Fujitsu Group Environmental Report 2017

Search ▲ To Table of Contents ◀ 21 ▶

| Top Message | Message from the Head of Corporate Environmental and CSR Strategy Unit | Special Feature 1: The Fujitsu Group Medium/Long-term Environmental Vision | Special Feature 2: Digital Co-creation | Fujitsu Group Environmental Action Plan Stage VIII | Chapter I Contribution to Society | Chapter II Our Business | Environmental Management | Data Overview |

Contribute to Sustainable Development of Society through Provision of ICT Services | Developing Innovative Technologies for Solving Environmental Issues | Development of Top-Level Energy Efficient Products | Improving the Resource Efficiency and Resource Circulation of Products | Product Recycling

Contribute to Sustainable Development of Society through Provision of ICT Services

■ Our Approach

The effort to "Contribute to sustainable development of society through provision of ICT services" is one of the goals in the Fujitsu Group's Environmental Action Plan (Stage VIII). With the United Nations having adopted a set of Sustainable Development Goals (SDGs) in 2015, thereby laying out clear international targets, the Fujitsu Group is now aiming to contribute even more to the sustainability of customers and society.

Bringing that vision of a sustainable society to fruition will require initiatives to tackle a wide variety of social and environmental issues, ranging from combating global warming through reductions in GHG emissions to saving natural resources, preserving biodiversity, stabilizing food supplies, responding to urbanization, and protecting against disasters. Information and communication technology (ICT), which helps optimize, streamline, and automate processes in a diverse mix of fields, has the power to drive solutions to the problems that society and the natural environment are facing. By leveraging its ICT services and working with customers, the Fujitsu Group is determined to play an important role in achieving SDGs on a global scale.

Summary of FY 2016 Achievements

Targets under the Fujitsu Group Environmental Action Plan (Stage VIII) (toward FY 2018)	Contribute to sustainable development of society through provision of ICT services.
FY 2016 Targets	Release case studies.
FY 2016 Key Performance	Released **9** case studies.

FY 2016 Performance and Results

Publishing Case Studies of ICT-Driven Approaches to SDGs

Fujitsu published nine case studies of efforts to contribute to SDGs, including educational solutions featuring content that underscores the importance of conserving natural resources, basic intelligence infrastructures for protecting biodiversity, disaster-prevention solutions for reducing damage from sewer flooding resulting from torrential rain, and next-generation bus location services.

Publicizing Efforts via outside Channels and Holding Seminars and Workshops for Employees

In working to create ICT services that help achieve SDGs, Fujitsu presented case studies of various ICT services at the UN-sponsored UNFCCC NAP Expo and other international conferences. The Company also used its intranet to distribute information and held internal seminars and workshops for employees. (See Page 48.)

Distributing information via the intrasite (ex.)

Case Studies of Contributions to SDGs

Next-Generation Bus Location Services

Target 11.2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

FUJITSU Mobility Solution SPATIOWL uses real-time location information to tailor information and services to users' current locations. With that functionality, SPATIOWL helps optimize urban transportation, prevent and mitigate traffic congestion, and provide users with the ideal modes of transportation—all of which bring society closer to achieving SDGs.

The technology is already benefiting the DESUCA Company, which has issued over 100,000 DESUCA IC commuter cards for public transport in Kochi Prefecture. In the process of updating its DESUCA IC system, the company worked with Tosa Electric Railway (a core group company) to launch "buskocchi"—a service that lets users track bus locations. Fujitsu established a data link with the DESUCA IC system, which features an intuitive map display and search function. Fujitsu's contributions laid the foundation for high-accuracy, real-time visualizations of bus and user movement, thereby facilitating the optimization of bus schedules.

"With this system, we get a clear idea of differences in delays by route—and the locations where delays begin," a customer representative said. "When it comes to delay prevention and scheduling, we need the right environment to make the necessary changes. We hope Fujitsu continues to work with us in establishing that environment and developing the public transportation system in Kochi."

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Search ▲ To Table of Contents ◀ 22 ▶

| Top Message | Message from the Head of Corporate Environmental and CSR Strategy Unit | Special Feature 1: The Fujitsu Group Medium/Long-term Environmental Vision | Special Feature 2: Digital Co-creation | Fujitsu Group Environmental Action Plan Stage VIII | Chapter I Contribution to Society | Chapter II Our Business | Environmental Management | Data Overview |

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Contribute to Sustainable Development of Society through Provision of ICT Services

Case Studies of Contributions to SDGs

Detecting Signs of Sewer Overflow to Limit Damage from Torrential Rain

Target 11.b (excerpt): Substantially increase the number of cities adopting and implementing integrated policies and plans towards resilience to disasters

Target 13.1 (excerpt): Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters

The Fujitsu Group's disaster-prevention solutions help prevent disasters before they occur and make it easier to collect, analyze, and publicize information during a crisis—benefits that make communities more resilient to disasters and enhance their adaptive capacities to climate-related hazards.

In a field trial of a sensing system for detecting signs of sewer overflow, the partners succeeded in real-time detection of early signs of inland flooding during localized downpours and gathered data for effective analyses. The trial also included validation of energy harvesting technology, which converts small amounts of energy from the natural environment into electricity. The partners confirmed that it could generate enough electricity for stable system operation and eliminate the need for battery replacement for five years or more.

"Monitoring the water levels in the sewer system helps us speed up the process of sending staff to sites, implementing emergency measures, and delivering evaluation information to residents," the customer said. "By quantifying changes in water levels, as well, the technology makes it possible to validate drainage plans, and thereby mitigate flood damage."

Laying the Groundwork for Science Museum Net (S-Net)

Goal 4 (overview): Provide quality education

Goal 17 (overview): Revitalize global partnership

Goals 14 and 15 (excerpt): Conserve and sustainably use water/land ecosystems

Musetheque is Fujitsu's educational solution to help museums, galleries, public records offices, and libraries manage their collections and materials. It contributes to education and research for biodiversity conservation.

The National Museum of Nature and Science aims to preserve collections of over 4.5 million specimens as the common heritage of mankind, and nurture scientific literacy through exhibits and learning support. Using Musetheque, the Museum built "Science Museum Net" to collect and share specimen data on collections at natural history museums throughout Japan. As Japan's Global Biodiversity Information Facility site, the Museum also uses Science Museum Net to publicize natural history specimen information.

"With our system, we've been able to gather data from over 80 institutions nationwide and amass a collection of information that exceeds what a single museum could offer," a Museum representative told us. "Science Museum Net is a popular resource for many researchers around the world, too. We want to keep offering users a valuable source of primary information on biodiversity."

Offering On-Site Environmental Classes

Goal 4 (excerpt): Ensure higher-quality, equitable learning and research throughout the primary and secondary education processes

Goals 6, 11, and 15 (excerpt): Protect and preserve endangered species in the natural world and preserve biodiversity

Fujitsu's "Manavication," an educational solution for collaborative learning in K-12 school environments, enables educators to help students engage in fundamental learning, acquire knowledge, hone their critical thinking, reasoning, and expressive abilities.

In a practical application of the technology, Fujitsu teamed up with WWF Japan to develop environmental study materials to help reconfirm the relationship between resources and lifestyles, think about what humans need to do to achieve a one planet lifestyle, and provide a catalyst for action. By posting and sharing students' opinions via an electronic whiteboard and other resources, Manavication encourages learners to think about the views of their peers and fosters a collaborative-learning environment. Fujitsu has been conducting visiting lectures on environmental education at domestic elementary and junior high schools. Approximately 130 groups and 7,200 students participated.

"Electronic study materials now provide a new means to make environmental education more attractive," a WWF Japan representative said. "The SDGs underscore the importance of education. WWF Japan will continue to pursue possibilities for new education."

Contribute to Sustainable Development of Society through Provision of ICT Services

Main Activities in FY 2016

GHG Emission Reduction through the Provision of ICT

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. The Fujitsu Group recognized 38 new cases of environmentally conscious solutions in FY 2016, bringing the cumulative total to 489 and helping reduce total CO_2 emissions by 7.37 million tons. Estimates indicate that middleware products that support ICT platform operations and management are effective in minimizing environmental impact by limiting the amounts of electricity that ICT devices consume. With FUJITSU Software Systemwalker Operation Manager, for example, users can schedule their servers to turn on and off according to usage status—and that functionality reduces server electricity consumption.
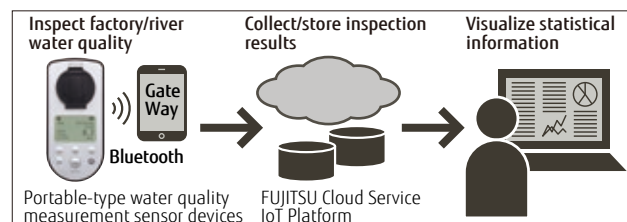
In FY 2016, we also expanded our "environmentally conscious solutions" into our cloud services. Using PaaS (Platform as a Service) technology allows users to accelerate application development and operations, thereby creating a lighter environmental impact.

Utilizing the IoT Platform to Lighten the Environmental Load of the Development Phase

OPTEX Co., Ltd. began offering "WATER it," a quick water-quality analysis service for users, to users in Asia in April 2016. WATER it forwards data from OPTEX's portable water quality measurement sensors to the cloud via smartphones, enabling users to analyze and visualize data on their devices. Using Fujitsu's IoT Platform, OPTEX successfully developed the service in a quick, cost-efficient manner. For the demonstration tests, which began in the fall of 2015, the team in charge of developing the equipment completed the water quality control application in just three months. According to Fujitsu estimates, the technology reduces the environmental burden of the development phase by approximately 50%.

WATER it will also help address environmental issues by improving water quality in Asia, where industrialization continues to charge forward. WATER it gives users the ability to make frequent measurements of water quality, which they can use to gather accurate analysis results and draw on their findings to develop plans for water-quality improvements. "By driving this kind of virtuous cycle, we put ourselves in position to sustain our business-development efforts and make contributions to society," an OPTEX representative explained. "That's the kind of business model we need."

WATER it, OPTEX's quick water-quality analysis system

Inspect factory/river water quality
Gate Way
Bluetooth
Portable-type water quality measurement sensor devices

Collect/store inspection results
FUJITSU Cloud Service IoT Platform

Visualize statistical information

Calculation Method for Amount of GHG Reduction Effect
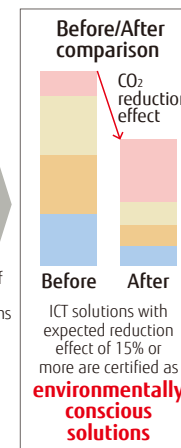
Reference Information

Fujitsu uses assessment methods from Fujitsu Laboratories to evaluate environmental burden-reduction of its ICT offerings (in CO_2 emissions) and measures annual GHG reductions from solution user count, client count, or annual sales.

Overview of Environmental Impact Assessment Methodology
Conversion of 7 factors to CO_2 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 equipment (servers, PCs, etc.)
Data communication traffic volume	Data communication traffic volume by Internet/FAX

Environmental-load basic unit database

Sum of CO_2 emissions

Before/After comparison

CO_2 reduction effect

Before | After

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

Comment from Third-Party Verification Body

Continuing from last year, we reviewed the data on the amount of contribution to GHG emission reduction through provision of ICT. For FY 2016, we changed the methods for determining reduction units and took other steps to improve the accuracy and reliability of calculation results.

Masatoshi Sakaguchi
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