Ltd., began in April 2010 to evaluate the potential reduction in CO_2 emissions from using products and services that incorporate these technologies. Through these efforts, Fujitsu is broadly promoting designs optimized for their benefits to the environment, both in products and services incorporating each technology as well as in the systems that deploy them, including operations management.



Making Visible Power Consumption in the Office and Developing a 'Smart' Power Strip to Raise Awareness about Energy Saving

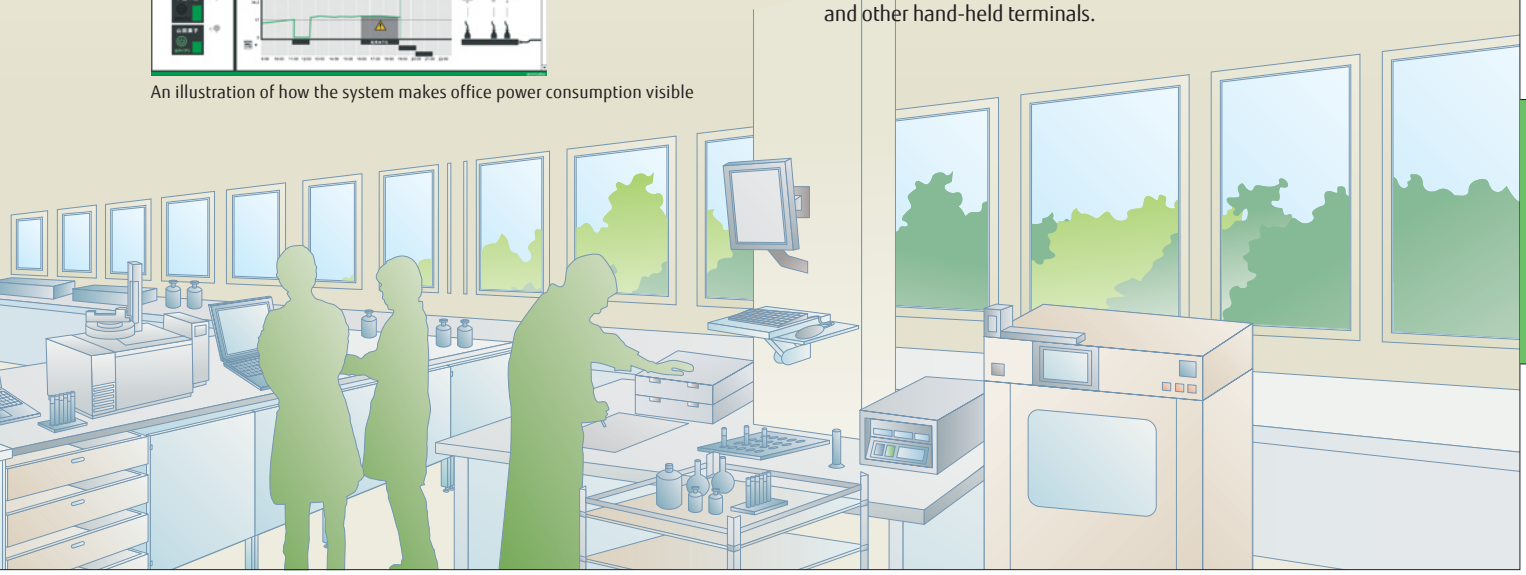
In March 2010, we developed our smart power strip, which features the smallest power strip with built-in power sensor in the industry. It enables power consumption to be visible on a per-outlet basis and also helps to raise user awareness about energy saving by indicating when they forget to turn their computers off. The product was tested in some of our offices and they achieved a 20% reduction in power consumption below their previous levels.



An illustration of how the system makes office power consumption visible

Demonstration of an 'Outpatient Guidance Solution' for Medical Facilities Using Low-Power Electronic Paper

In July 2009, we began demonstrating at Fujitsu Hospital some of our recently developed medical technologies, such as a solution to synchronize an electronic card holder with an electronic medical record system and to an outpatient navigation system, which guides patients to their treatment room and lets them know their place in the queue when waiting for their consultation. By installing low-power electronic paper in an electronic card holder, we are able to reduce power consumption to less than one tenth that of PHS devices and other hand-held terminals.



Environmental Governance

We are continuously working to improve our ISO 14001-based environmental management system and to promote unified environmental management of the Fujitsu Group.

EMS Implementation and Operational Status

Environmental Promotion Structure

The Fujitsu Group's environmental management system (EMS) is based on the company's business group organization in order to facilitate rapid management decision-making, and consists of a matrix structure combining 'line programs' for promoting environmental protection activities tailored to each group's particular operating characteristics and 'business-site programs' under which individual factories and offices tackle common themes.

Our original environmental management tools include the Global Environment Database System, which enables the Fujitsu Group throughout the world to coordinate the management of the disparate elements that help to reduce our environmental burden, such as plans, achievements, and measures. They also encompass the ISO 141 Green Management System, which supports our EMS management and allows us to integrate our compliance and risk management measures.

The final decisions on environmental management are taken at meetings of the Management Council, which is headed by the company's President and has two committees—the Environmental Committee and the Low Carbon Committee—under its direct authority. The Environmental Committee sets up subcommittees staffed by those responsible for specific environmental protection programs, transcending the structure of business groups and units, to consider matters such as environmental action plans and improving the EMS. The Environmental Committee manages and integrates the results of these subcommittees' deliberations and reports them to the Management Council.

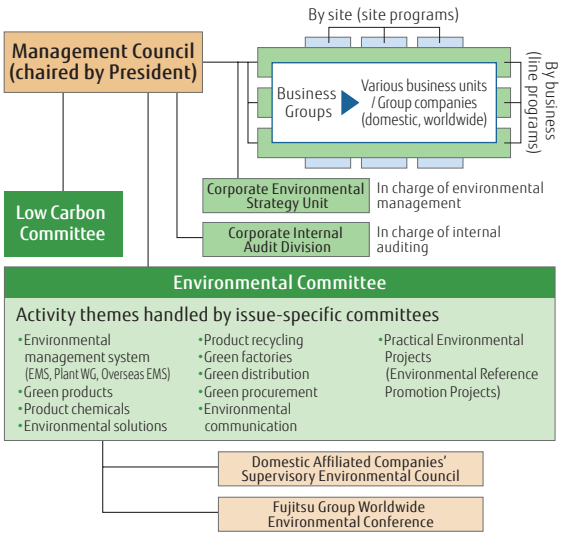
The new Low Carbon Committee, established in September 2008, is staffed by business group operations executives and was set up to review company policy particularly in relation to the prevention of global warming, for example by reducing emissions associated with the Group's own operations.

In fiscal 2009, we established a new subcommittee, the Environmental Communication Committee, to promote management reforms from an environmental perspective and to support business expansion through enhanced communication both inside and outside of the Group. In addition, we launched the Environmental Reference Promotion Project, which aims to strengthen environmental management and reduce our environmental burden by actively utilizing products, solutions, and services within the Group

An EMS Committee with a Factory Working Group and Overseas EMS Committee under its authority has also been set up to communicate the results of these discussions and reviews throughout the Group and ensure that they are understood, assimilated, and acted on dynamically. The EMS Committee convenes those responsible from each business group and informs the various divisions and group companies of what the Group requires them to do. The Factory Working Group brings together environmental coordinators from the Group's manufacturing facilities to deliberate matters such as establishing common environmental standards, and issues affecting the operation of the EMS. Meanwhile, environmental coordinators from Group companies outside Japan attend Overseas EMS Committee meetings to hear about and discuss the Group's environmental requirements.

Fiscal 2009 marked the final year of Fujitsu Group Environmental Protection Program (Stage V). This Program aims to strengthen the Group's main businesses by improving the quality of its globally integrated EMS. We achieved our targets in all areas.

Structure for Environmental Activities



BU Environmental Activities Councils Go Into Action

In the Environmental Protection Program (Stage V), Fujitsu has specified strengthening the environmental programs of its main businesses.

Moving towards practical implementation, it was decided in the FY 2007 management review to promote a shift toward more autonomous environmental activities. BU Environmental Activities Councils, attended by the senior managers of the BUs under the control of each business group, were set up at the BU level for this purpose. This has made the BUs the key stakeholders and has enabled them to implement environmental programs tailored to their particular operations (both products and services), strengthening their activities not only at the site (factory or office) level but also at the line (business) level.

In fiscal 2009, we continued to hold councils for product BUs that create a significant environmental burden, and also for solutions BUs. We will further strengthen our environmental programs by tailoring them to the characteristics of each specific business.

Updating Our Globally Integrated ISO 14001 Certification

We obtained integrated ISO 14001 certification, which is an international EMS standard, covering our consolidated subsidiaries. At the end of fiscal 2009, Fujitsu and Group companies in Japan (a total of 94 companies), together with 11 overseas companies, now operate their environmental programs under a single management system.

Since 26 of our consolidated overseas non-manufacturing subsidiaries have constructed and are operating an EMS based on common standards derived from the Fujitsu Group's environmental policy, we have now established an environmental management system that covers the entire Group.

Implementing Environmental Audits (Internal Audits)

To ensure that our internal audits are fully objective and independent, they are directed by a Corporate Internal Audit Division unaffiliated with any line organization and are performed by auditors from Fujitsu and Group companies.

From July through December of 2009, 492 Fujitsu Group factories, offices and other facilities in Japan and abroad were internally audited. During these audits, the trends in items highlighted in the FY 2008 round of internal audits were examined together with the results of external audits, with two top priorities: (1) confirming compliance and (2) confirming main business activity status and supporting performance improvement. Sales divisions also audited each other in fiscal 2009, with the aim of stimulating their environmental programs by reflecting their experience of auditing another division in their own activities.

The result of these internal audits was a total of 424 findings, including 52 minor non-conformances and no major ones. Most of the findings related to compliance (mainly to do with industrial waste), operations management (observance of self-imposed rules) and environmental aspects (either omitted or not evaluated satisfactorily). All of the findings had been resolved by the end of fiscal 2009.

External audits were also performed from August 2009 through January 2010. Group companies in Japan were audited by JACO, which listed no non-conformances, while overseas Group companies were audited by DNV, which found eight. Neither auditing company discovered any major non-conformances.

When the results of the audits were combined, most non-conformances in overseas Group companies related to operational management, objectives and targets, and we had corrected all of these non-conformances by the end of fiscal 2009. Within Japan, we will review the progress we are making in those items earmarked for improvement during the fiscal 2010 internal audit.

In order to further improve the quality of our environmental programs, in September 2008 we began discussions with our external auditors toward the introduction of the ISO 14031 performance evaluation in future audits. We will make a final decision on evaluation methods during fiscal 2010, and to inform this decision we are continuing to carry out the trial audits we began in the first half of fiscal 2009.

Status of Environmental Compliance

While the Fujitsu Group made no major violations of environmental law and caused no accidents that had any major impact on the environment in FY 2009, there were 12 events in which laws were violated or our own standards were exceeded. These consisted of matters like exceeding the allowable limits for water quality and noise, inadequacies in contracts and other documentation, and failing to make the required submissions to official authorities. We will do our best to prevent any recurrence of such incidents.

In April 2009, we received a request from the Ministry of Economy, Trade and Industry (METI) for an inspection to verify our product labeling. The results of the inspection showed that some descriptions of products, such as in our catalogues, did not comply with the requirements of the Energy Saving Law. The relevant labeling included energy efficiency values of some products, including servers, magnetic disk drives, and PCs. We submitted to METI the results of the inspection and also the measures we will take to prevent problem reoccurrence. To prevent problem reoccurrence, we have clarified and improved our energy-saving training for staff in the product development department and our checks and rules to ensure accurate labeling.

Thanks to these efforts, we have eliminated all non-compliant labeling and we now constantly monitor our revised processes to ensure they continue to function effectively.

Promoting Environmental Programs with External Organizations

The Fujitsu Group is actively cooperating with a diverse range of external groups such as corporate networks, industry groups, the government, international and educational institutions, and NGOs and NPOs. Our goal is both to promote our own environmental programs and to contribute more widely to the realization of a sustainable society. See examples as follows:

Green ICT

Activities to promote, spread, and standardize green ICT

- Green IT Promotion Council
- ITU and Climate Change, the climate change group of the International Telecommunication Union Telecommunication Standardization Sector (ITU-T)

Climate Change

Carrying out proposals to achieve a sustainable low carbon society

- Japan Climate Leaders' Partnership (Japan-CLP)

Product Chemicals

Investigating frameworks to effectively communicate information on restricted chemical substances

- The Japan Article Management Promotion Committee (JAMP)
- The Japan Green Procurement Survey Standardization Initiative (JGPSSI)

Biodiversity

Promoting the conservation of biodiversity by corporations

- Business and Biodiversity Initiative
- Japan Business Initiative for Conservation and Sustinable Use of Biodiversity (JBIB)

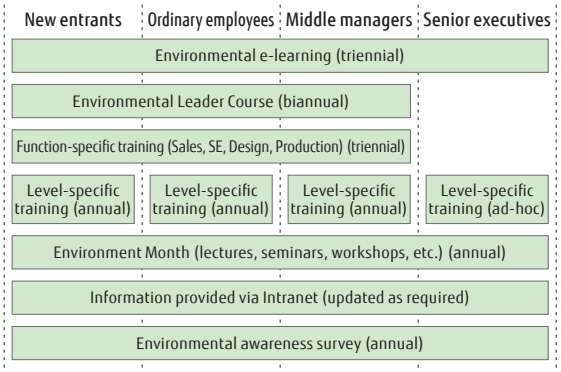
Environmental Education and Enlightenment

Our Environmental Education System

To ensure that our environmental activities take firm hold, the Fujitsu Group believes it essential to inculcate and raise the environmental awareness of each and every employee to a point where it translates into actual practice. To this end, the Group has been carrying out environmental education and enlightenment training since 1995, based on the system described below.

In addition to having all of our employees undertake environmental e-learning once every three years to acquire a basic understanding of environmental issues, environmental education also forms a part of the general training given to new entrants when they join the company and to ordinary employees, middle managers and senior executives whenever they are promoted. On top of this, customized environmental training is also delivered to individual areas of the business such as sales, systems engineering (SE), design, quality assurance and production.

Fujitsu's Environmental Education System



In-House Award Scheme

To raise the environmental awareness of employees in all Fujitsu Group companies, we have operated an Environmental Contribution Awards scheme and an Environmental Contest (with a photo division and an eco-life division), open to all employees, every year since 1995. Since 2002, the Environmental Contribution Awards 1st Award has been designated a 'Key Award' and is conferred by our President at the company's annual Foundation Day celebration held each June.

Moreover, in fiscal 2008 the Fujitsu Solutions Business Group independently established an awards scheme to help even more customers utilize our outstanding environmental solutions.

One of the awards presented is the Special Environment Award for an organization that has carried out an outstanding environmental program, and the recipient's achievements are recognized at the Solutions Business Sales Expansion Meeting held every year.

Environmental Leader Course

In April 2010, people responsible for promoting the Fujitsu Group's environmental management system gathered at the Group's Nakatosa Kuroshio no Mori site in Nakatosacho, Kochi Prefecture, for a one-night, two-day training course to learn about biodiversity.

Through the training, the participants deepened their understanding of biodiversity through practical activities, such as checking the quality of river water. This hands-on training encouraged them to consider precisely what needs to be done to conserve biodiversity and helped them to acquire the planning skills and know-how they need to become environmental leaders when they return to their places of work.

Environmental Education for Engineers

The Corporate Environmental Strategy Unit carries out a range of environmentally-related education, such as equipment-dismantling training for engineers and tours of recycling centers for members of the Sales Division. As a new trial program for fiscal 2009, every member of our Sales and Systems Engineering divisions in Japan was invited on a tour of a recycling center at five locations throughout the country. A total of ten tours were held, with a total of 131 participants.


Inspecting a recycle center

Promoting Awareness Through Environment Month

The Fujitsu Group holds a number of events to raise environmental awareness among our employees in conjunction with the Environment Month sponsored by the Ministry of the Environment. These events include lectures and movie presentations on the environment at our places of work. In 2009, about 200 employees in the Kawasaki district attended our screening of the National Geographic Channel's "Six Degrees Could Change the World" DVD documentary, which shows the changes the earth will undergo due to climate change.

Moreover, each company in the Group is engaged in a variety of environmental programs. For example, PFU Ltd. employees participate in several social-contribution programs, such as picking up trash in the Kahokugata Polder Windbreak Forest and on the roads they use to commute to work, and also visit environmental facilities. In addition, Fujitsu Semiconductor Technology Ltd. is running a flower-planting program.


Screening of the "Six Degrees Could Change the World" DVD

Conservation of Biodiversity

One of the targets we set in our Green Policy 2020 medium-term environmental vision is the 'conservation of biodiversity,' which we are striving to achieve in both our business and social-contribution activities.

Measures for the Conservation of Biodiversity

The problems of climate change and environmental destruction continue to worsen due to the mass consumption of energy and resources and the emission of greenhouse gases. These man-made phenomena place a heavy burden on the earth's ecosystem and have made the conservation of biodiversity a problem that we must urgently address.

In October, 2009, we defined the Fujitsu Group Biodiversity Action Principles to guide our global efforts to tackle the complex problem of biodiversity.

We also created Group guidelines based on these principles and we are now pressing ahead with concrete measures to achieve the targets set in Fujitsu Group Environmental Protection Program (Stage VI), launched at the beginning of fiscal 2010.

Reducing the Environmental Burden Placed on Biodiversity by Business Activities

In the Fujitsu Group, we are trying to reduce the environmental burden that results from our business activities based on an awareness of the consequences our actions have for biodiversity.

We have prepared Group guidelines on biodiversity for all phases of a product's life cycle; namely research, design, development, procurement, production, transportation, marketing, utilization and recovery

The guidelines outline the specific measures we must take for each of these phases and all our employees can refer to them to understand precisely how their work relates to biodiversity and what they need to do to reduce their environmental impact.

In addition, since fiscal 2009 we have added biodiversity to our list of items evaluated in our Suppliers' Performance Review (SPR), while from June 2010 we formulated and distributed our Suppliers' Guidelines for Conserving Biodiversity to further advance and support suppliers' efforts in this area. Through all of these measures, at every stage of our supply chain we are succeeding in reducing any adverse effects our activities, or those of our suppliers, might have on biodiversity.

Promoting Biodiversity Regeneration and Conservation through Social Contribution Programs

One example of the Group's contribution to conserving biodiversity is our participation in the Yamanashi Enterprise Farm-Building Initiative, promoted by Yamanashi Prefecture. Our employees volunteer to work on a grape farm until after the harvest, the objective being not only for them to enjoy the experience of working on a farm but also to deepen their understanding of how the proper management of agricultural land can contribute to the conservation of biodiversity.

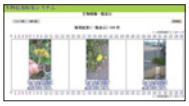
Part of the grape farm of the Yumekyo Grape Farm. Ltd. in Koshu City, was named "Fujitsu GP2020* Wine Farm," and the first activities there started in March 2010. Thirty eight employees participated, cleaning the vineyard and performing the work of training the vines by wiring their branches.


Working on the wine farm

*** GP2020**
Abbreviation of Green Policy 2020, the Fujitsu Group's medium-term environmental vision

Contributing to the Conservation of Biodiversity through ICT

As just one of our series of efforts to conserve biodiversity through using ICT, since April 2010 our employees have been using their mobile phone cameras to carry out a nationwide survey of dandelion distribution patterns. The participants take photographs of the flowers using their GPS mobile phones and then upload the images to a database. Through mapping the photographs' GPS coordinates, we can understand how local and foreign species of dandelion are distributed throughout the country. This initiative not only demonstrates how the use of ICT can help conserve biodiversity, it also raises awareness among employees of the importance of this issue, and so motivates them to take part in this and similar projects.


A system for collecting biodiversity information

Fujitsu Group Biodiversity Action Principles

October 2009

Recognizing that corporate activities benefit from the riches of the Earth's biodiversity while at the same time impacting it, the Fujitsu Group strives for a sustainable, prosperous global society. At the same time, the company endeavors to harness its technological and creative capabilities as a global ICT company to pursue, together with society, an optimal relationship between nature and humankind.

Fujitsu's Approach

1. **Pursuing the Conservation of Biodiversity and the Sustainable Use of Natural Resources in Business Activities**
   The Fujitsu Group will work to conserve biodiversity and utilize natural resources in a sustainable manner. It will accomplish this by analyzing and evaluating the company's impact on biodiversity at every stage of its business activities, and by working to reduce its impact on biodiversity throughout the entire lifecycle of its products and services.
2. **Contributing to Building a Society which Ensures the Conservation of Biodiversity and the Sustainable Use of Natural Resources**
   The Fujitsu Group will strive to contribute to its customers' and society's initiatives to conserve biodiversity and utilize natural resources in a sustainable way. It will accomplish this by offering its technologies and the knowledge it has acquired through its own in-house biodiversity initiatives and through its own environmental contributions to society.

Priority Measures

1. **Applying ICT to Biodiversity Conservation**
   The Fujitsu Group will utilize remote sensing, database technologies, analysis and evaluation techniques, and other applicable ICT technologies to conserve biodiversity and promote the sustainable use of natural resources.
2. **Contributing to the Promotion of Biodiversity Throughout Society**
   Recognizing the importance of training a future generation that will work to promote biodiversity conservation and the sustainable use of natural resources throughout society as a whole, the Fujitsu Group will promote a better public understanding of the importance of biodiversity and help to build an IT infrastructure that supports public education.
3. **Global Initiatives**
   The Fujitsu Group will employ a globally integrated environmental management system to increase each employee's awareness of biodiversity, as well as pursue global biodiversity initiatives.

Operating Activities and Environmental Burden (Material Balance)

We promote environmentally friendly business activities through overall quantitative assessment of our environmental burden from the life cycle and supply chain standpoints.

Material Balance

INPUT

Raw Materials
- Metal 24,063 tons
- Plastic 13,064 tons
- Others 24,909 tons

Chemical Substances
6,051 tons

Water
23,106,000 m^3

Energy Total 23,900,000 GJ
- Electricity purchased 2,143,687 MWh
- Heavy oil, kerosene 28,979 kℓ
- LPG 585 tons
- Natural gas, city gas 37,120,000 m^3
- District heating and cooling 46,087 GJ

Hardware Products

Development/Design
We develop Green Products based on product environmental assessments considering both energy efficiency during use and post-use recyclability.

Procurement
We select product parts and materials with an eye to minimizing the environmental burden.

Manufacturing
We conduct resource- and energy-saving activities to minimize use of materials, energy and water resources; zero-emission activities to achieve zero landfill disposal and simple incineration; and activities to reduce chemical emissions.

Software & Solutions

Planning and Design
We plan and design solutions that contribute to reductions in environmental burden when the systems and services are introduced.

Procurement
We promote Green Procurement to procure software and services from suppliers who give proper consideration to the environment.

Development
Along with working to reduce the environmental burden of our business sites, we develop environmental business solutions and systems and services that contribute to reducing the environmental burden of our customers and society in general.

OUTPUT

Raw Materials
- CO_2 discharge 643,000 tons-CO_2

Chemical Substances
20 tons

Atmospheric Release
- CO_2 1,041,000 tons-CO_2
- NOx 435 tons
- SOx 306 tons
- Greenhouse gases other than CO_2 (e.g. PFC, HFC, SF_6) 273,000 tons GWP
- VOC 328 tons

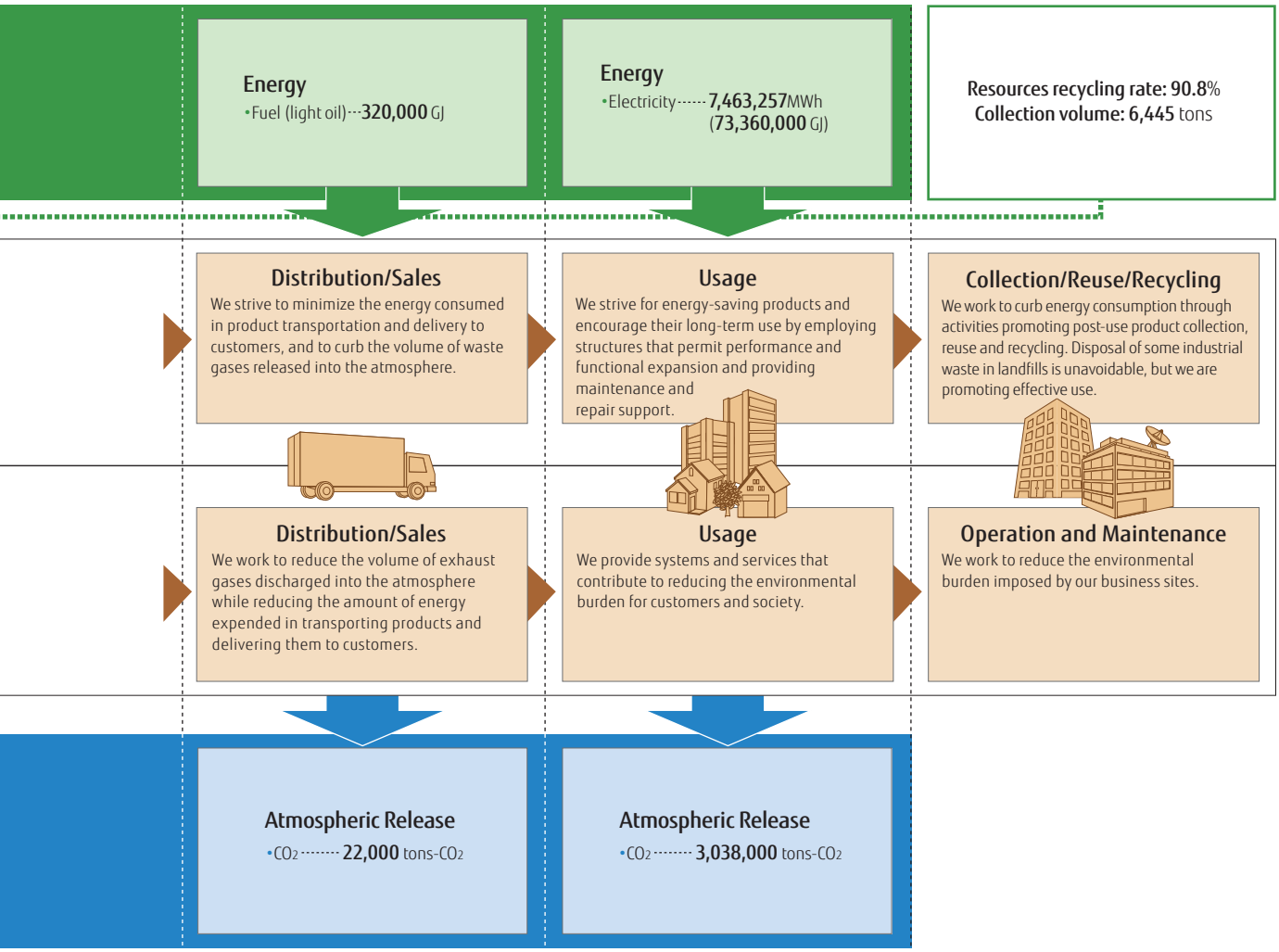
Water Discharge
20,874,000 m^3
- BOD 262 tons
- COD 282 tons

Waste
- Volume of waste generated 32,440 tons
- Volume of thermal recycling 6,483 tons
- Volume of material recycling 22,472 tons
- Volume of waste disposal 3,485 tons

Calculation Methods

INPUT		
Development / Planning & Design	Raw Materials	Material inputs to our major products* shipped in fiscal 2009 (raw materials per unit for each product times the number of units shipped in fiscal 2009)
Procurement	Chemical Substances	Volume of PRTR Law target chemicals handled by plants/sites in fiscal 2009
Manufacturing / Development	Water	Volume used by plants/sites in fiscal 2009
	Energy	Electricity, oil and gas consumed by plants/sites in fiscal 2009
Distribution/ Sales	Energy	Energy consumption in transportation in fiscal 2009
Usage	Energy	Electricity consumption by major products* shipped in fiscal 2009 (Assumed hours of use per product x age-based electricity consumption x the number of units shipped in fiscal 2009)
Collection/Reuse/Recycling		The weight ratio of recycled parts and resources with respect to the processing volume of post-use products is calculated according to the method of the Japan Electronics and Information Technology Industries Association. It excludes collected waste other than post-use electronic products.

* **Major products:** Personal computers, mobile phones, servers, workstations, storage systems, printers, scanners, financial terminals, retail terminals, routers, LAN access equipment, access network products, mobile phone base stations, and electronic devices. (Magnetic disks and MO drivers were included in major products in the previous fiscal year, but have been removed following the Group's withdrawal from these business areas.)



Calculation Methods

OUTPUT		
Development / Planning & Design Procurement Manufacturing / Development	Raw Materials	Material inputs to our major products* shipped in fiscal 2009 (per-unit volume of CO_2 emitted from mining the resource until it becomes a raw material for each product times the number of units shipped in fiscal 2009)
	Chemical Substances	Measuring the concentrations of PRTR Law target chemicals discharged through plants' drains and exhaust ports in fiscal 2009 and multiplying the total volume discharged (nickel compounds, manganese compounds, etc.) or total volume emitted (xylene, toluene, etc.), or calculating based on the chemical substance balance (xylene and toluene).
	Atmospheric Release	CO_2: CO_2 discharge volume associated with energy consumption by plants/sites in fiscal 2009 (Energy consumption times CO_2 conversion factor) NOx, SOx: Calculated from concentrations in gases discharged from vents (boilers, etc.) by plants/offices in fiscal 2009 Greenhouse gases other than CO_2: Discharge volume of process gases used in four semiconductor plants in fiscal 2009. (Calculated by formulas such as <volume of gas used> x <ratio consumed in reactions> x <detoxification ratio>) VOC: Emission amounts of the substances subject to emissions restrictions stipulated by the four electric and electronics associations for factories and business sites for fiscal 2009
	Water Discharge	Wastewater volume discharged by plants/sites into sewerage or rivers in fiscal 2009 BOD: A measure of the emission volume of organic pollution of water discharged by businesses employing the volume of oxygen consumed when organic matter in water is removed by microbial activity. COD: A measure of the emission volume of organic pollution of water discharged by businesses employing the volume of oxygen consumed when organic matter in water is removed chemically by oxidation.
	Waste	Quantity of Waste Generated: amount of waste generated by plants/sites in fiscal 2009 Volume of Waste Disposal: The volume of landfill disposal and simple incineration by plants/sites in fiscal 2009 (including waste which is not a zero emission target)
Distribution/ Sales	Atmospheric Release	The total volume of CO_2 emissions in fiscal 2009, including both fuel consumption by Fujitsu's shipping business when measurable, and shipping distance x freight weight x coefficient when the freight of companies other than Fujitsu is included, as in mixed load transportation
Usage	Atmospheric Release	The volume of CO_2 emissions during use of major products* shipped in fiscal 2009 (Amount of energy consumed x CO_2 conversion coefficient. The amount of energy consumed is calculated by multiplying the quantity of electricity used during the estimated time of use of each product unit by the number of units shipped in FY 2009)

* **Major products:** Personal computers, mobile phones, servers, workstations, storage systems, printers, scanners, financial terminals, retail terminals, routers, LAN access equipment, access network products, mobile phone base stations, and electronic devices. (Magnetic disks and MO drivers were included in major products in the previous fiscal year, but have been removed following the Group's withdrawal from these business areas.)

Eco-Friendly Products

We are accelerating the development of Green Products and Super Green Products and are working to reduce environmental burdens throughout the product life cycle.

Green and Super Green Product Development

The Fujitsu Group has adopted a unified Group-wide approach to eco-design for newly designed products and works to improve environmental performance throughout the product life cycle. We have been implementing our own environmental assessments for products since 1993, and we strive to develop eco-friendly products that reflect environmental considerations in such areas as energy saving, 3R design,* non-use of hazardous chemical substances, packaging materials, and information disclosure.

Moreover, in 1998, to further strengthen development of eco-friendly products, we established Green Product Evaluation Standards and positioned the products that satisfy them as Green Products. Then, in fiscal 2004, we combined what had previously been two separate sets of regulations—for product environmental assessment and for Green Product evaluation—into a single set of standards with even higher levels of consideration for the environment. We called these Product Environmental Green Assessment Regulations, and they have helped to both strengthen our Green Product development efforts and make them more efficient.

Furthermore, since fiscal 2004, we have been working on what we call "Super Green Product" development for newly developed products. Super Green Products are those that meet the required conditions for Green Products and are also top class in terms of low energy consumption and/or 3R design technology, non-use of hazardous substances, packaging materials and use of eco-friendly materials and technologies. Super Green Products are products or systems recognized as having superior environmental characteristics to others we supply or are available on the market.

In fiscal 2009, we updated our list of certified Super Green Products, with items in 30 product families meeting our strict criteria. Since we began this scheme in fiscal 2007, the number of Super Green Products has steadily increased and for the updated 2009 total, 63% of our Green Products were also Super Green Products, meaning we had achieved the target set in Fujitsu Group Environmental Protection Program (Stage V).

At the beginning of fiscal 2010, we strengthened to a world-leading standard the requirements for a product to be recognized as Super Green in the categories for energy savings and resource savings, etc. Based on these significantly toughened standards, we established a new target in Fujitsu Group Environmental Protection Program (Stage VI) for at least 30% of our Green Products to also qualify as Super Green Products.

*** 3R design**
Design based on the principles of reduce, reuse and recycle

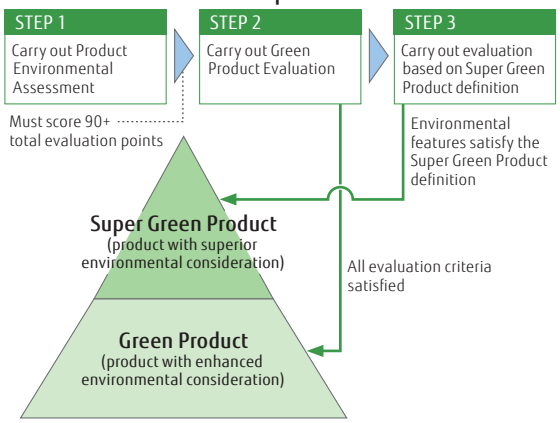
Carrying Out Life Cycle Assessment (LCA)

The Fujitsu Group has made it obligatory to perform LCA for all its green products. Calculation standards have been formulated for each product family, and the Group efficiently evaluates the environmental burdens of its products using its own database*.

Performing LCA makes it possible to determine which parts of a product's life cycle account for the greatest proportion of the environmental burden, so that environmentally-friendly products can be designed effectively. We also apply the expertise developed through our LCA activities to calculate the eco-efficiency factor, and are actively using this as a tool for communicating with our customers.

*** Our Own Database**
This is our own unique database of unit values, created by Fujitsu Laboratories based on input-output tables.

Mechanism for Green and Super Green Product Evaluation



Super Green Product Development Achievements (FY 2009)

Fujitsu Limited
- Server high-speed storage switch, SR-X526R1
- Secure switch, SR-S348TC1
- Optical access ring, FLASHWAVE 2735A1
- Wireless base-station equipment: RRE
- Global server, GS21 1600/GS21 1400
- Storage, ETERNUS DX60/DX80/DX90
- Notebook PCs: FMV LIFEBOOK T8190
- Desktop PCs: FMV-DESKPOWER CE/E50
- Display: VL-177SEL
- PC Servers: PRIMERGY CX1000 S1/CX120 S1
- Mission-critical IA server: PRIMEQUEST 1000 series
- Mobile phones: Raku-Raku Phones (F883iESS), etc.

Subsidiary companies and affiliates
- ATM FACT-V X100 (Fujitsu Frontech Ltd.)
- Thermal printers: FTP-62ADSL series (Fujitsu Component Ltd.)
- Connectors: (88 Type straight jack connectors) (Fujitsu Component Ltd.)
- Image scanner, fi-6800 (PFU Ltd.)
- Information KIOSK terminal (MEDIASTAFF SC mode I(PFU Ltd.)
- Power supply IC (MB39C316 (Fujitsu Semiconductor Technology Ltd., etc.)

Super Green Product Development Examples

Mission-Critical IA Server PRIMEQUEST 1800E

Energy savings
Reduces operating power consumption by 68% compared to a conventional model

3R design technology
Reduces product weight by 78%, volume by 86%

PC Server PRIMERGY CX1000 S1

3R design technology
Reduces product weight by about 40% compared to a conventional product with the same configuration

Secure Switch SR-S348TC1

Energy savings
Reduces operating power consumption by 27% compared to conventional models with the same functionality

Mainframe Global server (GS21 1600 / GS21 1400)

Energy savings
Reduces operating power consumption by about 20% compared to a conventional model

3R design technology
Uses a returnable box for product packaging

Notebook PC FMV-LIFEBOOK S8390

Energy savings
Achieves a ratio in excess of 1,000% relative to the target values in Japan's Energy Conservation Law (Model equipped with Intel Core 2 Duo)

High-Speed, Compact ATM FACT-V X100

Energy savings
Reduces power consumption by 40% in standby mode compared to a conventional model

3R design technology
Uses about 80% recycled materials for all the plastic parts of its case

Storage Disc Array ETERNUS DX90

Energy savings
Lowest operating power consumption (standard configuration) in its product class

3R design technology
The battery-free design eliminates the need for periodic battery changes

Chemicals
Lead-free printed circuit assembly

Desktop PC FMV-DESKPOWER F/E90D

Energy savings
Achieves an achievement ratio in excess of 1,000% relative to the target values in Japan's Energy Conservation Law

A3 High-Speed Image Scanner fi-6800

3R design technology
Leading product on the market in its product class for footprint and volume

WEB Table of Certified Super Green Products (in Japanese)
http://jp.fujitsu.com/solutions/eco/products/sgp/

Eco-Friendly Products

Disclosure of Environmental Information on Products

We actively disclose environmental information on our products, both via the Internet and in the form of environmental labels.

Since the end of fiscal 2006, we have registered notebook personal computers under the EPEAT*1 system, which encourages the purchase of green PCs and is used chiefly by US government bodies. Product environmental information for computers, magnetic disk devices, displays, printers, scanners, and mobile phones covered by green purchasing laws*2 is published on the Ministry of the Environment's website*3, while the equivalent information for computers, displays, printers and scanners conforming to the ENERGY STAR Program in Japan is published on the website of the Energy Conservation Center, Japan*4.

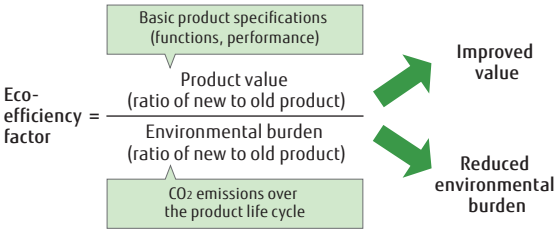
***1 EPEAT website**
http://www.epeat.net/
***2 Green purchasing laws**
Laws related to promoting the purchase of eco-friendly goods and products by the country or other parties.
***3 Ministry of the Environment website**
http://www.env.go.jp/en/laws/policy/green/index.html
***4 Energy Conservation Center, Japan website**
http://eccj06.eccj.or.jp/cgi-bin/enestar/pub_productsE.php

Reducing Product Environmental Burdens by Using the Environmental Efficiency Factor

In fiscal 2007, the Fujitsu Group introduced the eco-efficiency factor*, which evaluates both increases in product value and reductions in its environmental burden at the same time. The factor is calculated for newly developed Green Products in comparison with FY 2005 products. On average, the factor was 3.6 for the Fujitsu Group as a whole for products developed in FY 2009, which is substantially better than our FY 2009 target of 2.0, which we set in Fujitsu Group Environmental Protection Program (Stage V).

Moving on, we will continue to work toward the target set in Fujitsu Group Environmental Protection Program (Stage VI), of achieving a eco-efficiency factor of 2.5 by the end of FY 2012 compared to FY 2008 products.

*** Eco-efficiency factor**
A method for comparing old and new products that quantitatively grasps improvements in both product environmental burden and value (functionality and performance). This is an environmental index that promotes the creation of products that can provide even higher values at even lower environmental burden.



TOPICS

Making Visible How the Use of Eco-friendly Products Reduces Environmental Burdens

The Fujitsu Group is making visible the reductions in CO_2 emissions achieved through the use of our eco-friendly products and services by quantifying these reductions and then communicating this performance data to customers.

For example, since fiscal 2008 Fujitsu Business Systems Ltd. calculates for customers the data on emissions for before and after it implements a solution, and also the resultant yearly reduction in power costs. Also, it uses the 'cedar tree CO_2 conversion tool' to estimate a solution's environmental contribution as expressed as the number of cedar trees necessary to make an equivalent reduction in CO_2 emissions, and this service has proven very popular with customers.

Eco-friendly Product Example
Senshu University

A low power, low heat computer-system solution

In April 2010, Senshu University installed some 2,000 Fujitsu computers equipped with Windows® 7 as the computer system terminals to be used for its upcoming information processing courses and for research.

This is the first time an installation of this scale has taken place in a Japanese university for its computing classrooms using computers equipped with the Windows® 7 operating system (OS).

For this educational and research computer solution, we decided to use low power, low heat emitting servers and computers. About 1,600, or 80%, of the client PCs were LCD integrated models equipped with a power-saving CPU, the FMV-K5290. In addition, through the construction and installation of the PRIMERGY BX900 Blade Server, which has the lowest mounting space requirements in the industry, and also by creating a solution employing virtualization, we were able to realize substantial power and space savings. We continue to calculate the energy savings Senshu University is achieving through our solution, and four years after the installation we estimate it has contributed to a reduction in CO_2 emissions of as much as 975 tons (or 69,623 cedar trees), and reduced power costs by 27.45 million yen.

LCD-integrated PC FMV-K5290

Management of Restricted Chemical Substances in Products

The Fujitsu Group designates substances that are harmful to people and the environment and whose use is either prohibited or regulated by law as 'Fujitsu Group Specified Banned Substances.'

We provide products that do not contain such substances by strictly prohibiting their use in our products and by working to eliminate them through our green procurement programs.

We also recognize that minimizing the risks posed by certain chemicals is of the highest priority in ensuring our customers' safety. For this purpose, we designate substances suspected of being harmful (Substances of Concern) as 'Fujitsu Group Specified Controlled Substances,' even when their harmfulness has not yet been fully demonstrated.

Furthermore, in October 2009 we revised the Fujitsu Group Green Procurement Standards (please refer to page 73) and in line with these updated standards created the Fujitsu Group Specified Reportable Substances list. We place the highest importance on accident prevention for chemicals designated as specified control and reportable substances, and we control their amounts in a way that enables us to prohibit their use before they reach dangerous levels.

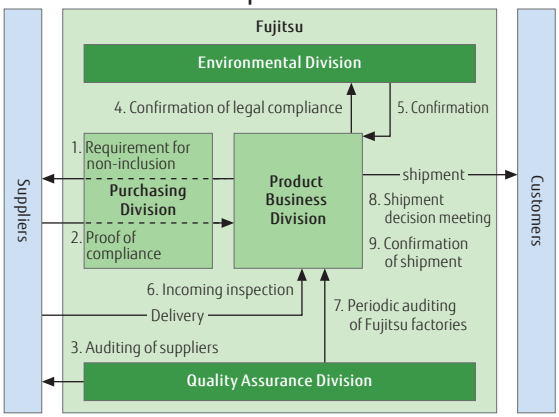
Our Approach to Preventing the Use of Forbidden Substances

The Fujitsu Group defines legally-regulated substances as 'Fujitsu Group Specified Banned Substances,' and provides products that do not contain them.

We have also established Fujitsu Group Green Procurement Standards and strengthen control of the chemicals in our products by requiring our suppliers to construct chemical management systems (CMS).

In response to regulations such as the RoHS*1 Directive, we have taken systematic action covering the entire supply chain by constructing a system headed by our product business division and including our quality assurance, purchasing, and environmental divisions, to manage chemical substances from design through to delivery.

Framework for RoHS Compliance



* Fujitsu Group companies are also constructing their own frameworks based on the above

***1 RoHS Directive**
Restriction of the use of certain hazardous substances in electrical and electric equipment

WEB **Fujitsu Group specified Banned substances**
http://www.fujitsu.com/global/about/environment/products/chemical/

Controlling Substances of Concern

The Fujitsu Group Specified Reportable Substances list includes substances that are REACH-regulation*2 candidate substances*3, and we collect information on substance amounts from suppliers and then manage these quantities on a per-product basis. Moreover, the Specified Controlled Substances list also includes data from suppliers on amounts for substances that may not be restricted by every country's regulations, but which we consider to be of concern.

As far as PVC is concerned, we not only control the amounts included in our products but also require in our Green Procurement Standards that it be used as little as possible, and restrict its use in everything except sheathing for cables and insulating materials for electronic components.

***2 REACH regulation**
Regulation concerning the Registration, Evaluation, Authorization, and Restriction of Chemicals

***3 REACH candidate substances**
Selected chemical substances with properties (carcinogenicity, mutagenicity, reproductive toxicity, etc) regulated by REACH. If these substances are present in products, data on the amounts must be displayed.

WEB
- **Fujitsu Group Specified Reportable Substances**
  http://www.fujitsu.com/global/about/environment/products/chemical/
- **Fujitsu Group Specified Controlled Substances**
  http://www.fujitsu.com/global/about/environment/products/chemical/

We recognize that these are issues that occur across the entire supply chain and so we are actively participating in industry-wide efforts to deal with them, such as those by the Joint Article Management Promotion-consortium (JAMP) and the Japan Green Procurement Survey Standardization Initiative (JGPSSI). Moreover, we are currently investigating methods to more efficiently communicate information about these chemicals.

Using ICT to Control the Chemicals in Our Products

From requesting surveys by outside organizations through to gathering information by our own efforts, the Fujitsu Group maintains an integrated system for managing the information on the chemicals contained in the components and materials it purchases from its suppliers throughout its supply chain. Further, we use the large volumes of chemical-related data we collect to calculate amounts on a per-product basis, pinpointing the amounts of restricted chemicals at the product level and managing them accordingly.

The Group also offers an environmental business solution called PLEMIA/ECODUCE*, a software package that utilizes this in-house expertise.

WEB **The PLEMIA/ECODUCE website (in Japanese)**
http://jp.fujitsu.com/solutions/plm/pdm/plemia/option-04.html

Environmental Solutions

The Fujitsu Group develops and offers a wide range of environmental solutions to support environmental management, aimed at both reducing environmental burdens and increasing economic value.

The Basic Thinking behind Our Environmental Solutions

Companies' environmental initiatives are needed to reduce their burden on the environment, to respond to laws and regulations, and to form the kind of environmental management that leads to company growth through activities that match their business strategy. We support our customers with Environmentally Conscious Solutions and environmental management solutions that contribute to active ongoing improvements.

Environmentally Conscious Solutions

We use environmental impact assessments to evaluate the burdens when customers use Fujitsu Group software and ICT services. Products that achieve a defined reduction in CO_2 emissions are given "Environmentally Conscious Solution" status. In fiscal 2009 we added 37 such products, giving an updated total of 197. We now provide these helpful solutions to a wide variety of customers in a range of industries.

From 2007, we have also introduced the Eco-Quality Solutions Registration System, a qualitative environmental assessment system available to all employees within the Group. The system not only covers those business areas where we traditionally have customers, but also the tools we use within the Group to increase operational efficiency. In fiscal 2009, we newly registered 146 solutions to give a new total of 353. We now provide these Environmentally Conscious Solutions and Eco-Quality Solutions in every area where we do business.

In fiscal 2009, we continued to search for new solutions. In addition to efficiently providing customers with certified Environmentally Conscious Solutions, we have begun testing web tools that will enable us appeal to environmentally conscious customers by offering them a simple, quantitative simulation of the environmental impact even for systems that are not certified. From fiscal 2010, we will proactively recommend the tools we have completed and work to incorporate Eco-Quality functions into our development methods.

Environmental Impact Assessment Techniques

The Fujitsu Group utilizes techniques developed by Fujitsu Laboratories to quantitatively assess from the following viewpoints how much our customers' environmental burdens have been reduced by introducing our ICT solutions products.

- Evaluating the environmental benefits of introducing ICT solutions, including the benefits of increasing efficiencies such as working efficiency as well as the potential energy-saving and resource-saving benefits.
- Indicating the overall environmental benefit by evaluating from the standpoints of both the factors that increase the environmental burden and the factors that decrease it.
- We evaluate by converting the environmental burden to a CO_2 emission quantity.

TOPICS

Developing and providing software that contributes to the environment

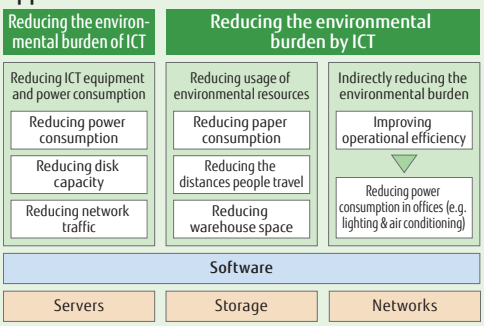
Concerning software development, the Fujitsu Group works on reducing the environmental burden of ICT itself and reducing the environmental burden by using ICT—and provides such software as environmental solutions.

We are reducing the environmental burden of ICT by providing software and solutions that help the efficient use of ICT resources. This is achieved by linking ICT equipment such as servers, storage, and networks; by providing software that can reduce power consumption by making consumption visible and control power supplies, and that that can reduce the volume of network communications; and by constructing private cloud environments. Also, installing our software can help customers reduce the environmental burden of their entire ICT system while it is operating if it includes our Green Products and Super Green Products. By modeling their ICT system and carrying out a green performance evaluation we can confirm these reductions. (For example, our evaluation showed that installing the energy-saving PRIMERGY BX900 Super Green Product under software control results in a reduction in power consumption of approximately 24%.)

We are also reducing the environmental burden by ICT to digitize paper records to reduce paper consumption, to reduce the amount of transport and storage space required, and we are using e-learning to reduce the distances people have to travel. In these ways, in a whole range of industries we are providing software that improves operational efficiency and thereby indirectly contributes to reducing environmental burdens.

Moving on, the Fujitsu Group will continue to make use of such techniques as green performance evaluations and also implement solutions within the Group itself as we strive to develop and provide our customers with software that can help achieve even greater reductions in their environmental burdens.

Approach of Software on Environment



Case Study 1
Sanrio Co., Ltd.

Saving resources by digitizing paperwork

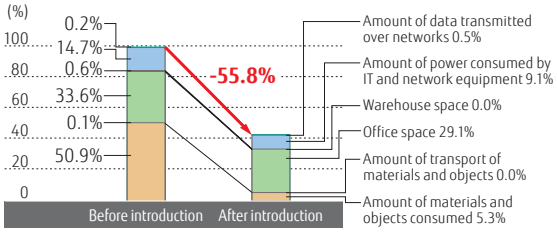
In May 2002, Sanrio Co., Ltd. began a "paperless project" to digitize its paperwork. At that time, Sanrio was printing out some 300,000 paper forms each month and so reducing paper use was an important issue for its environmental management. The objective of this project was not only to save on resources such as paper and ink, but also to reduce delivery and storage costs, the space required for printers, and operational costs.

On launching this project, Sanrio decided to use Fujitsu's Interstage List Works software for managing electronic forms. Using this software, Sanrio reduced the number of paper forms step by step, and by completion of the project in February 2005, was able to reduce them to 30,000 a month.

Not only were the original objectives of saving resources and reducing space requirements and costs achieved but Sanrio's operational efficiency also improved as electronic forms are easier to use than paper forms. For example, they are much easier to search. In addition, our software is enabling Sanrio to speed-up its ability to send and share information. Moreover, the software's security measures are also helping Sanrio prevent information leaking outside of the company by restricting access to highly confidential information to certain departments or employees.

In April 2010, Fujitsu Laboratories Ltd. calculated the reduction in CO_2 emissions that Sanrio had achieved since introducing Interstage List Works. It worked out that through reducing the volume of paper forms, the resultant reduction in storage space requirements, and the improvement in processing efficiency for information management, Sanrio had reduced its annual CO_2 emissions by more than half, from 52.3 tons per year prior to introducing our software to 23.1 tons per year afterwards.

Comparison of CO_2 Emissions Before and After Introduction of Interstage List Works.



Case Study 2
DESUCA LTD.

Promoting train and bus use through eco-points

DESUCA LTD. is the management company established by Tosa Electric Railway Co., Ltd. and Kochikenkotsu Inc. (tr: Kochi Prefecture Public Transport) for the DESUCA IC card, useable on trams and buses in Kochi Prefecture on the Island of Shikoku. Fujitsu created an IC card management system for DESUCA through which users collect traffic eco-points based on their use of public transport, and DESUCA points, which are redeemable by individuals.

When traffic eco-points are used for tram and bus fares, the extent to which CO_2 has been reduced below what it would have taken by car is calculated and displayed, which means that Kochi Prefecture can use the eco-points collected during the course of the year by all card users in its planning and calculations for measures to prevent global warming.

Kochi Prefecture is targeting a 6% reduction in CO_2 emissions by the end of FY 2010 compared to FY 1990, and is promoting a number of environmental-contribution activities in which local people, companies, and organizations take an active role.

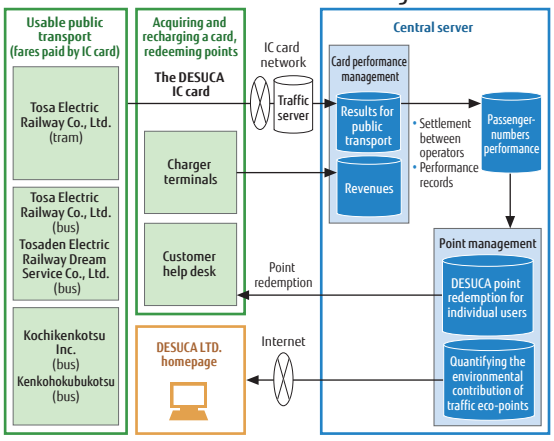
However, the problems of a declining birth rate and aging population mean that in recent years the numbers of passengers on buses and trams have been steadily declining at a rate of about 2% to 5% per year. DESUCA's goal is to position public transport as an essential part of the infrastructure of a sustainable regional society. They hope to achieve this by making visible to card users how much they can contribute to the environment by a modal shift to using public transportation rather than their own cars. In the space of a single year, from April 2009 to March 2010, the scheme succeeded in reducing CO_2 emissions by about 2,866 tons.

In the future, DESUCA's goal is for many more residents of Kochi Prefecture to participate in the scheme and to amalgamate it with other kinds of eco-point programs, such as those to reduce the use of plastic bags. We will continue to collaborate with our customers and business partners like DESUCA LTD. to find even more ways to render environmental contributions visible.


Miss DESUCA


Ryoma card

Timeline for Bus and Tram Use and Receiving the Eco-Points



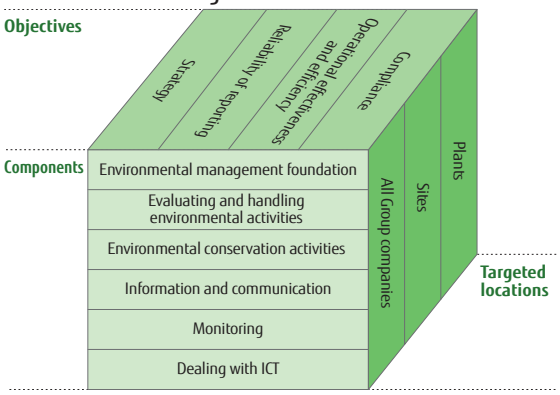
Environmental Solutions

Providing Environmental Management Solutions

We provide environmental management solutions based on the Group's extensive track record of consulting and introducing environmental solutions and its expertise built up over many years of conducting internal environmental activities.

Based on our own original assessments developed by condensing the Group's knowledge and accomplishments, we utilize the Environmental Management Framework newly developed by Fujitsu Research Institute to evaluate our customers' management activities. We use the results of this evaluation to render visible the issues that need to be addressed. We also propose ways of resolving them by adopting strategic and effective measures that utilize the Fujitsu Group's wide range of ICT solutions.

Environmental Management Framework



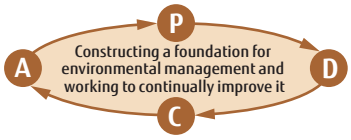
We use our Environmental Management Framework to identify the key objectives, targeted areas, and structural components of our customer's environmental activities, and adopt a management perspective to both reduce the environmental burden and improve economic value.

The Fujitsu Group's Environmental Management Solutions

Environmental management solutions system

Senior executives

Management



- EMS construction, operation and maintenance
- Environmental performance management
- Environmental accounting
- Documentation control and internal communications
- Environmental education and training
- Environmental reporting

EMS construction, operation and maintenance
- EMS environmental assessment support system EVERSLIM
- ISO 14001 consulting

Environmental performance management, environmental accounting
- SaaS environmental management solutions SLIMOFFICE AS
- Environmental management information system SLIMOFFICE EX

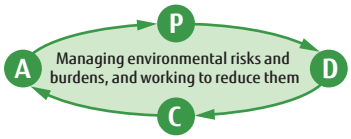
Documentation control and internal communications
- Documentation control system PRODocumal
- GLOVIA smart information sharing Documal

Environmental education, training
- e-learning Internet Navigware
- e-learning environmental management course

Environmental reporting
- DIALOG data base service
- EPA reporting, etc., service
- Environmental newspaper article information

Management department

Factories, offices and other sites



- Monitoring pollutant emissions
- Controlling energy
- Controlling chemicals
- Controlling & recycling waste materials

Monitoring pollutant emissions
- Environmental information system e-FEINS

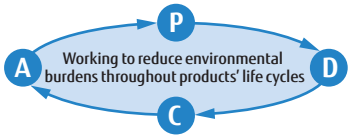
Controlling energy
- Systemwalker Desktop Patrol V14g
- Building management system Futuric/SX series
- EDRAS For Windows facility management system
- IT infrastructure energy savings, green infrastructure solutions
- SupportDesk Expert IT resource management service

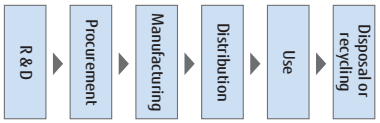
Controlling chemicals
- Chemical controls PLEMIA/ECODUCE
- Chemical information control system McConcierge
- CMS construction/management/support service
- ProcureMart environmental information exchange service
- EH & S (SAP Japan)

Controlling & recycling waste materials
- Business IT products recycling service
- Total emissions management system, waste materials for the web
- For waste processing companies, Sanpai for Windows
- Manufacturing-related emissions processing companies, Kenpai SP For Windows

Plants Department

Plants Department





Research and development - disposal or recycling
- Product LCA support system LCASLIM

Green research and development
- Environmental information management (eco-friendly design support system) PLEMIA/ECODUCE
- Chemical information management system McConcierge
- EH & S (SAP Japan)
- Eco-friendly design VPS/Eco Design
- System for IUCLID5 and installation support service
- CMS construction, management, support service
- ProcureMart environmental information exchange service

Green distribution
- CO_2 emission calculation system LOMOS/EC
- Car dispatch support system LOMOS/Delivery planning
- In-vehicle station MBCDSeries
- TRIAS/TR-E & S
- TRIAS/TR-Pro
- TRIAS/TR-Server

Green procurement and manufacturing
- Green procurement PLEMIA/ECODUCE
- Chemical information management system McConcierge
- System for IUCLID5 and installation support service
- CMS construction/management/support service
- ProcureMart environmental information exchange service
- EH & S (SAP Japan)

Consulting
- Environmental management assessments
- Assessment of environmental conservation activities

Consulting for Evaluating and Improving Environmental Management

This is a consulting service that utilizes the Environmental Management Framework to comprehensively evaluate customers' environmental programs and put forward improvement proposals.

In line with the six constituent elements and approximately 100 assessments of our Environmental Management Framework, we evaluate these programs from viewpoints such as legal/regulatory and other requirements, industry standard level, economic impact on management, and degree of standardization of in-house implementation. We also consult on continuous improvement of management, based on the evaluation.

Consulting for Evaluating and Improving Environmental Conservation Activities

This is a consulting service that focuses on environmental conservation activities (one of the constituent elements of the Environmental Management Framework).

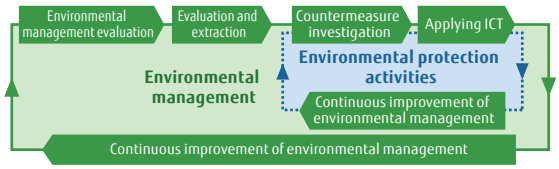
Having exhaustively identified the environmental conservation activities that a customer should undertake at each phase of its business process, we evaluate the efficiency, soundness and other aspects of its current activities and propose solutions for resolving the issues.

Environmental Business Solutions

In the Fujitsu Group, we are making full use of our expertise in reference modeling and advanced technologies that were devised in our environmental programs to provide our customers with ICT solutions that support their environmental management.

- Some Examples of Environmental Business Solutions
  SaaS environmental management solution SLIMOFFICE AS
- SLIMOFFICE EX Environmental Management Information System
- PLEMIA/ECODUCE Product Chemicals Management Solution

Environmental Solution Framework



Structure of an Environmental Management Solution

Case Study
Konica Minolta Business Expert, Inc

Configuring a Chemical Control System using ICT

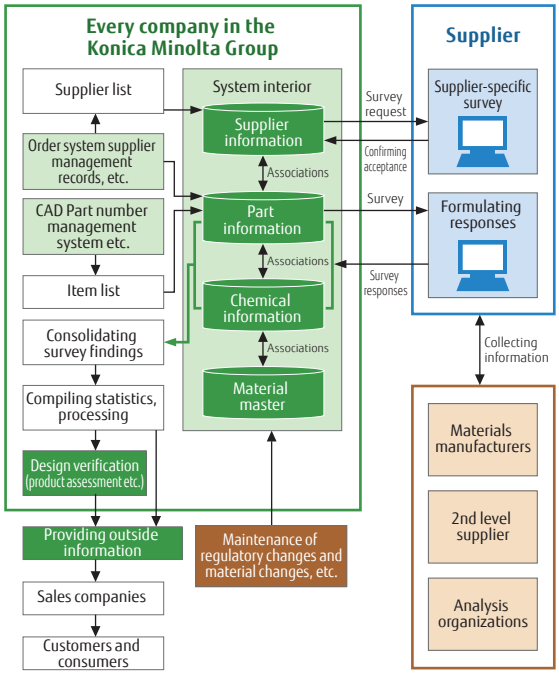
In conjunction with the enforcement of REACH and the strengthening of other regulations, such as the revisions to RoHS compliance requirements scheduled for 2010, companies must achieve even more stringent control of chemicals throughout the entire supply chain.

Konica Minolta Business Expert, Inc. performs functions such as engineering, logistics and environmental and safety consulting as common services for all companies in the Konica Minolta Group. It responded to the increasingly strict regulatory environment by constructing SIGMA, its new eco-friendly procurement system, and it decided to use the Fujitsu Group's PLEMIA/ECODUCE system to control chemicals in products as the foundation on which it would construct this new system.

PLEMIA/ECODUCE is compliant with REACH and provides integrated control of all the components used to create hardware. It creates tables showing chemical amounts within each component and can automatically calculate amounts on a per-product and per-unit basis. Further, it can be used in three languages (Japanese, English, and Chinese), can accommodate expansive and multifaceted survey responses, and can flexibly respond to changes in regulations and to the status of controlled chemicals.

When Konica Minolta Business Expert decided to use our system in constructing SIGMA, we improved the system's usability based on the needs of all the companies within the Konica Minolta Group, ensuring that users would be able to acquire the information as and when needed.

New System Survey Scheme



SIGMA came fully on-line in December 2009, and by helping to implement stringent chemical controls it continues to provide effective support for the Konica Minolta Group's compliance and risk management.

Promoting Product Recycling

We are advancing collection and recycling of end-of-life ICT products from a global perspective to help create a recycling-minded society.

The Concept of Producer Responsibility

In accordance with the concept of Extended Producer Responsibility (EPR), under which the producer's responsibility for its products is not limited to the product design and manufacturing stages but extends to the disposal and recycling stages as well, the Fujitsu Group carries out recycling programs that comply with the waste disposal and recycling laws and regulations of the various countries in which it operates. We also try to do as much collection, reuse and recycling as we can even in countries where recycling is not obligatory, in line with the concept of Individual Producer Responsibility (IPR), which sees each producer as responsible for its own products.

IPR is a major challenge for the Fujitsu Group in expanding its business globally, but we believe that responding to this challenge and that of EPR in collaboration with industry associations and governments will enable us to help create a recycling-minded society in which the requirements and demands of all stakeholders are met.

Our Approach to Product Recycling Overseas

The Fujitsu group recycles products in EMEA and the Americas (the United States, Canada, and Brazil) and Asia (Singapore, the Philippines, Australia, Hong Kong, Taiwan, and Korea).

EMEA: Fujitsu Technology Solutions (Holding) B.V. (FTS)

Through its partner companies, Fujitsu Technology Solutions (Holding) B.V. (FTS) recycles waste ICT products for corporate and individual customers in 27 countries in the EU, as well as in Norway and Switzerland. In addition, since 1988 at Paderborn, the Group's own recycling center in Germany, we have been contributing to the reuse of waste resources by dismantling products by hand so we can precisely classify and then appropriately recycle the materials.

Moreover, since 2008 Fujitsu Technology Solution's South Africa office has been collaborating with local waste-management companies to collect and recycle from corporate and individual customers all products of any brand, including monitors, printers, mobile phones, desktop PCs, notebook PCs, calculators, TVs, and DVD equipment. This is the first time an ICT company has provided such a service in South Africa.

WEB **The FTS Recycling Program**
http://ts.fujitsu.com/aboutus/company_information/business_excellence/environmental_care/recycling.html

Singapore: Fujitsu PC Asia Pacific Pte. Ltd. (FPCA)

Since 2007, Fujitsu PC Asia Pacific Pte. Ltd. (FPCA) has been teaming up with local recycling companies in Singapore to provide an ICT product recycling service for corporate customers.

WEB **FPCA's recycling approach in Singapore**
http://www.fujitsu.com/sg/news/pr/fpcap_20071101.html

Brazil: Fujitsu do Brazil Ltda. (FBR)

Fujitsu do Brazil Ltda (FBR) is also working with local recycling companies and in 2009 created and launched a service to recycle ICT products.

Promoting Product Recycling in Japan

As an enterprise with official designation for wide-area industrial waste disposal in Japan, Fujitsu engages in various kinds of contracts for accepting industrial waste for appropriate processing.

Fujitsu has developed a nationwide recycling system based on Fujitsu Recycling Centers and other facilities throughout Japan. This system provides for rigorous traceability and security, and achieves a high resource reuse rate*. By providing this safe and secure service, we are fully discharging our Extended Producer Responsibility (EPR).

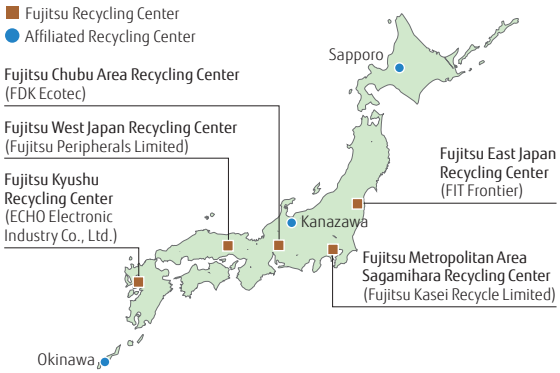
*** Resource reuse rate**
The ratio of the amount (by weight) of recycled parts and resources to the amount of end-of-life business ICT products processed.

Wide Area Industrial Waste Disposal Certificate

Reconfiguring Our Recycling Center Structure in the Tokyo Metropolitan Area

On April 1, 2010, with the goal of realizing even smoother operations, we consolidated activities at the Metropolitan Area Ayase Recycling Center into the Metropolitan Area Sagamihara Recycling Center, resulting in a new nationwide structure of eight recycling centers.

Fujitsu Recycling Centers Throughout Japan



Achievements in Collecting and Recycling End-of-Life ICT Products

We recycled 6,445 tons of ICT products from corporate customers in fiscal 2009, and achieved a resource reuse rate of 90.8%. Also, we have now collected a total of 67,662 end-of-life PCs from individual customers.

Trends in Resource Reuse Rate of End-Of-Life Business ICT Products

(%)

FY	2006	2007	2008	2009
Resource reuse rate	91.5	91.8	91.5	90.8

Promoting Recycling

Experienced workers carefully disassemble collected products by hand and separate the materials into categories such as steel, copper, aluminum, precious metals, glass and 20 different types of plastic. They also strive to raise their manual disassembly standards through the use of animated disassembly manuals. Materials recognition equipment has been introduced for plastics that are difficult to discriminate, so as to allow the complete segregation of different types of plastic.

In addition to minimizing the quantity of waste materials in this way, we are continually trying to turn them back into resources that can be reused to make products. To keep our customers informed of these initiatives, we distribute ballpoint pens and clear folders made from recycled plastic at exhibitions and other events, as well as demonstrating PCs being manually disassembled.

Materials recognition equipment

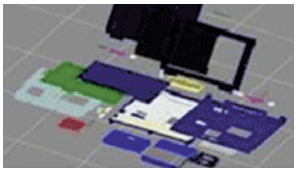
Ballpoint pens

A clear folder

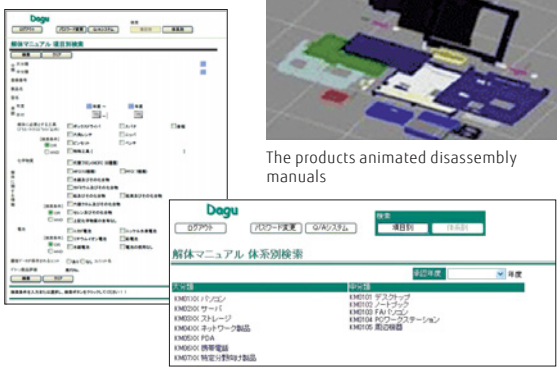
Providing Product Recycling Information

In order to properly dispose of end-of-life ICT products, since fiscal 2004 Fujitsu has been operating a digital management system for its products disassembly manual.

Through this system, Fujitsu recycling centers can download from our in-Group website, as animated disassembly manuals all the information they need to recycle products. In addition to providing a downloadable products disassembly manual, the system provides instructions on how to deal with items containing restricted chemical substances and plastic materials, and with products that contain customer data.



The products animated disassembly manuals



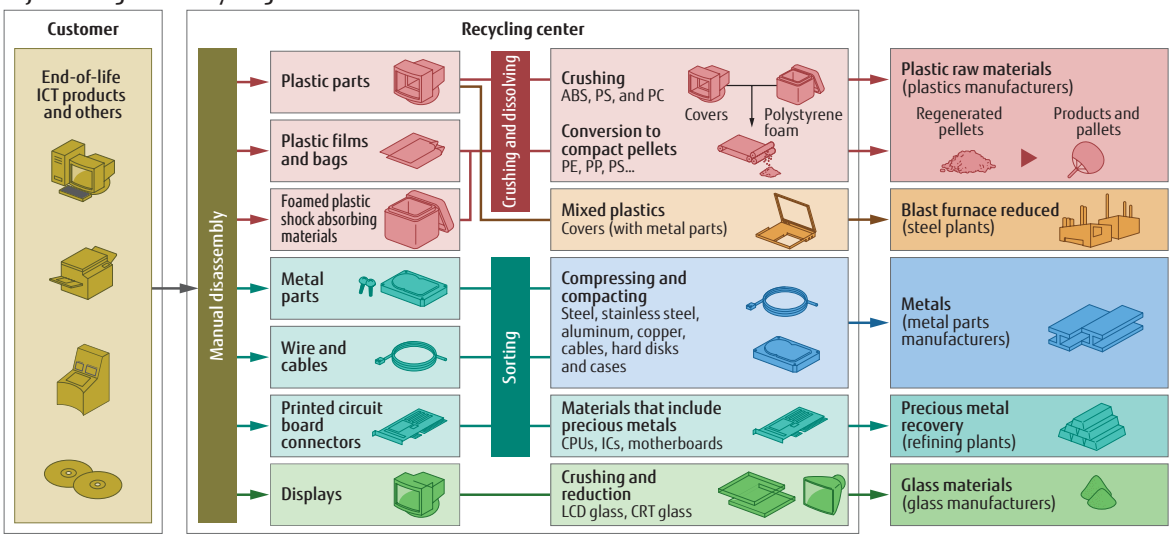
Electronic Disassembly Manual Management System

Developing a Traceability System

We developed an integrated recycling information management system and since fiscal 2007 have adopted it at the Fujitsu recycling centers.

This system prevents theft and illegal dumping by attaching barcodes to customers' ICT products and managing data on the history of the recycling process from acceptance at the recycling center through disassembly and destruction of the hard disks on a per-customer basis.

Fujitsu Integrated Recycling Process



Efforts to Prevent Global Warming

We are examining all of our business operations in our efforts to reduce greenhouse gas emissions —not only factories and offices but also transportation and the products and services we provide.

Basic Approach

We are working to reduce emissions of greenhouse gases associated with all our Group business activities. These efforts include reducing emissions of CO_2 due to energy consumption and other greenhouse gases at our factories and offices and reducing emissions associated with transportation (see page 74). Furthermore, we are working to prevent global warming throughout all areas of business activity by contributing to reduced emissions of greenhouse gases by our customers, industry, and society in general by developing IT products (see page 57) that achieve energy savings and by providing IT solutions (see page 61) that have the effect of reducing environmental burdens.

Reducing Greenhouse Gas Emissions in Manufacturing

In Fujitsu Group Environmental Protection Program (Stage V), we established the goals for annual CO_2 emissions from energy consumption of (1) holding emissions levels to under those of fiscal 1990 for business sites in Japan and (2) reducing emissions per unit of actual sales by 28% relative to fiscal 1990 levels by the Group as a whole, including overseas businesses, both by the end of fiscal 2010. We have implemented the following energy-saving measures.

- Energy-saving equipment, focusing on motive-power facilities (introduction of free cooling, inverters, energy-saving facilities, fuel conversion, etc.)
- Increased efficiencies through revised manufacturing processes, accompanied by proper motive-power facility operation and improvement of management
- Adjusting appropriate room temperature for office air conditioning, saving electricity for lighting and office automation equipment
- Promotion of the measurement and visualization of energy consumption and proactive use of that data
- Use of natural energy sources such as solar power

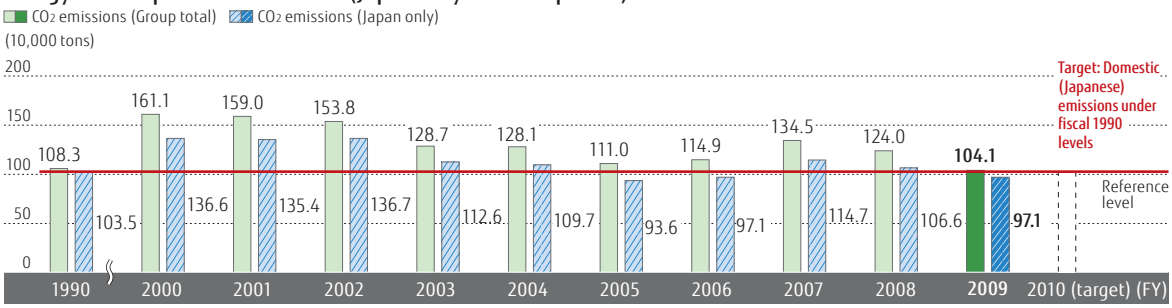
Further, we set up a new Low Carbon Committee at the corporate level in September 2008, establishing reduction targets for each business unit. Stronger measures to achieve these targets follow reforms to processes and equipment (in mounting, assembly and testing) and the development of new technologies. Moreover, our Capital Investment Guidelines define the economic and environmental criteria for investment as we identify and urgently implement priority measures.

These efforts reduced our CO_2 emissions from energy consumption to 0.971 million tons in Japan in fiscal 2009, well under the 1.04 million-ton target. While this is a year-on-year decrease of 95,000 tons, partly due to business realignment, it was a 6.1% decrease below fiscal 1990, achieving the target set for the end of fiscal 2010 a year early. CO_2 emissions for the entire Group were roughly 1.041 million tons, a 74.4% reduction below fiscal 1990 per unit of actual sales.

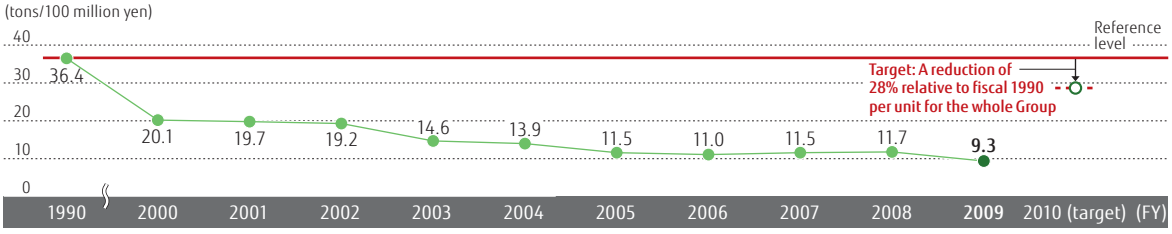
We are also participating in the Japanese Government's domestic emissions trading scheme pilot project, launched in fiscal 2008 with the aim of examining further global warming countermeasures based on a medium-to-long-term viewpoint. In fiscal 2009, following the launch of a trial emissions trading scheme*, our emission levels are verified by an organization outside the Group, which confirmed that we achieved our emissions targets for fiscal 2008.

*** Trial emissions trading scheme**
The principal framework for the trial implementation of an integrated emissions trading market in Japan. Participants voluntarily establish emission reduction targets and are allowed to supplement their own reduction efforts by trading emission allowances and credits.

Energy Consumption CO_2 Emissions (Japan Only and Group Total)



Trends in CO_2 Emissions per Unit Actual Sales (Group Total)



*** CO_2 conversion coefficient for purchased electric power:** Our results for fiscal 2002 and later are calculated as 0.407 tons CO_2 per MWh.
*** Actual sales:** Consolidated sales adjusted using the Bank of Japan's corporate goods price index (electrical and electronic equipment). (Per unit value = CO_2 emissions/actual sales)

Case Study 1
Shinano Fujitsu Ltd.

Energy-saving measures for compressors and air conditioners

Shinano Fujitsu Ltd. (The Fujitsu Component Group) has been focusing its efforts on energy savings for its compressors and air conditioners, which are responsible for about 40% of total power consumption.
Compressors: reducing pressure, controlling number of units used, eliminating air leakage.
Air conditioners: reducing air-conditioner load by installing waste-heat ducts and insulated jackets on equipment and a rooftop watering system.

Thanks to these and other measures including improving the operational efficiency of boilers, fuel-oil demand decreased and the plant as whole was able to reduce its yearly CO_2 emissions by 1,400 tons.


Waste-heat ducts and insulated jackets are used on the reflow furnace.

Case Study 2
Fujitsu Semiconductor Ltd.

Substantially reducing CO_2 emissions by modifying electrical storage and heat-source facilities

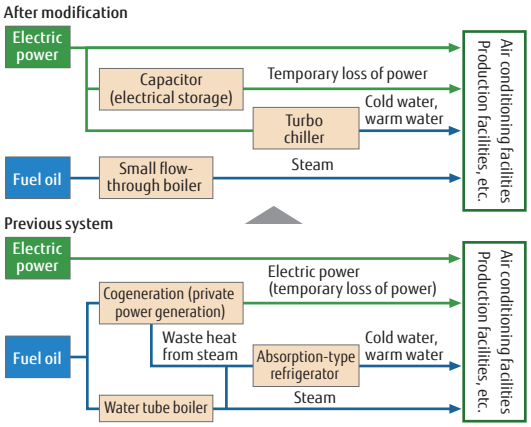
Fujitsu Semiconductor Ltd.'s Iwate Plant and Fujitsu Semiconductor Technology Inc. have been implementing measures to address temporary losses in electrical power*.

They installed electric double-layer capacitors, which can store (and discharge) large amounts of electrical charge, and implemented measures to optimize the operations and improve the efficiency of heat-emitting equipment such as refrigerators and boilers. These strategies have enabled both to substantially reduce their use of fuel oil below the previous systems, and they achieved a combined reduction in CO_2 emissions of 38,000 tons a year.

*** Temporary power loss**
the electric power supply can drop temporarily due to phenomena such as lightning. It can cause significant damage in plants operating advanced ICT equipment.


Electric double-layer capacitor

System block diagram



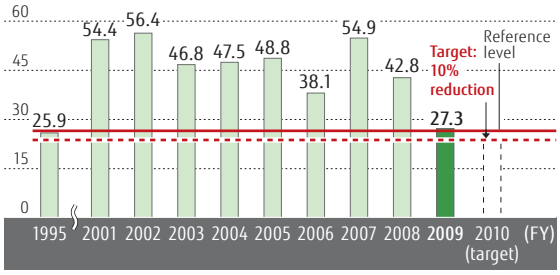
Cutting Emissions of Greenhouse Gases Other than CO_2

The semiconductor industry has established a voluntary action plan to cut the emissions of PFC, HFC and SF6, which are all greenhouse gases.

The Fujitsu Group Environmental Protection Program (Stage V) sets a target for reducing emissions of non-CO_2 greenhouse gases to 10% below fiscal 1995 by the end of fiscal 2010. Our Electronic Devices units are changing over to gases with lower global warming potential and extracting such gases on new manufacturing lines.

In fiscal 2009, business reorganization and plant production line unification and integration affected totals, and according to the Global Warming Potential measure, emissions increased from 0.155 million tons the previous fiscal year to 0.273 million tons. This is a 5.1% increase over fiscal 1995, but we expect to achieve our fiscal 2010 target by gas extraction equipment and other measures.

Emissions of Greenhouse Gases other than CO_2 (total for semiconductor business)
(GWP conversion, 10,000 tons)



Targets for Fujitsu Group Environmental Protection Program (Stage VI)

For Fujitsu Group Environmental Protection Program (Stage VI), as in previous stages, we will continue to set reduction targets on a per-gas basis (typically for energy-consumption CO_2 and greenhouse gases other than CO_2) and based on scientific findings and forecasts up to the year 2020, our goal is to reduce our total greenhouse gas emission by 6% by the end of fiscal 2012 compared with fiscal 1990.

Promoting the Use of Renewable Energy

Some Fujitsu business sites have introduced renewable energy in the form of solar power, etc. Moving forward, we will positively increase our use of renewable energy as new data centers and other facilities come to be built (see pages 11-12). Reflecting this, we have established new, higher targets for renewable energy use and we intend to use it to meet these goals.

We also perform carbon offsetting of the electricity we consume by using Green Power certificates at events and exhibitions such as Fujitsu Forums and stockholders' meetings. In fiscal 2009, we purchased a total of approximately 56,000 kWh worth of these certificates.

Reducing the Environmental Burden of Factories and Business Offices

We are advancing eco-friendly business activities through comprehensive environmental protection activities in our factories and offices.

The Thinking behind Our Activities to Reduce Environmental Burdens in Factories and Offices

The Group continually strives to reduce the quantities of materials and energy used in its operations, as well as the amounts of chemicals and waste materials generated and atmospheric pollutants emitted, while trying to minimize manufacturing costs. It also takes a rigorous approach to complying with laws and regulations and eliminating environmental risks.

Applying the Green Factory and Green Office Systems

To reduce even further the environmental burden of our factories and business offices, we initiated in fiscal 2007 our Green Factory and Green Office systems, designed to comprehensively evaluate our level of eco-friendliness and autonomous initiatives and render them 'visible.'

In Fujitsu Group Environmental Protection Program (Stage V), we propose achieving a two star (★★) or higher level in the Green Factory or Green Office system at every one of our relevant business sites in Japan by the end of fiscal 2009, and we have worked to achieve the certified levels and improve and heighten our eco-friendliness.

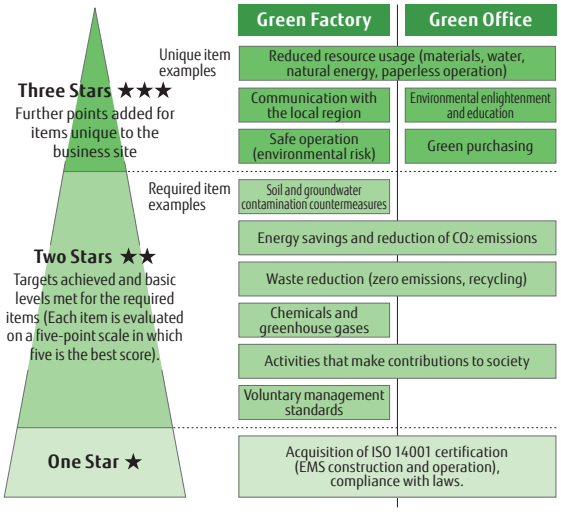
Thanks to these efforts, for the 42 sites evaluated according to the Green Factory system in fiscal 2009, all sites achieved at least two stars while 14 sites received three stars or more.

In addition, by increasing the number of sites participating in the Nationwide Paper Recycling System (please refer to page 72) and implementing training for local auditors and employees responsible for waste management, we targeted a three-star score for all of our 371 business sites being evaluated under the Green Office system. Thanks to these and other measures, every site achieved a three-star rating and all 371 sites also achieved zero emissions* for waste, the largest number for any organization in Japan.

We intend to achieve four stars or more for all our business sites by the end of fiscal 2012, which is the goal set in Environmental Protection Program (Stage VI). With this aim, we are carrying out initiatives such as creating opportunities for locations to discuss common problems and further unifying our waste disposal management across multiple sites.

*** Zero emissions**
For simple calculations of emissions from the incineration or landfill disposal of industrial waste and paper waste

Certification Levels



Using Green Process Activities to Reduce the Environmental Burden in Our Manufacturing Processes

The Group promotes Green Process activities with the aim of further lightening our environmental burden by reducing energy usage in our factories, rigorously controlling chemicals, reducing waste, etc.

These activities are conducted in parallel with cost-reduction activities, and consist of initiatives such as optimizing the amount of energy and raw materials used in manufacturing processes and switching to alternatives with a lower environmental burden.

In these activities, we first identify the total input of materials (raw materials, chemical additives, etc.) and energy into the process, together with their purchasing costs, and then establish our own original CG (Cost Green) index*. We then set quarterly reduction targets (planned values) at the production line level for each factory and evaluate the degree of attainment of these targets while going through the PDCA cycle. Based on the results, we try to continually improve our production processes through initiatives like introducing new manufacturing technology, revising our processes, and improving the work procedures.

A more effective way to reduce the environmental burden generated by plants is to link activities involved in manufacturing processes with those involved non-manufacturing processes. We have therefore incorporated the CG index and the philosophy that underlies it into the activities of all relevant departments, not just manufacturing.

*** CG index: Cost/Green index**
This index describes the product of input volume used per product, the cost (input materials and energy), and the environmental impact (on a scale from 1 to 10).

Example of a Green Process Activity
Fujitsu Integrated Microtechnology Ltd.

Improving the efficiency of cold-water supply for air conditioners used in an LSI packaging process

Fujitsu Integrated Microtechnology Ltd., which provides package solutions for LSI products, has revised its framework for measures to reduce environmental burdens by extending measures from manufacturing to non-manufacturing departments, as more of the latter participated in green process programs, linking the activities of entire plants.

On starting a program, every department within the plant sets individual targets based on CG index calculations and then carries out programs to achieve these targets. For example, the Facilities Department in its Miyage Plant established energy efficiency CG index values for air conditioners and other power plant equipment and then implemented energy-saving measures to achieve the targets at every facility within the plant.

One of these measures was to improve the efficiency of the cold water supply for air conditioners. In the past, heat-storage tanks used by the air conditioners throughout the plant were supplied separately by individual chillers. But as some were not operating at maximum capacity they could be connected to each other by pipes to increase operating efficiency. Also, turning some of them off outside the peak summer season reduced power consumption by an average of about 33.0% along with the costs per CG unit and unit of cold water.

Reducing the Amount of Waste Generated

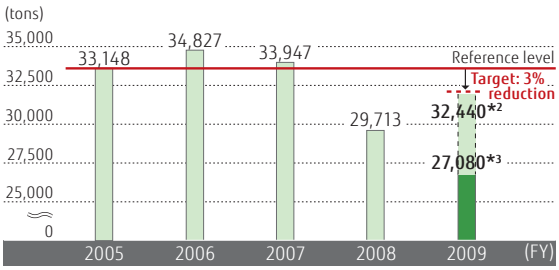
Basic Approach

Working towards a recycling-minded society, our 3R policy (reduce, reuse and recycle) encourages all employees to separate waste materials into different categories for effective recycling.

FY 2009 Performance

In Fujitsu Group Environmental Protection Program (Stage V), we set the goal of reducing the amount of waste generated by our business operations by 3% compared to fiscal 2005 levels by the end of fiscal 2009.

Amounts of Waste Generated*1



*1 Statistics for eight Fujitsu sites and 31 Group companies.
*2 Includes the amounts for companies consolidated from FY 2009: in Japan, FDK Ltd.; overseas, FTS.
*3 Volume of waste generated by the business sites included when establishing Stage V targets.

The amount of waste generated by business sites included in our targets for Stage V of the program was 27,080 tons, an 8.9% reduction year on year, and an 18.3% reduction below FY 2005. This means we achieved our Stage V target. Our success lay in converting waste paper, acids and other materials into valuable resources, but there were also significant market changes.

Fujitsu Group waste came to 32,440 tons in fiscal 2009, including the two companies newly consolidated, FDK Ltd. in Japan and FTS overseas. From fiscal 2010 we will push on with programs to realize our ambitious target of a 20% reduction below FY 2007 by the end of FY 2012.

Example of Activities to Reduce the Amount of Waste Generated
Fujitsu Integrated Microtechnology Ltd. Kyushu Plant

Reducing sludge generated by treatment of waste water from silicon polishing

Waste water containing sludge is generated during the silicon wafer back-polishing process, the first stage in product assembly. Without using chemicals, we were able to reduce the amount of silicon sludge generated to just one quarter of the previous amount by installing new equipment to concentrate and dry the waste.

Decompression dehydration dryer (left), membrane concentrator (right)

Silicon sludge

Basic Policy for Chemical Substances Management

Basic Approach

Prevention of environmental risks that could lead to environmental pollution or adverse health effects due to the use of harmful chemical substances has been established as our basic policy for chemical substances management. We manage the amounts used for about 1,200 chemicals, and we work to reduce the amount discharged and implement appropriate management at every business site.

Results for FY 2009

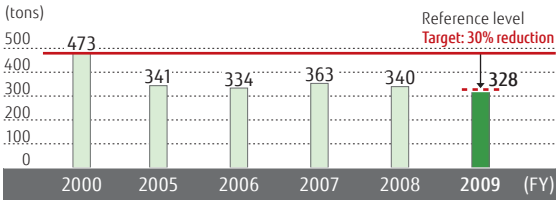
In Fujitsu Group Environmental Protection Program (Stage V), we proposed the target of reducing volatile organic compound (VOC) atmospheric emissions from business sites by 30% from FY 2000 levels by the end of FY 2009.

Thanks to these efforts, the entire Group's atmospheric VOC emissions for FY 2009 came to 328 tons, a 31% reduction below FY 2000, and we successfully achieved the target set in Fujitsu Group Environmental Protection Program (Stage V).

Reducing the Environmental Burden of Factories and Business Offices

In FY 2010, we are aiming for the new target set in Stage VI of the Program, which calls for reducing emissions of specific chemicals by 10% by the end of FY 2012 compared with FY 2007.

VOC Atmospheric Emissions



Example of Measures to Reduce VOCs
Shinko Electric Industries Co., Ltd.

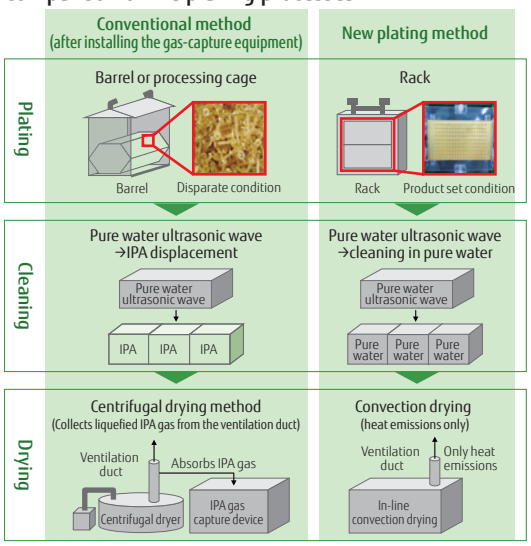
Reducing IPA gas emissions

Shinko Electric Industries' Takaoka plant has introduced a new method into its plating processes that has enabled it to eliminate one type of VOC, IPA (Isopropyl alcohol). In addition, it was also able to cut the volume of its IPA gas emissions in plating processes yet to adopt this new method, by installing equipment to capture IPA gases.

The new method involved introducing rack equipment at the plating stage and also redesigning the structure of the equipment used. These changes allows the plant to use water instead of IPA gases at the cleaning stage, which in turn results in zero IPA emissions at the drying stage.

In addition, it is reducing IPA gas emissions on those lines not yet upgraded to the new method by installing equipment to capture IPA gases at the drying stage

Comparison of the plating processes



Compliance with the Revised Chemical Management Law

Following revisions to the Chemical Management Law*1, more chemical substances are now covered by the MSDS*2 system and the PRTR*3 system (revisions applied to the MSDS system from October 2009, and to the PRTR system from April 2010).

Responding to these revisions, the Fujitsu Group has asked its suppliers to cooperate in the delivery of chemicals, and based on the revised PRTR system it is carrying out initiatives to obtain and accurate grasp of the amounts of chemicals transported and emitted.

***1 Chemical Management Law**
A law to promote correct understanding, management, and reporting of amounts of designated chemicals emitted into the environment

***2 MSDS**
A system that requires attachment of a Material Safety Data Sheet to chemical deliveries

***3 PRTR**
Abbreviation of Pollutant Release and Transfer Register. This system requires the registration and reporting of data relating to the emission of harmful chemicals into the environment and volumes within transported waste.

Environmental Liabilities

We intend to be a corporate group that accurately forecasts and evaluates today the extent of its environmental liability tomorrow, that does not defer settlement of this liability to a later date, and that discloses information to its stakeholders on the soundness of the group from a medium- to long-term perspective. To achieve this, at the end of fiscal 2009 we recorded as a liability on the Group's consolidated balance sheet 6.04 billion yen for soil-pollution cleanup costs and high-level PCB waste disposal costs. Based on data previously acquired, this total is the amount we calculate to be necessary for the Fujitsu Group in Japan to carry out these tasks.

Responding to Soil and Groundwater Pollution

We have reviewed our internal rules established in fiscal 2006 in response to soil and groundwater problems and will handle such problems based on these revised rules for soil and groundwater surveys, policies, and disclosure. In the future, at the same time as performing planned surveys and, if pollution is discovered, implementing cleanup operations and countermeasures appropriate for the conditions at each business site, we will also disclose relevant information in collaboration with government authorities.

The following website gives an overview of our initiatives to combat soil and groundwater pollution, together with the results of our surveys of groundwater pollution at our sites in Japan and the status of our cleanup operations at those sites:

WEB Our initiatives to combat soil and groundwater pollution (in Japanese)
http: //jp.fujitsu.com/about/csr/eco/factories/gwater/

Status of New Soil and Groundwater Pollution Measures Undertaken in FY 2009

A voluntary survey in fiscal 2009 revealed soil and groundwater contamination at two sites.

We reported the state of contamination at both sites and explained our countermeasures to local citizens and authorities.

Sites Continuing to Undertake Cleanup Operations and Institute Countermeasures in FY 2009 Stemming from Past Business Activities

We have dug wells to monitor groundwater contamination near our sites where soil or groundwater contamination has been found. We continuously monitored five such sites in fiscal 2009.

The table below lists the largest of the most recent measurements for chemicals whose measurements are recognized to have exceeded legal limits in fiscal 2009 stemming from past business activities.

Work to clean the soil and groundwater at the site of the former Minamitama Plant was completed in October 2007. Following two years of monitoring underground water conditions as prescribed by law, we confirmed that all values remained below legally prescribed safe levels.

Business sites where soil or groundwater contamination has been found

Site Name	Location	Cleanup and countermeasure status	Monitoring well maximum value (mg/ℓ)		Regulation value (mg/ℓ)
			Substance	Measured value	
Kawasaki plant	Kawasaki, Kanagawa Prefecture	We are continuing to clean up VOCs by pumping and aeration.	Cis-1, 2-dichloroethylene	2.9	0.04
Oyama plant	Oyama City, Tochigi Prefecture	We are continuing to clean up VOCs by pumping and aeration.	Cis-1, 2-dichloroethylene	3.679	0.04
			Trichloroethylene	4.711	0.03
Nagano plant	Nagano City, Nagano Prefecture	We are continuing initiatives to clean up VOCs by pumping and aeration.	Cis-1, 2-dichloroethylene	0.35	0.04
Shinetsu Fujitsu	Shinano machi, Kamiminochi Gun, Nagano Prefecture	We are continuing to clean up VOCs by pumping and aeration.	Cis-1, 2-dichloroethylene	0.13	0.04
Fujitsu Optical Compo-nents	Oyama City, Tochigi Prefecture	We are continuing to clean up VOCs by pumping and aeration.	Cis-1, 2-dichloroethylene	0.17	0.04
			1, 1-dichloroethylene	0.041	0.02
			Trichloroethylene	0.63	0.03

Reducing the Environmental Burden in Offices

The Fujitsu Group also promotes environmental activities in its administrative offices, saving energy, working toward zero waste emissions and contributing to society and, of course, ensuring legal compliance. In fiscal 2007, we began operating our Green Office System to energise and enhance these activities. Under this system, the level each office has achieved in its environmental activities is evaluated and awarded one to three stars. All of the offices that come under this system achieved a three-star ranking by the end of fiscal 2009 (see page 69).

In this way, we plan to render the details of the activities carried out by our offices 'visible,' construct databases that allow the activities to be shared with and rolled out to other offices, and continue to raise the level of environmental activities throughout the Fujitsu Group.

On-Site Waste Disposal Auditing

The important "Law on Waste Disposal and Cleaning" applies to all offices in Japan.

To confirm that ICT equipment and other types of industrial waste are being properly dealt with, we perform standardized Group-level checks of the regular on-site audits at Fujitsu Recycling Centers that have elected to dispose of in-house ICT equipment. Specifically, a member of the Fujitsu Corporate Environmental Strategy Unit visits the recycling center once a year with the person in charge of waste disposal from the relevant office, using a standardized checklist to check the documentation and the onsite disposal operation itself.

Creating a Database of Environmental Activity Measures, and Utilizing Checklists

By operating the Green Office system, we survey energy-saving, waste reduction and paper reduction measures and build them into a database, which we then use to make checklists.

These checklists are proving useful not only as materials for considering the measures to adopt when our offices set their environmental objectives and targets but also for invigorating and improving the activities by making visible operational improvement issues and measures that require investment.

Conducting a Field Survey in Response to the Revised Energy Conservation Law

The revised Energy Conservation Law of May 30, 2008, requires administrative offices to identify their energy usage.

In response, we used the Green Office system to investigate and clarity the theoretical and actual values of the electricity allocation method and meter positions in all affected offices.

A Green Office Example

Achieving Zero Emissions for Waste Paper by a Nationwide Paper Recycling System

We have gradually increased the number of sites taking part in the Nationwide Paper Recycling System created last year, and as of June 2010, 285 sites are participating in the scheme. Waste-paper processing companies in all the regions where we have business sites are collecting and processing confidential documents and non-confidential used paper as a set. This is enabling us to achieve very high levels of recycling and zero emissions according to simple calculations from the disposal of paper by incineration or land fill.

Also, all of the waste-processing companies we use are carrying out integrated ICT data management for the paper they collect. As a result, we can quantity and make visible our environmental performance and also reduce the work load of data processors who deal with this data in companies throughout the Group.

Green Purchasing

In cooperation with our business partners, we promote green purchasing–from parts and materials for manufacturing through software and services–to provide our customers with products and services with superior environmental efficiency.

Our Approach to Green Purchasing

In our purchasing activity, we stipulate in our basic requirements for green purchasing that we give priority to purchasing parts, materials, and products that are eco-friendly in the Fujitsu Group Green Procurement Direction and are promoting green purchasing activities together with our business partners.

WEB Fujitsu Group Green Procurement Direction
http://www.fujitsu.com/global/about/procurement/green/

Green Purchasing Activities in Environmental Protection Program (Stage V)

The Fujitsu Group has been engaged in the following two proactive efforts for our business partners as green purchasing activities in the Environmental Protection Program (Stage V).

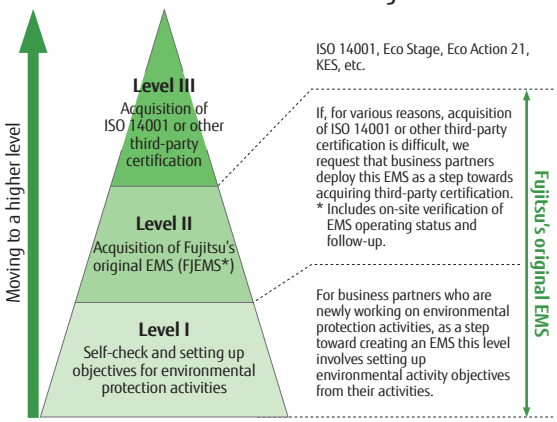
Improving Our Business Partners' Environmental Management Systems (EMS)

In order to further promote our business partners' activities to reduce environmental burdens, we held EMS Upgrade Meetings and other events to ask them to raise their EMS level by acquiring third-party certification or by establishing FJEMS*. We have set a specific target for attaining a level II or higher level of EMS which is managed by our materials suppliers, and this was achieved 100% by the end of fiscal 2009.

In the future, we will help our business partners improve their EMS level through EMS Upgrade Meetings, so that we can contribute to improvement activities to reduce environmental burdens in our whole supply chain.

*** FJEMS**
Fujitsu Group Environmental Management System. The Fujitsu Group's original EMS.

EMS Establishment for Green Purchasing



Establishment of Our Business Partners' Chemical Substances Management System (CMS*1)

To achieve appropriate management of chemical substances throughout the whole supply chain, we have requested and supported the establishment of CMS based on the Guideline for the Management of Chemical Substances in Products issued by JAMP*2, and promote strengthened management of chemical substances with a strong emphasis on source management.

Specifically, we audit CMS status of our parts and materials suppliers, and help them when their CMS status is found to be inadequate. By fiscal 2009, the proportion of partners with a properly-established CMS had risen to 98.2%. We continued to support our business partners who don't have CMS to establish it and will have achieved 100% completion by the first half of fiscal 2010.

In the future, we will continue to stress the importance of supplier source management through briefing sessions and periodic audits, and aim at raising the level of chemical substances management in the whole supply chain.

***1 CMS**
Chemical Substances Management System

***2 JAMP**
Joint Article Management Promotion-consortium
http://www.jamp-info.com/english/

New Green Purchasing Activity Targets Based on Fujitsu Group Environmental Protection Program (Stage VI)

We have revised a part of the Fujitsu Group Green Procurement Direction to help us achieve Green Policy 2020, our medium-term environmental vision. In the future, we will work with our business partners and implement the following two green purchasing activities as a part of Fujitsu Group Environmental Protection Program (Stage VI).

Activity of Limiting and Reducing CO_2 Emissions by Our Business Partners

We continue to encourage our business partners to take action toward limiting and reducing CO_2 emission, which include not only figuring out the amount of their CO_2 emissions but also announcing their action to the public and conducting concrete action with specific targets.

Activity of Conserving Biodiversity by Our Business Partners

We request our business partners to understand the significance of biodiversity conservation and then make an announcement of their policy regarding biodiversity conservation to the public. In this regard, it is quite important that our business partners be aware of differences between biodiversity conservation and conventional environmental protection activities.

In fiscal 2009, prior to setting this theme, we carried out a preliminary survey of our main business partners and found that the level of awareness and the actions taken on this issue varied appreciably form partner to partner.

Fujitsu Group would like to request our business partners to work on these targets in accordance with their capabilities and we are going to work with them.

Environmental Considerations in Distribution

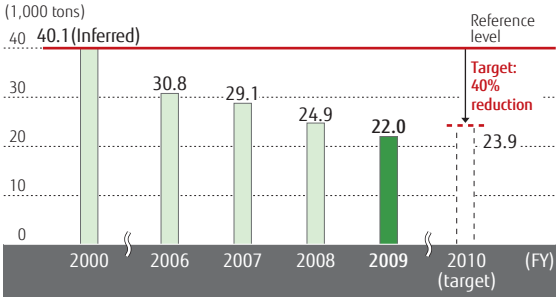
We promote the efficiency and rationalization in distribution that keeps the whole supply chain in view and strive to reduce the environmental burden.

Reduction of Distribution-Associated CO_2 Emissions

We promote Green Logistics Activities which strive to reduce CO_2 emissions associated with transportation by coordination between the distribution divisions of all group companies and cooperation between manufacturing and sales divisions. Furthermore, we take advantage of partnerships with our business partners and strive to reduce the environmental burden associated with distribution across the whole supply chain.

Also, in Fujitsu Group Environmental Protection Program (Stage V) we set a target of reducing CO_2 emissions from transportation by 40% by the end of FY 2010 compared with FY 2000. By carrying out measures such as modal shifts and reducing the number of trucks we use, we were able to achieve this target, reducing emissions by 45% (includes the impact of changes in freight volume) in FY 2009 compared with FY 2000. Our new target is to reduce emissions by 11% by the end of FY 2012 compared with FY 2008.

Trends in CO_2 Emissions from Transportation (Fujitsu)



* Including Fujitsu Semiconductor Technology

Expanding the Application of Modal Shifts

Fujitsu is working to reduce its CO_2 emissions through modal shifts, promoting the effective utilization of railroad and sea transportation and reducing the proportion of air transportation.

In FY 2009, in addition to further advancing the modal shifts of PCs and mobile phones, we started modal shifting of purchased materials for the first time.

Mobile phones

In FY 2009, we increased our use of rail transport for products sent from Fujitsu Mobile-phone Products Limited and Fujitsu Peripherals Limited to warehouses specified by customers. As a result, these products were designated as Eco Rail Mark Products, according to the system created by the Ministry of Land, Infrastructure and Transport and the Railway Freight Association. Fujitsu's desktop computers and PC servers have already received this accreditation, and moving forward we will continue to utilize rail transport positively as part of our efforts to reduce the burden on the environment.

エコレールマーク
Eco Rail Mark

PCs

From October 2009, notebook PCs and monitors destined for corporate customers in Hokkaido will be shipped by truck from Shimane Fujitsu (SFJ) and Fujitsu Peripherals Limited sites to our Tokyo distribution center. From there, they will be transported to our Sapporo terminal not by road as in the past, but by rail.

Purchased materials

In August 2009, we were able to increase our use of rail transport by switching some of our shipments of imported materials transported from Tokyo Bay to Fujitsu Isotec and Fujitsu IT Products Limited from truck to rail freight, using 20-foot sea-going containers.

Reducing the Number of Trucks

Fujitsu has improved freight loading and reduced the number of trucks it requires by reviewing domestic product delivery routes, increasing mixed loading of cargo between Group companies, adopting a two-level truck loading system, and standardizing shipments.

Modal Shift in Transportation

Fujitsu has, by reconciling the timing of deliveries, been able to change from air transport to overland trucking for the delivery of components to remote parts centers (in the Tohoku region and parts of Kyushu) from two hub warehouses for service parts in East and West Japan.

Reduction of Environmental Burden Associated with Distribution

To reduce the whole environmental burden of the distribution process, we are promoting 3R efforts for packaging products and parts.

Reducing the Use of Cardboard and other Packaging Materials

The Fujitsu Group has been replacing cardboard and other materials used to package products with reusable alternatives. This has reduced the use of cardboard and other cushioning packaging materials.


Air protector for servers


Returnable container for notebook PCs

Environmental Contributions to Society

We vigorously promote activities that make environmental contributions to society and foster mutually beneficial relationships in our communities worldwide.

Our Basic Approach

All employees of the Fujitsu Group recognize the importance of the global environment and, to assure that the next generation inherits a beautiful planet-wide environment, they contribute to their local community through activities based on the following three pillars: regional contributions, nature conservation and environmental education.

Regional Contributions

An important objective for the Fujitsu Group is to help achieve a pleasant living environment for people in local communities. All our offices, stores and plants throughout Japan are taking part in regional-contribution activities such as cleanup and tree-planting schemes.

Coastal Cleanup, Fujitsu FSAS Inc. Kobe branch

Suma Beach is an all-seasons place to relax, not only a symbol of Kobe, it is also the only seaside swimming resort in the entire Hanshin area.

To protect this precious seaside area, the Kobe branch office of Fujitsu FSAS Inc. has been carrying out a beach clean-up program every June and September since June 2006. These are the months immediately before and after the summer swimming season. In fiscal 2009, 46 employees took part.

Nature Conservation

The Fujitsu Group carries out tropical rainforest regeneration and forest conservation programs with the objective of protecting natural abundance and regenerating the natural environment.

An example of the Fujitsu Group's forest conservation work

The Fujitsu Group supports the "Corporate Forest" program being promoted by local governments throughout Japan. As of April 2010, we were engaged in forest conservation activities in nine locations. In March 2009, every company in the Group with locations in Saga Prefecture signed a compact with Saga's Yoshinogari Town to launch the Fujitsu Group Yoshinogari Cherry Tree Forest Campaign. In May 2009, the first wave of activities began and 66 employees and their families helped with weeding and maintaining the forest footpath.

Also, in July 2009, Fujitsu Okayama Systems Engineering Ltd. (FOE) took part in the collaborative forest conservation program that Okayama Prefecture promotes. It "borrowed" a forest from Bizen City in Okayama Prefecture and renamed it Fujitsu Okayama Systems Engineering Bizen Hattoji Forest. In November 2009, 47 employees and their families helped maintain the forest by carrying out tasks such as weeding and tree thinning.

Since 2006, employees from every company in the Group in the Hokushin region of Nagano Prefecture have been carrying out weeding, tree thinning, and other measures in many unspecified areas of forest, with support from Nagano City. This scheme has been achieving excellent results and in October 2008, as the first Corporate Forest Conservation Program to be certified by Nagano City, we were offered a two-hectare area within the Joshinetsu National Park (Iizuna Highland) to work on. Since 2009, we have been mapping the Hokushin Region Fujitsu Group Forest area using a GPS logger tool. We have also established 30 monitoring sites and have been taking "before-and-after" photographs of our activities to check on how the forest is developing.


FOE Forest

Regenerating Tropical Rainforests in Borneo, Malaysia

Since 2002, we have been working to regenerate the tropical rainforest at the Fujitsu Group Malaysia Eco-Forest Park in Sabah State, with the support of the Sabah State Forestry Development Authority. So far, 536 employees have participated in the program and planted 37,500 dipterocarpaceae (a tree indigenous to tropical rainforests) in a 150-ha area.

In fiscal 2009, we carried out surveys to check rates of growth at our previous tree-planting sites, planted more seedlings, and conducted a habitat survey of wild birds and animals in the area.

Also, from July 2009 we began to sell a Fujitsu brand soft drink within Group companies, donating part of the sales to a program to regenerate tropical rainforests.

In addition, we launched the Birdies for Green project at the Fujitsu Ladies Golf Tournament, held in October 2009. Through this project, we donate to an eco-forest park carrying out a tree planting and cultivating program. The cost of planting saplings is based on how well the players score. About 1,000 trees were planted in fiscal 2009 thanks to this project.


Tree-growth surveys


Line census method habitat surveys

Environmental Education Activities

The Fujitsu Group visits schools to give lessons, in order to make local adults and children aware of the importance of the environment.

In fiscal 2009, we gave lessons in some 55 locations, including elementary schools, junior high schools and community centers, for around 3,000 people, in which we presented the 'PC 3R' exercise (in which students learn about 3R while dismantling a PC) and the 'My Earth' card game (in which students study global environmental problems). Also, to respond to the demand for more of these lessons, we held an instructor development course in Fiscal 2009 in which a further 18 Fujitsu Group employees learned how to deliver the lessons.

As of April 2010, 45 instructors are providing these environmental lessons at locations throughout Japan.

Environmental Accounting

Understanding and evaluating the costs and benefits of effective environmental protection activities helps to identify problems and share best practices across the Group.

FY 2009 Results

As the table below indicates, the Fujitsu Group's FY 2009 environmental accounting results showed a 2.40 billion yen investment in plant and equipment (640 million yen more than the previous year), expenses of 30.06 billion yen (9.42 billion yen more than the previous year), and an economic benefit of 53.86 billion yen (26.74 billion yen greater than the previous year). However, these totals include the impact of a change to methods of calculation implemented from FY 2009

This change principally applies to methods of calculating R&D costs/benefits and administration benefits.

R&D cost/benefit calculations were updated to include their contribution to some environmental solutions for reducing environmental impact. The method used for Super Green Products and similar products was adopted, and at the same time as independently estimating and calculating benefits for the total amount that environmental conservation development contributed to revenues, the costs of this development work were also calculated.

Also, the method used to estimate the benefits from R&D relating to Super Green and similar products was changed. Between FY 1998, when the Group adopted environmental accounting, and FY 2008, changes made to calculation methods have been relatively minor and the methodology for estimating totals had remained fundamentally unchanged throughout the period. However, based on changing customer perceptions of eco-friendly products and major changes in societal conditions, we determined it was necessary to update our methodology.

As a result of the above changes, in the R&D costs/benefits category, costs increased by approximately 11.0 billion yen and economic benefits rose by about 34.2 billion yen.

For administration benefits, we newly adopted an independent method of estimating economic benefits of environmental advertising that expresses our approach to reducing environmental impact. As a result, administration benefits increased by approximately 1.1 billion yen.

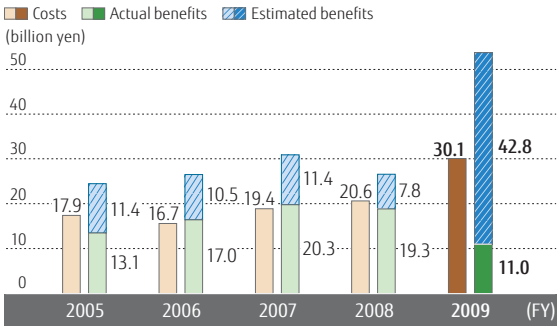
For your information, Totals for FY 2009 when calculated using the method before the changes were adopted are as follows: capital investment was 2.4 billion yen (a 640 million yen increase year on year), costs were 19.07 billion yen (a 1.57 billion yen decrease), and economic benefits were 18.52 billion yen (a 8.6 billion yen decrease).

One reason why costs and economic benefits both decreased was that following the transfer of our HDD and HDD media business, three companies whose totals had been included in the scope of calculations until the end of FY 2008—Yamagata Fujitsu Ltd., Fujitsu Computer Products Corporation of the Philippines, and Fujitsu (Thailand) Co., Ltd.—were removed. As a result, costs and economic benefits decreased by approximately 200 million yen and 5.4 billion yen, respectively. Conversely, FDK Corporation was added to the scope of consolidation, resulting in an approximate 100 million yen increase in both costs and benefits.

Elsewhere, environmental remediation costs and benefits declined 400 million yen. Also, following the fall in market prices of unusable products, resource circulation benefits fell 1.9 billion yen year on year.

WEB Environmental Accounting
http://www.fujitsu.com/global/about/environment/management/accounting/

Trends in Costs and Economic Benefits



Item		Main areas covered	Capital investment (billion yen)	Costs (billion yen)	Economic benefits (billion yen)	Related Pages
Business area costs/benefits	Pollution prevention costs/benefits	Preventing air pollution/water pollution, etc.	0.92 (+0.63)	4.81 (−0.16)	5.69 (+0.56)	P69-72
	Global environmental conservation costs/benefits	Preventing global warming, saving energy, etc.	1.12 (+0.13)	2.91 (+0.16)	1.29 (−0.71)	P67-68, 74
	Resource circulation costs/benefits	Disposal of waste, efficient utilization of resources, etc.	0.01 (−0.08)	3.17 (−0.28)	9.22 (−7.37)	P70
Upstream/downstream costs/benefits		Collection, recycling, reuse, and proper disposal of products, etc.	0.00 (−0.01)	0.82 (−0.21)	0.39 (−0.13)	P65-66, 73
Administration costs/benefits		Provision and operation of environmental management systems, environmental education of employees, etc.	0.08 (−0.06)	4.11 (−0.52)	1.54 (+0.95)	P51-53, 69, 72
R&D costs/benefits		Research and development on products and solutions that contribute to environmental protection, etc.	0.27 (+0.06)	13.07 (+10.78)	35.72 (+33.82)	P57-64
Social activity costs		Donations to, and support for, environmental groups, etc.	0.00 (±0.00)	0.05 (+0.03)	–	P54, 75
Environmental remediation costs/benefits		Restoration and other measures related to soil and groundwater contamination, etc.	0.00 (−0.02)	1.11 (−0.39)	0.00 (−0.40)	P71-72
Total			2.40 (+0.64)	30.06 (+9.42)	53.86 (+26.74)	–

- Numbers in parentheses indicate increases or decreases in comparison with the previous year.
- Due to rounding, figures in columns may not add up to the totals shown.
- See pages 55 and 56 for details on the environmental performance index (environmental conservation benefits).