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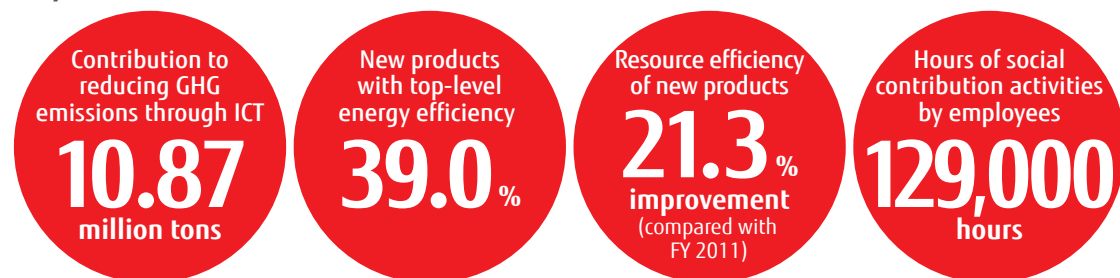
| Top Message | Interview to Head of Corporate Environmental Strategy Unit | Special Feature: The Power of ICT | Fujitsu Group Environmental Action Plan Stage VII | Chapter I Contribution to Society | Chapter II Reducing Our Environmental Burden | Environmental Management | Data Overview |

GHG Emission Reduction through the Provision of ICT　Deploying Sustainability Solutions　Development of Top-Level Energy Efficient Products　Improving the Resource Efficiency of Products　Research and Development of Advanced Green ICT　Collaborating with Communities and Taking Action as a Good Corporate Citizen

Chapter I

Contribution to Society

Under the Environmental Action Plan (Stage VII), the Fujitsu Group is aiming to expand our contributions to society overall and is globally expanding the scope of our targets, including reduction of GHG emissions through the provision of ICT and social contribution activities by employees. Moreover, as ICT is able to contribute to the resolution of various environmental issues, Fujitsu has set goals for expanding the provision of solutions that will contribute to global sustainability, as well as for promoting research and development. In addition, the company will make efforts to improve the environmental performance of the ICT products that are used by our customers.

Key Achievements in FY 2013

Contribution to reducing GHG emissions through ICT
10.87 million tons

New products with top-level energy efficiency
39.0 %

Resource efficiency of new products
21.3 % **improvement** (compared with FY 2011)

Hours of social contribution activities by employees
129,000 hours

About Symbols Used　✓ Examined by third-party organization　○ FY 2013 target achieved　● FY 2013 target not achieved

	Theme	Target items (targets through the end of FY 2015)	FY 2013 Key Performance	Status	
Our Society	Contribution to Society by ICT: Reduce Greenhouse Gas Emissions	Reduce greenhouse gas emissions for our customer and society over 26 million tons. *1	Contributed to reducing customers' and society's GHG emissions by 10.87 million tons (Japan: 6.68 million tons; overseas: 4.19 million tons) ✓	○	P.15
	Contribution to Society by ICT: Increase Solutions	Increase the deployment of sustainability solutions.	Prepared an action framework Set a definition and criteria of a sustainability solution, and identified potential solutions	○	P.17
	Design and Deliver Eco-efficient Products: Energy Efficiency	Achieve top-level energy efficiency *2 of more than 50% of the newly developed products.	Made 39.0% of new products top-level energy efficient ✓	●	P.18
	Design and Deliver Eco-efficient Products: Resource Efficiency	Increase resource efficiency of newly developed products by 20% compared to 2011.	Increased resource efficiency of new products by 21.3% compared to FY 2011. ✓	○	P.20
	Leading Edge R&D	Develop innovative technologies that enable solutions and products to reduce the environmental load.	Announced 18 key green technologies	○	P.22
	Corporate Citizenship: Social Challenges	Support initiatives that address the complex social and environmental challenges, e.g. biodiversity conservation.	Funding: Provided support for NPO activities and for typhoon victims Technology: Provided the Mobile Photo System cloud service Human resources: Provided management know-how for small-scale charities	○	P.24
	Corporate Citizenship: Social Activities	With society, support our employees to volunteer social activities.	Dedicated 129,000 hours to social contribution activities by employees	○	P.24

*1 26 million tons: Calculate the numeric target by multiplying annual sales of each solution category by a conversion factor of CO_2e savings per sales which is based on around 300 case studies of Environmentally Conscious Solutions in Japan.
*2 Achieve top-level energy efficiency: Achieve more than 25% of market benchmark in energy efficiency such as top-runner products (first in the world or industry, top of the world or industry)

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GHG Emission Reduction through the Provision of ICT

Our Approach

Through the provision of ICT, the Fujitsu Group is working to create innovations in wide-ranging areas of society, including improvement of efficiency in energy usage, greater efficiency in production activities, and reduction in the movements of people and goods. By doing so, we aim to contribute to the reduction of GHG emissions. We believe that the use of ICT by large numbers of customers will reduce GHGs in society overall, while leading to ongoing business growth for the Fujitsu Group as well.

The Fujitsu Group is working to quantitatively visualize – and also expand – the contribution to GHG reductions from the ICT used by our customers. Between FY 2009 and FY 2012, this ICT usage has contributed to a cumulative reduction of 12.23 million tons of CO_2 emissions. From FY 2013, we will extend the scope of our targets overseas, and aim to contribute to a global cumulative reduction in emissions of 26 million tons or more over the three years through FY 2015.
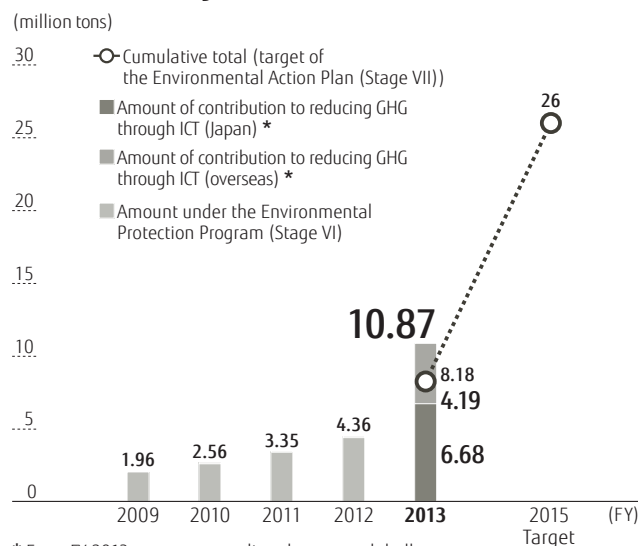
Summary of FY 2013 Achievements

| Targets under the Fujitsu Group Environmental Action Plan (Stage VII) (toward FY 2015) | Reduce greenhouse gas emissions for our customers and society | over **26** million tons |

| FY 2013 Targets | Contribute to reducing customers' and society's greenhouse gas emissions by | over **8.18** million tons |

| FY 2013 Key performance | **10.87** million tons | Japan 6.68 million tons / Overseas 4.19 million tons |

Performance and Results for FY 2013

Expanding Environmentally Conscious Solutions

To advance the quantitative visualization of GHG reduction effects through ICT, we recognize solutions with an expected reduction effect of 15% or more as "environmentally conscious solutions." In FY 2013 we moved ahead with recognizing these cases, centered on solutions that we provide to large numbers of customers. Moreover, we leveraged opportunities to propose environmental contribution effects to customers and worked to convey the environmental value of our solutions.

Amount of Contribution to Reducing Emissions of Greenhouse Gases (GHG) through the Provision of ICT

(million tons)

○ Cumulative total (target of the Environmental Action Plan (Stage VII))
■ Amount of contribution to reducing GHG through ICT (Japan) *
■ Amount of contribution to reducing GHG through ICT (overseas) *
■ Amount under the Environmental Protection Program (Stage VI)

	2009	2010	2011	2012	2013	2015 Target
	1.96	2.56	3.35	4.36	10.87 (8.18 / 4.19 / 6.68)	26

(FY)

* From FY 2013, we are expanding the scope globally.

Recognizing 48 New Cases that Contribute to 10.87 million Tons of GHG Reduction

The Fujitsu Group recognized 48 new cases of environmentally conscious solutions in Japan, bringing the cumulative total to 349. These new cases include the Global Communication Platform that transforms work styles, and the SupportDesk Service that offers total support for customers' ICT operation. The result has been a reduction effect of 10.87 million tons of GHG worldwide, meeting our target.

FY 2014 Targets and Plans

Setting Priority Solutions and Advancing Recognition

Toward our target of a 16.99 million-ton cumulative amount of contribution to GHG reduction from FY 2013, we are placing priority on solutions which we provide to large numbers of customers and solutions for which we foresee expanded use by customers, such as cloud computing and mobile, as we engage in recognition of environmentally conscious solutions. We will also work to make the results of assessments of these easily understood to customers in terms of environmental value.

Examples of Priority Solutions (FY 2013)

1. FUJITSU Managed Infrastructure Service SupportDesk
2. Global Communication Platform
3. FUJITSU Software Systemwalker
4. Product Lifecycle Management (PLM) Solution FJPLEMIA
5. FUJITSU Software SIMPLIA
6. Patent management cloud service ATMS PROPAS

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Main Activities in FY 2013

Reducing CO₂ Emissions by 43.1% through Adoption of Sales Tablet Computers for Life Insurance Company

In December 2013, Fujitsu provided a tablet computers-based solution as the core of the insurance policy management system for insurance sales personnel.

The sales personnel have traditionally relied on voluminous paper documentation. In addition, such paperwork are typically performed at sales offices. Through enhanced security functions, our solution allows the sales personnel to perform business tasks, from explanation of products to preparing contracts, using tablets at the customer's location. The solution achieves paperless documentation and eliminates travel from the field to the office.

Tablet usage image
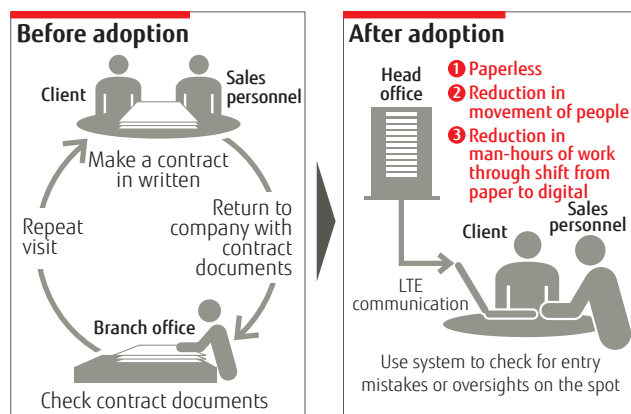
Assessment of the environmental contribution effect for customers revealed a GHG reduction effect of 43.1% (Fujitsu's estimate). In addition to enabling significant reduction in paper usage on the order of tens of millions of sheets, the solution has had a marked effect in reducing personnel movement (including business travel expenses and transportation expenses) and office space (including the use of energy for lighting, air conditioning, etc.).

Reference Information **Calculation Method for Amount of GHG Reduction Effect**

At the Fujitsu Group, we have assessed the quantitative reduction in environmental burdens (in terms of reduced CO₂ emissions) from ICT adoption using an environmental impact assessment method developed in 2004 by Fujitsu Laboratories Ltd. We have assessed the CO₂ emission-lowering impacts in over 300 prior cases and have calculated the CO₂ reduction
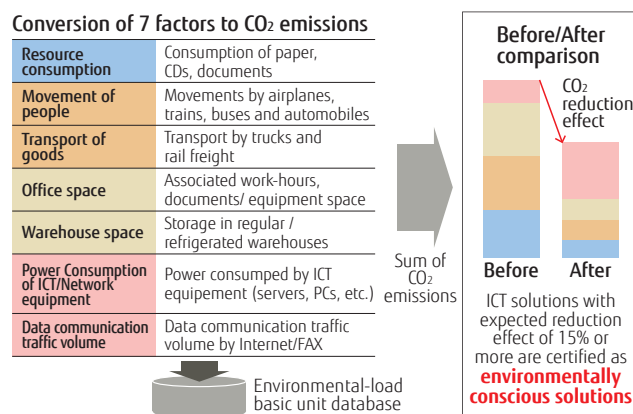
effect per unit of sales from the accumulated data.

In calculating the amount of contribution to GHG reduction, we calculate the annual amount of reduction effect from the CO₂ reduction effect per unit of sales and from the annual sales of each solution category.

Comment from Third-Party Verification Body

From a third-party perspective, we reviewed the FY 2013 data on the amount of contribution to GHG emission reduction through the provision of ICT.

In the calculation of the amount of GHG emission reduction effect, environmental assessment results for each solution were used as basic data. These data all undergo checks by the internal Environmentally Conscious Solutions Examination Board, which functions effectively as a method of securing reliability of the data. In addition, we note that the documents used in calculations have been properly prepared, and efforts have been made to make the calculation method transparent.

At the same time, we concluded that the method for calculating GHG reduction effect per unit of sales, a key point of the calculations, holds room for improvements to increase the accuracy of results. As examples, we believe that reviewing category classifications when calculating GHG reduction effect per unit of sales, as well as resetting baseline scenarios to better match current reality, would be effective methods, and we hope that further consideration will be given here.

Masatoshi Sakaguchi
System Certification Division, Bureau Veritas Japan

Overview of the Solution

Before adoption

Client · Sales personnel
Make a contract in written
Repeat visit
Return to company with contract documents
Branch office
Check contract documents

After adoption

Head office
❶ Paperless
❷ Reduction in movement of people
❸ Reduction in man-hours of work through shift from paper to digital
Sales personnel
Client
LTE communication
Use system to check for entry mistakes or oversights on the spot

Overview of Environmental Impact Assessment Methodology

Conversion of 7 factors to CO₂ emissions

Factor	Description
Resource consumption	Consumption of paper, CDs, documents
Movement of people	Movements by airplanes, trains, buses and automobiles
Transport of goods	Transport by trucks and rail freight
Office space	Associated work-hours, documents/ equipment space
Warehouse space	Storage in regular / refrigerated warehouses
Power Consumption of ICT/Network equipment	Power consumed by ICT equipement (servers, PCs, etc.)
Data communication traffic volume	Data communication traffic volume by Internet/FAX

Environmental-load basic unit database

Before/After comparison

Sum of CO₂ emissions
CO₂ reduction effect
Before / After

ICT solutions with expected reduction effect of 15% or more are certified as **environmentally conscious solutions**

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Deploying Sustainability Solutions

Our Approach

Achieving a sustainable society requires that we address not only measures against global warming by reducing GHG emissions, but also a variety of environmental and social issues including resource efficiency, conservation of biodiversity, food supply security, urbanization, and disaster preparedness.

In response, the Fujitsu Group is increasing deployment of sustainability solutions as we continue to respond to global environmental and social issues through ICT solutions. We are studying and implementing these solutions through the global members of our Environmental Solutions Committee and its constituent working group (WG).

Summary of FY 2013 Achievements

Targets under the Fujitsu Group Environmental Action Plan (Stage VII) (toward FY 2015)	Increase the deployment of sustainability solutions.
FY 2013 Targets	Sort out issues to be resolved and identify solutions. Create mechanisms for systemization.
FY 2013 Key Performance	1. Prepared action frameworks to expand our provision of sustainability solutions. 2. Set a definition and criteria of a sustainability solution, and identified potential solutions.

■ FY 2013 Performance and Results

Constructed Action Frameworks and Set a Definition and Criteria

To achieve the targets of the Environmental Action Plan (Stage VII), the Fujitsu Group has established a working group (WG) whose global members come together under the Environmental Solutions Committee.

We have set criteria and a definition ("ICT Solutions that contribute to resolving the world's environmental and social issues") for a sustainability solution in the Fujitsu Group, and, drawing on an analysis of the Fujitsu Group's strengths and those of our competitors, have divided issues concerning sustainability into four areas: food and energy, urbanization, use of resources, and biodiversity. We have also engaged in the identification of candidate solutions and the collection of case studies from customers.

TOPICS Using an Energy Management System for Central Management of Public Facilities in Date-City (Fukushima Prefecture)

Fujitsu's cloud-based energy management system, called FUJITSU Intelligent Society Solution Enetune-BEMS (Enetune-BEMS), differs from previous BEMS* that handled electricity consumption on a building-by-building basis. The new system, via a cloud-based platform, allows central management, integration, and visualization for multiple business sites.

Furthermore, the system supports energy conservation measures, energy saving measures, and energy management at these customer sites, through benefits such as demand management and remote/automatic control of energy consuming equipment.

In Date-City (Fukushima Prefecture), an Enetune-BEMS system was adopted, with some parts operational from April 2014. This has enabled the city to efficiently and effectively limit power consumption during peak periods, first by utilizing central management, via government office PCs, of a total of 32 public facilities and elementary and middle schools in the city, and second by designating sites that require priority treatment. On top of this, by constructing an information sharing system, the city has become able to share information on power usage, as well as the status of power saving measures, between public officials, and quickly and efficiently transmit information to citizens as well.

* BEMS (Building Energy Management System): A system for achieving efficient energy usage through centralizing information on building and office energy consumption, and equipment and facility operation status, in addition to offering visualization, operation optimization, and proposals for improvement measures.

■ FY 2014 Targets and Plans

Deliver Messages on Sustainability Solutions to Customers

With the aim of increasing the deployment of solutions to customers, during FY 2014 we will broadly disseminate messages on sustainability solutions through our website and other channels.

We will also work to provide case studies and to expand our lineup of solutions.

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Development of Top-Level Energy Efficient Products

Our Approach

As energy-related regulations for ICT products increase in number and in the breadth of the products they target, energy efficiency is taking on importance within society in the form of environmental label conformance and green procurement requirements.

Amid this background, the Fujitsu Group believes that we must accelerate improvement of the energy performance of products during their use, in order to reduce GHG emissions. For that reason, we are engaged in the development of products featuring top-level energy efficiency. Up to now, we have worked to improve the energy efficiency of products through development of "Super Green" products. As we now seek to further increase energy efficiency, in our Environmental Action Plan (Stage VII) we have set a target of making over 50% of all new products top-level energy efficient.

Summary of FY 2013 Achievements

Targets under the Fujitsu Group Environmental Action Plan (Stage VII) (toward FY 2015)	Achieve top-level energy efficiency of more than **50%** of newly developed products.
FY 2013 Targets	Make **40%** or more of new products top-level energy efficient.
FY 2013 Key Performance	Made **39.0%** of new products top-level energy efficient.

▌ FY 2013 Performance and Results

Actively Applied Energy-Saving Technology in All Divisions

In each of our business divisions, we have set targets for the achievement of top-level energy efficiency based on the number of product series that are expected to be developed during FY 2013. We have adopted high-efficiency power supplies in our storage systems and servers, have adopted energy-saving displays and optimized energy-saving control in our smartphones, and have strengthened power management features in our scanners. In addition, all of our divisions are actively undertaking the application of energy-saving technologies such as aggregation of LSIs, reduction of components, and adoption of energy-saving devices, and are engaged in development of top-level energy efficient products.

FUJITSU Server PRIMERGY RX300 S8 Employs Industry-Leading High-Efficiency Power Supply Units

Realizes Energy Consumption Reductions from a High-Efficiency Power Supply Unit with 80 PLUS® Titanium* Certification.

* The highest certification rank given through a U.S. industry group-focused program that sets energy efficiency standards for PC/server power supply units.
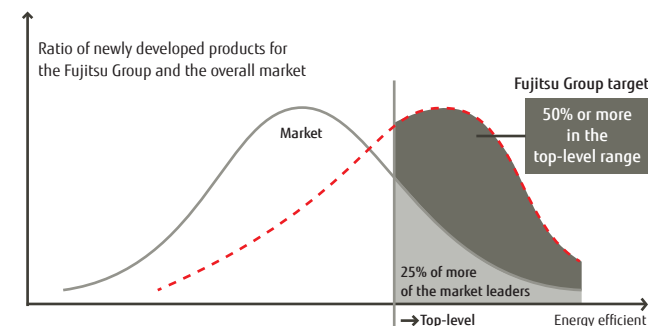
Fell Barely Short of Our Target due to Unplanned and Delayed Development

The Fujitsu Group's performance in FY 2013, at 39.0%, fell just short of our target. Major causes included the occurrence of unplanned development due to rapid changes in market demands, and delays by external organizations in the setting of standards adopted in our targets, which resulted in inability to meet the standards and subsequent delays in development.

Reference Information — Top-Level Energy Efficient Products

Products, beginning with "top-runner" products (first in the world or industry, top of the world or industry), that achieve 25% or more of the market benchmark in energy efficiency.

Ratio of newly developed products for the Fujitsu Group and the overall market

Market

Fujitsu Group target
50% or more in the top-level range

25% of more of the market leaders

→ Top-level

Energy efficient

▌ FY 2014 Targets and Plans

Deploying Outstanding Energy-Saving Technology and Expanding Its Application to Products

To achieve our fiscal year target of making 45% or more of new products top-level energy efficient, we will review plans to pursue actions such as the addition of top-level product development in all divisions. In addition, as a measure to improve energy efficiency, we will deploy outstanding energy-saving technology across the company and expand its application to products. Looking toward the future, we aim to advance the development of advanced technology for energy-saving devices, which will contribute to revolutionary improvements in energy efficiency.

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Main Activities in FY 2013

Smartphones that Achieve the Industry's Highest-Level Battery Life

ARROWS NX F-06E/F-01F

Actual usable time:
Over 2 days (F-06E)

Actual usable time:
over 3 days (F-01F)

For many smartphone owners, fast-draining batteries have been the greatest source of dissatisfaction. In response, Fujitsu worked to reduce energy use in the products it launched in FY 2013, and achieved industry-leading battery life with the ARROWS NX F-06E and top-class battery life with the ARROWS NX F-01F.

Three elements have supported Fujitsu in this effort: large-capacity compact batteries, optimized energy-saving control, and reduced power consumption in displays. With regard to the latter, the F-01F led the industry in adopting cutting-edge displays that achieve a 45% reduction in liquid crystal backlight power consumption at the brightest setting, compared with general TFT displays.

Disk Storage Systems that Reduce Power Consumption in Eco-Mode

FUJITSU Storage
ETERNUS DX100/200/500/600S3

Energy Saving Standard achievement rate:
500%
(FY 2011 target standard of the Top Runner Program under the Law Concerning the Rational Use of Energy)

Fujitsu's ETERNUS DX disk storage system is equipped with an Eco-mode function that supports the use of MAID technology to spin the drive's disc only when needed. When the drive has not been accessed for a set length of time, the system spins down the disk to reduce power consumption. When the stopped disk drive is accessed, it can be used for about one minute.

In addition to Eco-mode, Fujitsu has adopted power supply units with the industry's highest-level efficiency to control losses from power conversion (AC-DC), as well as technology that finely controls the rotation speed of cooling fans in accordance with the surrounding temperature.

Reference Information: Top-Level Energy Efficient Product Target Standards

For its targets in each product area, Fujitsu sets standards that recognize top-level energy efficiency compared with the market overall or with conventional products.

Example of Target Standards[1]

Reference Level	Product Categories
ENERGY STAR criteria (in effect) compliant	PCs, imaging equipments , etc.
Top-level achievement rate of the Top Runner Program (FY 2011) under the Law concerning the Rational Use of Energy (Energy Conservation Law)	Servers[2], storage systems, etc.
Industry-leading energy efficiency	LSI, products for specified fields, etc.
Industry's highest-level battery life	Smartphones
Power consumption reductions over prior products/prior performance	Network products[3], electronic components, etc.

[1] Depending on product specifications, standard values differ even for products within the same category.
[2] Excluding PC servers.
[3] A larger number of stars designate the top-level, concerning the products which are assessed by Ecology Guideline For the ICT Industry.

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Improving the Resource Efficiency of Products

Our Approach

Amid the depletion of national resources, rising international resource prices, uncertain supply of rare metals, and other growing threats to the sustainability of companies and society, there is also a growing view worldwide of the importance of resource efficiency. An example can be seen in the EU's designation of resource efficiency as a growth strategy and its establishment of the Resource Efficiency Flagship Initiative.

The Fujitsu Group, too, believes in the importance of efficiently using resources in the ICT products that we provide to customers. Toward that end, we have engaged in "3R design" that draws on the principles of reduce, reuse, and recycle, and have developed our products with technology that is effective in reducing the use of resources. We are making efforts to reduce environmental burdens through improved resource efficiency, which is made possible by designing products to be lighter and smaller, using recycled plastics, reducing the number of parts, enhancing ease of disassembly, and improving recyclability. Our goal is to offer outstanding products that provide customers with benefits including compactness, light weight, and space savings.

Summary of FY 2013 Achievements

Targets under the Fujitsu Group Environmental Action Plan (Stage VII) (toward FY 2015)	Increase resource efficiency of newly developed products by **20**% or more (compared to FY 2011)
FY 2013 Targets	Increase resource efficiency of new products by **10**% or more (compared to FY 2011)
FY 2013 Key Performance	Increased resource efficiency of new products by **21.3**% (compared to FY2011)

FY 2013 Performance and Results
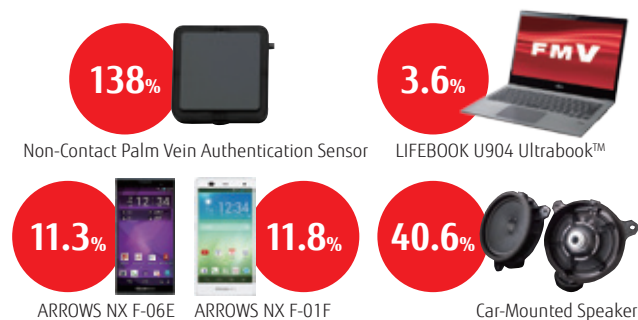
Improving the Resource Efficiency of New Products

In the past, there have been no officially released indicators of efficiency of resource, or mechanisms for its comprehensive, quantitative evaluation. In response, in FY 2012 the Fujitsu Group created its own definition of "resource efficiency". In FY 2013 we began using our indicators in the evaluation of products* newly developed by Fujitsu, while also undertaking initiatives aimed at reducing the number of parts in products and reducing the size of products through smaller, thinner, and lighter parts and higher-density mountings.

* Products newly developed by Fujitsu: Excludes products for which resource efficiency would be determined by customer specifications or standards.

Achieving 21.3% Improvement in Resource Efficiency

Fujitsu has achieved a 21.3% improvement in FY 2013 resource efficiency, against a target of 10%. This is the result of smaller size and lighter weight, primarily in smartphones, PCs, servers, palm vein authentication devices, and mobile phone base stations.

Examples of New Products (Resource Efficiency Improved)

138%
Non-Contact Palm Vein Authentication Sensor

3.6%
LIFEBOOK U904 Ultrabook™

11.3%
ARROWS NX F-06E

11.8%
ARROWS NX F-01F

40.6%
Car-Mounted Speaker

Reference Information — Definition and Calculation of Resource Efficiency

Resource efficiency is evaluated by dividing the value of a production, by the environmental burden (in terms of use and disposal) of the elements (resources) comprising the products.

$$\text{Resource efficiency} = \frac{\text{Product value}}{\substack{\text{Environmental burden from resource usage} \\ = \\ \Sigma\,(\text{Resource burden coefficient} \times \text{Resource usage volume})} + \substack{\text{Environmental burden from resource disposal} \\ = \\ \Sigma\,(\text{Resource burden coefficient} \times \text{Resource disposal volume})}}$$

Definition of Each Item

Product value	To place emphasis on the valuation of reduction in environmental burden due to resource usage and disposal, product value is limited to those that related to resource usage and is set on a per-product basis. (Example of factor not considered : CPU performance improvements)
Resource burden coefficient	Environmental burden weighting coefficient that is specific to a particular resource and considers factors like exhaustibility, scarcity, and environmental impact from mining and disposal. Activities will begin with this figure set to a value of "1" for all resources.
Resource usage volume	Mass of each resource used in the product (excluding the mass of recycled plastic used).
Resource disposal volume	Mass of each resource disposed of (not reused) in connection with a post-use product (design value). Activities will begin with this figure set to a value of "0".

FY 2014 Targets and Plans

Aiming for Further Improvements in Resource Efficiency

Toward our fiscal year goal of improving resource efficiency of new products by 15% or more compared to FY 2011, the Fujitsu Group is not only continuing its FY 2013 initiatives but is also working to expand development of new lightweight, rigid materials and the use of recycled materials. We also seek to widely publicize our products' environmental performance to increase recognition of this factor, which we will link to sales growth.

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Main activities in FY 2013

Commercializing the World's Smallest, Thinnest, and Lightest Non-Contact Palm Vein Sensor for Use in Thin PCs and Tablets

6.0mm — New product
11.2mm — previous model

Tablet with palm vein authentication sensor

Smaller size
61% reduction in volume!
(compared to previous model)

Lighter weight
56% reduction in weight!
(compared to previous model)

Resource efficiency
138% improvement
(compared to previous model)

The Fujitsu Group has commercialized the world's smallest, thinnest, and lightest (as of April 2013) non-contact palm vein sensor. Using non-contact, reflective-based authentication, this palm vein authentication sensor is adapted to applications calling for compact and slim form. By using an ultra-compact image sensor and a new lens design, we have achieved dimensions of 25.0mm width x 25.0mm depth x 6.0mm height (a 61% volume reduction from previous sensor) and a 4.0g weight (a 56% reduction in weight). Through repeated testing and simulation we have ensured the same high quality as in previous models, avoiding any loss of strength and precision in parts despite the smaller and lighter form. By adopting energy-saving sensors and ultra-compact, high luminous efficiency LEDs, we also reduced power consumption by 18% from previous models.

The sensor is easily incorporated into slim-type laptop PCs and tablets, and will broaden the uses of palm vein authentication.

Announcing the World's Thinnest Notebook PC

LIFEBOOK U904 Ultrabook™

World's thinnest

Resource efficiency: **3.6%** improvement!
(compared to previous model)

Fujitsu has achieved both thinness and toughness in the LIFEBOOK U904 Ultrabook™, the world's thinnest (as of June 2013) HDD-equipped laptop PC. We modified the sheet thickness of the palm rest component and the underside plate to better fit the form of the electronic components, slimming the thickest parts of components while thickening those parts that require strength.

A variety of improvements, including a thinner and lighter liquid crystal display unit, a smaller-circumference hinge, aggregation of motherboard-mounted components onto one side of the board, and lower height due to a folding, slide-out LAN connector, bring the thickness of the body down to 15.5mm.

Advancing 3R Design

Through our proprietary product environmental assessments and green product evaluations, the Fujitsu Group is working toward the application of reduced resource usage, improved recyclability, and other technologies that take into account the 3Rs. Examples of the effective resource-saving technologies that we are deploying in our products include reductions in the number of components and cables, performance enhancements, space savings through higher-density integration, and digital product manuals.

From 2010, we have also conducted regular study tours for designers at the Fujitsu Group recycling centers. In addition to hands-on experience with dismantling used products, designers gain feedback from staff in charge of recycling through idea exchanges and explanations of the obstacles to ease of dismantling. This information is used by the designers in improving product recyclability.

From here on out, the Fujitsu Group will summarize examples of the obstacles to ease of dismantling that we have learned from the recycling centers, and from the product development stage will incorporate these lessons into design for easier dismantling of post-use products.

Gaining experience in dismantling at receycling center study tour

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Research and Development of Advanced Green ICT

Our Approach

To expand our contribution to society through our business activities, we must undertake two key approaches: "Green *of* ICT," which seeks to reduce energy and resources consumed by ICT equipment and infrastructure, and "Green *by* ICT," which seeks to reduce environmental burdens through the use of ICT.

Fujitsu Laboratories Ltd., which engages in research and development of advanced green ICT, conducts R&D from an environmental perspective in all related domains, that range from product materials and devices, to facility and system solutions. Thus far, we have prioritized Green *of* ICT mainly for the purpose of strengthening platform technologies for green ICT. Hereafter, we will also focus our efforts on Green *by* ICT, which has a significant ripple effect in society. In particular, we are aiming to drive green ICT in the domain of Social Innovation, the core of the Fujitsu Group's growth strategy.

Summary of FY 2013 Achievements

| Targets under the Fujitsu Group Environmental Action Plan (Stage VII) (toward FY 2015) | **Develop innovative technologies** that enable solutions and products to reduce the environmental load |

| FY 2013 Key Performance | Announced **18** key green technologies |

FY 2013 Performance and Results

Positioning and Highlighting Our Key Green Technologies

To disseminate the Fujitsu Group's advanced green ICT throughout society, and to support its early deployment in businesses, we positioned as our key green technologies "best-in-class" and "world-first" technologies, as well as technologies with notably high environmental contribution. We are also highlighting our technological capabilities by advancing our R&D for these key green technologies and assertively promoting them through press announcements.

In addition, with the aim of creating social innovation that connects and leverages heterogeneous information, such as that generated by corporations, governments, individuals, and sensors, we established a Social Innovation Laboratory within Fujitsu Laboratories Ltd., and engaged in driving and generating green ICT.

Announcement of 18 Key Green Technologies

In FY 2013, the Fujitsu Group announced 18 technology development achievements centered on the domains of Green

Development Achievements

- Large-Scale Data Storage and Search Technology for Linked Open Data
- Millimeter-Wave Transceiver Module Technology
- High-Speed Thin Client Gateway Technology
- IaaS Platform Technology for Physical Servers
- High-Speed Homomorphic Encryption Technology
- Transmitter Power Amplifier Circuit Technology
- Low-Noise Signal-Generating Circuit Technology
- Remote File-Access Technology
- Technology for Automatically Linking with Open Data

- Image-Correction Technology for Improving Image Quality
- Wireless Transceiver Technology for Medical Devices
- Glove-Style Wearable Devices
- Social Media Analysis Technology
- Assessment Tool for Visualization of Local Government Characteristics
- Operations-Manual Analysis & Automation-Support Technology
- Wide-Area Network Distribution Technology
- OpenADR 2.0-Standard Demand Response Technology
- Speech Synthesis Technology

by ICT and the domain of Social Innovation: 13 technological developments (including 6 developments in the domain of Social Innovation), while 5 developments were in Green *of* ICT.

Fujitsu Laboratories Group – Social Innovation Domains
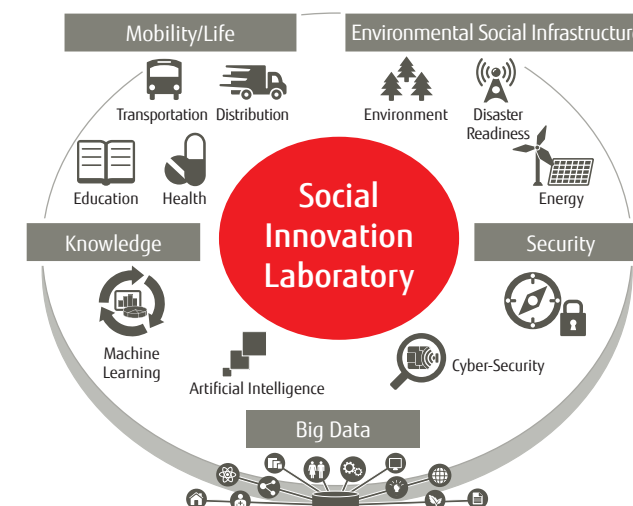
FY 2014 Targets and Plans

Accelerating Creation of Green Solutions

While further enhancing the environmental contribution of our advanced technologies, the Fujitsu Group will accelerate the creation of not only individual technologies, but also the creation of related green ICT that connects such technologies. In particular, in the domain of Social Innovation, we are actively advancing the fusion of green ICT and data that supports it, along with aggressively advancing R&D of our Platform Technologies, as we continue to promote and publicize to society our technological achievements.

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Main Activities in FY 2013

Development of a Glove-Style Wearable Device that Offers Low Power Consumption and Extended Operational Time

Fujitsu Laboratories Ltd. has developed a glove-style wearable device equipped with a Near Field Communication (NFC) tag reader and gesture-based input functionality. During fieldwork, such as factory or building maintenance, this device makes it possible to provide workers with alerts and with supporting information matched to the work scenario.

Using the device, a simple touch of the fingertip to NFC tags attached to work objects enables the presentation of relevant information. Moreover, a gyrosensor and acceleration sensor mounted at the wrist enables gesture recognition.

For wearable devices, considerations such as wearability and burden on the wearer prevent the use of large batteries, making low power consumption a prerequisite. Fujitsu's glove-style wearable device mounts contact sensors at the fingertips, and achieves low power consumption by operating the NFC tag reader only during the instant at which touching

occurs. This extends the operational time for a glove-style wearable device from 3 hours in the absence of electric power control to 9 hours, achieving operating time sufficient for a day's work.

Steps Involved in Power Control Operation

1. Detects touch
2. NFC tag reader activates
3. Reads tag data
4. Data transmitted
5. NFC tag reader goes idle

NFC tag
Gyro sensor, Accelerometer, NFC tag reading unit
Tag reader
Contact-detection sensor

Work Support Using a Glove-Style Wearable Device

NFC tag
Glove-style wearable device
Head-mounted display Earphones
Server Cloud
Support information
WiFi
Bluetooth
Blue tooth
Support information
Touch Gesture command
Smartphone

Fujitsu Develops First-of-Its Kind Assessment Tool that Visualizes Community's Characteristics: Contributes to the Creation of Sustainable Societies
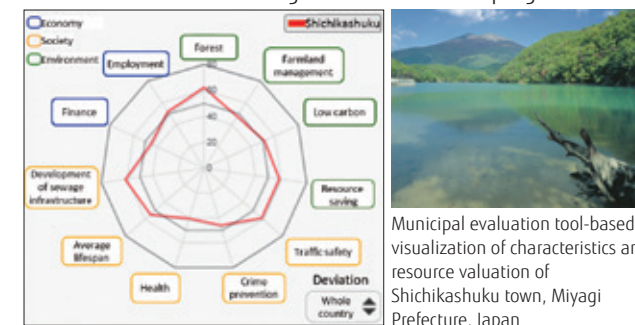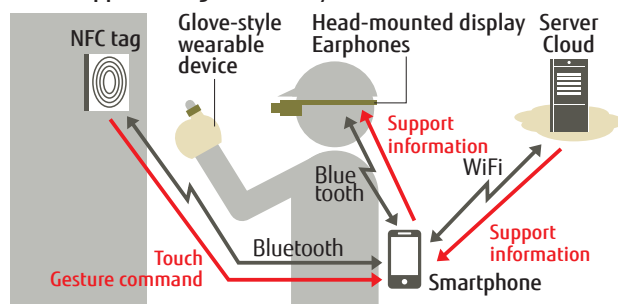
In February 2014, as an industry first, Fujitsu Laboratories Ltd. and Fujitsu Research Institute co-developed the first assessment tool from an ICT company that visualizes a community's characteristics, such as its local government, from multiple perspectives, including the environment and economy.

Existing urban assessment tools can quantify environmental performances, infrastructure functions, and other factors. However, future assessments will need to be more comprehensive, especially for ensuring the sustainability of a community, and will need to take into account a region's

particular attributes, including topography, population, and industrial areas.

Utilizing more than 1,200 categories of public data from government statistics and other sources, this project selected 50 items for evaluation related to regional revitalization needed to create sustainable societies. These were chosen in accordance with quality of life and stability, safety and security, prosperity, and other factors for 3 regional revitalization policies, as benchmarks associated with the environment, economy and society. Based on these policies, the newly developed tool visualized the strengths and challenges of local communities by performing comparative assessments of local governments that share similar characteristics in terms of population, industrial structure, and other representative regional attributes. In addition, Fujitsu Laboratories and Fujitsu Research Institute conducted field trials of the tool in cooperation with the town of Shichikashuku in Miyagi Prefecture, Japan. Based on the results, Fujitsu Research Institute proposed to Shichikashuku that a "forest and water experience project" and a "forestry, biomass, and solar power project" be taken as measures for a regional revitalization program.

Municipal evaluation tool-based visualization of characteristics and resource valuation of Shichikashuku town, Miyagi Prefecture, Japan

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Collaborating with Communities and Taking Action as a Good Corporate Citizen

Our Approach

Fujitsu Group deploys its funds, technology (ICT), and people (expertise) to support the activities of NPOs, NGOs, educational institutions, local governments, citizens' groups, and other diverse bodies that seek to resolve social issues. Specific examples include technological support for citizen enlightenment and studies for biodiversity strategies by local governments; funding support for rare species protection by NPOs and global warming countermeasure projects; technological support for monitoring and other systems; and support for human resources participating in the social contribution programs of international institutions. We determine the targets and content of support based on the needs and issues of local communities.

In addition, we support the social contribution activities undertaken by employees, encouraging each and every employee to maintain high awareness of social and environmental issues and to take an active involvement in resolving these.

Summary of FY 2013 Achievements

	Corporate Citizenship: Social Challenges	Corporate Citizenship: Social Activities
Targets under the Fujitsu Group Environmental Action Plan (Stage VII) (toward FY 2015)	Support initiatives that address the complex social and environmental challenges, e.g. biodiversity conservation.	With society, support our employees to volunteer social activities.
FY 2013 Key Performance	**Funding:** Supported a charity run and victims of Typhoon Haiyan. **Technology:** Provided with the Mobile Photo System cloud service. **Human resources:** Provided small-scale charitable organizations with management know-how.	Dedicated **129,000 hours** to social contribution activities by employees

FY 2013 Performance and Results

Aggregating Results to Assess the State of Activities

To expand our social contribution activities, the Fujitsu Group has begun aggregated management of activities that had previously been planned and implemented separately by country, workplace, and Group company. This step will allow us to assess the state of the activities, share exemplary case studies, and connect activities to resolution of issues, and will also be of aid in planning and setting internal targets for the next fiscal year.

Conducting 129,000 Hours of Social Contribution Activities in Japan and Overseas

Through the provision of funding, technology, and human resources, Fujitsu has supported conservation of biodiversity, employment for persons with disabilities, education for the next generation, and other activities aimed at diverse social issues. Among the social contribution activities undertaken by our employees are forestation projects throughout Japan, forest thinning work, environmental lessons at elementary and junior high schools, and local clean-up initiatives. Overseas, our employees have participated in charity events, rain forest revitalization activities in Malaysia, and environmental education classes. In Japan and overseas, employees spent 129,000 hours in social contribution activities.

Examples of Social Contribution Activities

- **Covering entrance fees for charity Fun Run participants: Fujitsu UK and Ireland (Great Britain)**
  Including our partner companies, 300 employees donated GBP 15,000 took part in a fun run called Vertical Rush, hosted by Shelter, a housing support NPO.

- **Support for typhoon disaster victims: Fujitsu Philippine Global Delivery Center (the Philippines)**
  USD 1,500 was donated to the Red Cross to support victims of the incredible damage in the Philippines from Typhoon Haiyan.

- **Cloud technology support for graduate school students: Nanjing Fujitsu Nanda Software Technology Co., Ltd (China)**
  We provided technological support for analysis and services, plus cloud computing data management, for graduate school students of NanJing Normal University.

- **Providing know-how to small-scale charity organizations: Fujitsu UK and Ireland (Great Britain)**
  We dispatched one person for approximately one year to The Joshua Tree Charity to provide support for strategic governance and for installing their ICT environment.

- **Teaching environment classes: FUJITSU DIE-TECH (the Philippines)**
  Two employees taught a class at Timbao Elementary School, in the Province of Laguna, and explained the current state of environmental issues, as well as what children can do to address them.

FY 2014 Targets and Plans

Expansion of Opportunities and Hours for Participation in Activities by Employees

Assessing the state of activities in FY 2013 revealed lower performance overseas than in Japan, as well as a lack of opportunities for activities by employees in regions with large numbers of employees. In FY 2014, we intend to respond by giving consideration to project launches overseas, and by expanding preservation activities and educational activities in which employees can participate.

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Main Activities in FY 2013

Supporting Biodiversity Survey Projects through the Provision of the Mobile Photo System Cloud Service

Fujitsu's Mobile Photo System lets users take photos of flora and fauna with GPS-equipped mobile phones or smartphones, then upload the photos by email for storage in a database. This database can be browsed online together with mapping data. By enabling the collection and management of data with participation by citizens, the system can reveal what sort of plants and animals grow and thrive in what locations. We are providing the system as a cloud service to 13 organizations that use the data in work to preserve biodiversity.

National Census of Flower-Visiting Bumblebees
The national census of bumblebees, which are on the decline due to factors including the impact of invasive species, uses the Mobile

A User's Voice

In FY 2013, bumblebee photos submitted by users around the country exceeded 1,300 photos. Using a method called niche modeling, we were able to use the data to estimate habitat distributions for several species. In particular, we were able to estimate environmental factors that impact the distribution of species including *Bombus ardens ardens, Bombus hypocrita hypocrita, and Bombus diversus diversus.*

Masakado Kawata
Professor, Graduate School of Life Sciences, Tohoku University

Photo System. Based on photos sent from citizens nationwide, the census is creating a domestic distribution forecast map.

TCE Animal and Plant Species Habitat Distribution Survey
Using the Mobile Photo System in fieldwork curriculum, this survey seeks to enlighten students and test the practicality and extensibility of the system. In the future, it will also help train human resources who will engage in environmental conservation.

A User's Voice

As a result of using the Mobile Photo System in our school's fieldwork over the course of the year, we uploaded over 2,600 items of reliable data, primarily from students. Through the work, students also became proficient in the use of the system. In FY 2014, we plan to focus efforts on collecting information on the species that are the target of the activity.

Masaaki Komaru
President, Tokyo College of Environment

Starting the Project "Regeneration and Collaboration Forest" in Miyako City, Iwate Prefecture

Over two days in October 2013, 76 Fujitsu Group employees and members of their families participated in the project "Regeneration and Collaboration Forest".

Operated under the theme of "Connecting with the Region," the project consists of forest revitalization activities

that leverage "Present Tree in Miyako," an initiative in which Miyako City NPOs and local forestry businesses participate jointly. Each participant becomes a "foster parent" to one tree and watches over its growth for 10 years. The activity creates opportunities to build ties to the region over the long term and to support reconstruction.

In the Taro district, a region affected by the Great East Japan Earthquake, local residents described the disaster to employees through vivid memories and videos. They also offered employees a hands-on work experience at the Mazaki *wakame* processing plant, which reopened a year after the disaster.

From the residents, we received words of gratitude, including, "We're so happy that you came all this way, saw and learned about the conditions here, and haven't forgotten us," and, "We'll be waiting for you next year, too!" Fujitsu will continue the project in FY 2014 and beyond.

An Employee's Voice

This event provided a great parent-child experience.
Visiting the sites of the disaster and hearing the accounts of residents gave me a strong sense of the magnitude of the disaster and the importance of readiness. Also, I'm very glad that the forest revitalization activity doesn't end with the planting, and that through the opportunity to watch over the tree from here on out, I've formed ties to an area with which I had no connection in the past.

Misa Nagumo
Corporate Brand Office, Global Marketing Division