Global Responsible Business

- Environment -

In line with the "FUJITSU Climate and Energy Vision", a Medium- to Long-Term Environmental Vision for 2050 which clarifies the role to be played in tackling global climate change as well as the future vision to be realized, we will work on to achieve zero emissions of the CO_2 from our own operation by 2050, and contribute to climate change adaptation as well as a de-carbonized society through technology supporting digital transformation.

Environmental Management

Environmental Policy at the Fujitsu Group

The Fujitsu Group is aware of its responsibilities as a global ICT company and seeks to reduce environmental burden, while working toward a sustainable and prosperous society together with its customers and society.

Environmental Policy

Since its founding in 1935, the Fujitsu Group has made environmental preservation one of the most important elements in its management, based on its philosophy of "manufacturing in harmony with nature." We have formulated the Fujitsu Group Environmental Policy to promote environmental management reflecting the distinct character of our businesses.
In 1992, when Agenda 21*1 was adopted at the Rio de Janeiro Global Summit, we established Fujitsu's Commitment to the Environment. This was created in the mold of the Global Environment Charter, announced by the Japanese Federation of Economic Organizations in the previous year. In October 2002, when the Johannesburg Summit was held, and summit participants were debating how to execute Agenda 21 in a more effective way, we revised this Commitment to create a Fujitsu Group Environmental Policy. Our objective in this revision was to implement environmental management in a way that reflects the distinct character of the Fujitsu Group's business, responding to more and more diverse problems where environmental management is increasingly vital.

*1 Agenda 21:
A concrete plan of action for sustainable development, to be carried out by various countries and international organizations. It involves programs to deal with environmental issues, including social and economic problems such as population, poverty and human settlement issues, as well as soil, forests, the atmosphere, desertification, agriculture, biodiversity, water, hazardous wastes and chemical materials.

Philosophy

The Fujitsu Group recognizes that global environmental protection is a vital business issue. By utilizing our technological expertise and creative talents in the ICT industry, we seek to contribute to the promotion of sustainable development. In addition, while observing all environmental regulations in our business operations, we are actively pursuing environmental protection activities on our own initiative. Through our individual and collective actions, we will continuously strive to safeguard a rich natural environment for future generations.

Principles

- We help customers and society reduce the environmental impact of their business activities and improve environmental efficiency with comprehensive services that include advanced technologies, ICT products and solutions.
- We proactively promote environmentally conscious business activities to help the environment and economy coexist harmoniously.
- We strive to reduce the environmental impact of our ICT products and solutions throughout their entire lifecycle.
- We are committed to conserving energy and natural resources, and practice the 3Rs approach (reduce, reuse and recycle) to create best-of-breed eco-friendly products and solutions.
- We seek to reduce risks to human health and the environment from the use of chemical substances and waste.
- We disclose environment-related information on our business activities, ICT products and solutions, and utilize the resulting feedbacks to critique ourselves in order to further improve our environmental programs.
- We encourage our employees to work on global environmental conservation such as tackling climate change and preservation of biodiversity through their business and civic activities to be role models in society.

Revised in April 2011
President
Fujitsu Limited

The lifecycle includes "Procurement", "Distribution and Logistics", "Development and Manufacturing", "Usage", "Recycle and Management of Waste", etc. The stakeholders through the lifecycle represent "Suppliers", "Contractors", "Clients", "Business Partners" and so on.

Medium- to Long-term Environmental Vision "FUJITSU Climate and Energy Vision"

The Fujitsu Group has established the "FUJITSU Climate and Energy Vision," a medium- to long-term environmental vision through 2050, with the goal of bringing the Fujitsu Group's CO2 emissions to zero, and achieving a decarbonized society, as well as contributing to the response to climate change, through technology supporting digital transformation.

- The Fujitsu Group Medium/Long-term Environmental Vision "FUJITSU Climate and Energy Vision"
  https://www.fujitsu.com/global/microsite/fujitsu-climate-and-energy-vision/

Approval by Science Based Targets (SBT) Initiative

In August 2017, the reduction targets of greenhouse gas (GHG) emissions from its business facilities and a part of value chain, set by Fujitsu Group, was approved by Science Based Targets (SBT) initiative as being at science based level. The SBT initiative was established in 2015 jointly by a number of organizations, including the World Resources Institute (WRI) and UN Global Compact. It encourages companies to set goals for reducing GHG emission based on scientific evidence, in order to limit the global temperature increase to less than 2°C over pre-industrial revolution temperatures.

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Targets

- To reduce GHG emissions from our business facilities by 33% by FY 2030 and 80% by FY 2050 in comparison to FY 2013.
- To reduce GHG emissions from our business value chain (purchased goods and services, and the use of sold products) by 30% by FY 2030 in comparison to FY 2013.

Joining RE100 as Japan's First Gold Member

In July 2018, Fujitsu joined RE100, which strives to significantly expand the adoption of renewable energy at a global scale, as Japan's first Gold Member. RE100 is an international initiative led by The Climate Group in partnership with CDP and consists of companies committed to source 100% of the electricity they use from renewable sources.

RE 100 | °C CDP

The Fujitsu Group will consider the appropriate steps for each region and expand its procurement of electricity from renewable sources at locations in Japan and around the world, starting with data centers outside Japan. The Group will concurrently continue its work on R&D and technology trials for energy management and storage, and contribute to the spread of renewable energy in society as a whole.

Renewable Energy Electricity Usage Goals at Fujitsu Group Locations

- Goal : 100% by 2050
- Intermediate Goal : 40% by 2030

Support for the TCFD Recommendations

The Task Force on Climate-related Financial Disclosures (TCFD) was established by the Financial Stability Board at the request of G20 with the objective to reduce the risk of instability in the financial market due to climate change. The task force announced its recommendations in June 2017 asking companies and organizations to gain understanding of and disclose the risks and opportunities arising from climate change. The Fujitsu Group announced its support for the TCFD recommendations in April 2019 and strives to disclose information in line with the recommendations, including responding to CDP.

Item	Response Status	Reference
Governance	Under our system for promoting environmental management, we have established the Environmental & CSR Management Committee chaired by the President. This committee deliberates on medium- and long-term issues, makes policies, shares the risks and opportunities arising from climate change, determines measures to tackle them and manages the progress of these activities. It also reports the results of these activities to the Board of Directors at the meetings of the Management Council. In addition, we analyze and respond to risks faced throughout the Group, including those from climate change, under the supervision of the Board as part of our Group-wide risk management system.	• Environmental Management System
Strategy	Based on the analyses of risks and opportunities arising from climate change in the medium to long term (2030-2050), we have formulated the FUJITSU Climate and Energy Vision, a medium- to long-term environmental vision through 2050. As the world strives for decarbonization, we recognize that any delay in action can lead to risks. Therefore, this vision aims to promote zero CO2 emissions from our company using ICT and contribute technology services that support digital innovation to build a decarbonized society and cope with climate change, including turning know-how gained into services.	• Medium- to long-term environmental vision
Risk Management	The Fujitsu Group manages risks through committees and management systems. Our risk management system starts with identifying and evaluating risks. We then rank the risks by the frequency of their occurrence and impact level, and the relevant committees determine measures to avoid, mitigate, transfer or accept them as well as check the progress of such measures. Major risks are periodically reported to the Board of Directors.	• Response to risks from climate change • Environmental Management System • Risk Management
Indicators & Targets	We have formulated the medium- to long-term vision to tackle climate change in the medium to long term, and the Environmental Action Plan for short-term targets. We manage the progress of our strategy by monitoring the indicators set in the vision and action plan.	• Medium- to long-term environmental vision • Environmental Action Plan (Stage VIII) • Environmental Action Plan (Stage IX)

First ICT Services Company to Garner "Eco-First" Credentials

In September 2010, Fujitsu became the first ICT services company to be certified under Japan's Ministry of the Environment's "Eco-First Program." Under the program, industry-leading companies pledge to fulfill their environmental commitments to the Minister of the Environment in areas such as countering climate change and conserving biodiversity as a way to further promote their environmental protection initiatives.

Environmental Management

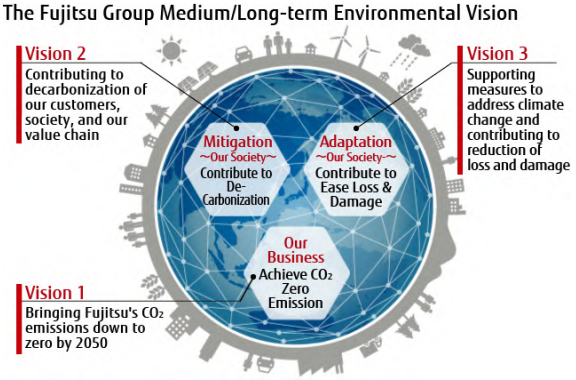
The Fujitsu Group Medium/Long-term Environmental Vision "FUJITSU Climate and Energy Vision"

The Fujitsu Group has established the "FUJITSU Climate and Energy Vision, "a medium- to long-term environmental vision with the goal of bringing the Fujitsu Group's CO_2 emissions to zero by 2050, as well as contributing to the achievement of a decarbonized society and the adaptation to climate change, through provision of technologies and services supporting digital transformation.

Concept

As an international framework of measures against global warming starting in 2020, the Paris Agreement, which sets a goal of limiting the rise in global average temperature to less than 2℃ above the average temperature prior to the industrial revolution, came into effect in November 2016. In order to achieve this, the goal to "achieve a balance between emissions and removals of greenhouse gases (GHG) in the second half of this century" has been set, and a shift to a decarbonized society will be necessary beginning in 2050.

The Fujitsu Group Medium/Long-term Environmental Vision



Various change are taking place in the global market as well, and it is expected that regulations on CO_2 emissions will be tightened, carbon taxes and other carbon pricing will be applied to more countries, and carbon tax will rise sharply. In addition, investment taking into account Environmental, Social and Governance (ESG) factors is expanding, which is also exerting a significant influence on market rules.

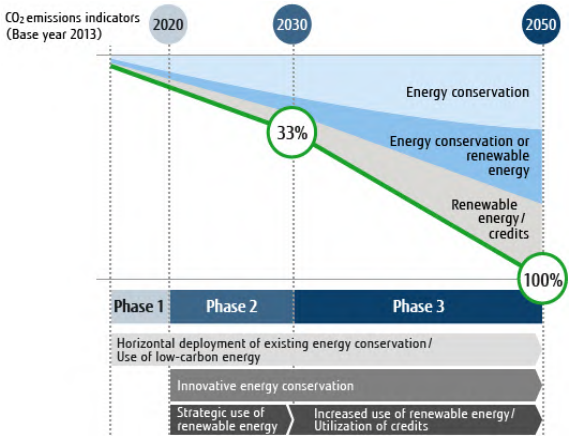
This vision has three pillars, namely, "Our Business: Achieve Zero CO_2 Emissions", "Mitigation: Contribute to a Decarbonized Society" and "Adaptation: Contribute to Measures in Society to Adapt to Climate Change". The Fujitsu Group aims to use ICT effectively to accelerate its own efforts to shift away from carbon, and by providing the knowledge gained from such efforts to customers and society as solutions, leverage its own business activities as a way to mitigate and adapt to climate change.

Note) Paris Agreement: New framework adopted by the 21st Session of the Conference of the Parties to the UN Framework Convention on Climate Change for measures to combat climate change starting in 2020.

Vision1 Achieving Zero CO_2 Emissions in the Fujitsu Group

The Fujitsu Group established the challenging scenario of reducing its CO_2 emissions gradually to zero in three phases by 2050, with its intention to take the initiatives as a global ICT company to strive to create a decarbonized society. This scenario has been established with scenarios recommended by the Science Based Targets (SBT) initiatives. It is also consistent with the 2℃ goal*1.

The Roadmap to reduce the Fujitsu Group's CO_2 Emissions to Zero by 2050



Phase I

In Phase I (until 2020), from the perspective of usability and economic efficiency of the technology, in Japan, we will horizontally deploy energy conservation technologies that already exist, verify new energy conservation technologies that use AI, etc., and move forward with the use of low-carbon energy. Overseas, we will proactively implement renewable energy, focusing on the EU.

Phase Ⅱ

In Phase Ⅱ (until 2030), the Fujitsu Group will work to establish and spread a transition to AI and ZEB*2, etc. to accelerate the reduction of emissions. Further, we will expand strategic implementation of renewable energy, which is expected to be easier to use in Japan as well, with consideration given to local characteristic and economic efficiency.

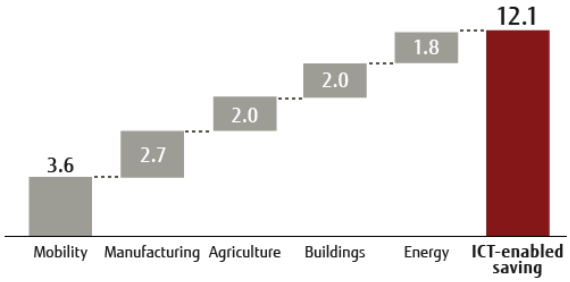
Phase Ⅲ

In PhaseⅢ(2030 and after), we will accelerate implementation of increasingly easy-to-use renewable energy, while supplementing with offsets from carbon credits, with an eye towards deploying and deepening innovative energy conservation technologies and shifting away from carbon.
The Fujitsu Group intends to increase the use of renewable energy in the electricity consumed at Fujitsu Group locations to at least 40% by 2030 and to 100% by 2050 with the membership gained in July 2018 to RE100. RE100 is a collaborative initiative led by The Climate Group in partnership with CDP, for companies committed to source 100% of the electricity they use from renewable sources.

*1 The GHG reduction target, with the Group's carbon credits subtracted, was approved by the SBT initiative.
*2 ZEB: Zero Energy Building. A building with significantly reduced yearly energy consumption achieved through conservation of energy in its structure and facilities, and thorough creation of energy by using solar power generation, etc.

Vision2 and 3 "Contributing to a Decarbonized Society" and "Contributing to Measures in Society to Adapt to Climate Change"

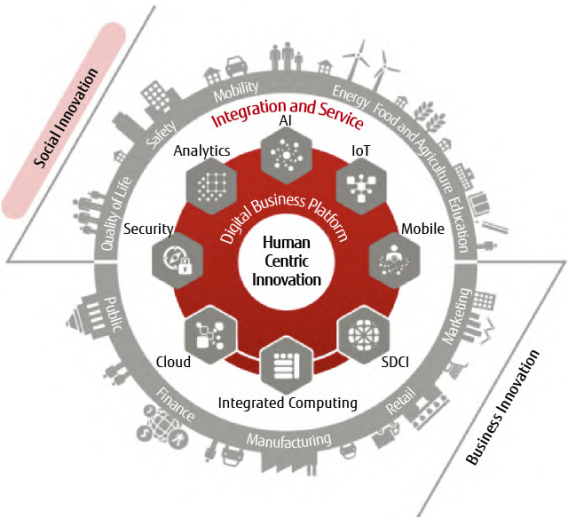
The Fujitsu Group believes that ICT has the potential to contribute to the mitigation of and adaptation to climate change. To that end, we have established "Mitigation: Contribute to a Decarbonized Society" and "Adaptation: Contribute to Measures in Society to Adapt to Climate Change" as pillars of Fujitsu's medium/long-term environmental vision, and are utilizing advanced ICT to create social innovation that contributes to resolving global environmental issues.



Exhibition:"#SMARTer2030",Global e-Sustainabilitye Initiative

Vision2 Contributing to a Decarbonized Society

The Fujitsu Group contributes to the decarbonization of society by creating ecosystems with customers in a variety of industries and business types. The key point of mitigation measures is the utilization of AI and other advanced digital technologies to maximize energy efficiency. We will achieve optimal usage of energy for the overall societal system by incorporating those technologies into a mechanism that crosses the boundaries between businesses, industries, and regions.



Vision3 Contributing to Measures in Society to Adapt to Climate Change

The key point of measures to adapt to the impact of climate change is advanced measuring technology using AI, big data, and simulations through sensing technology and high-performance computing (HPC), etc. Fujitsu will utilize these to create solutions to enable creation of a resilient societal infrastructure and stable supply of agricultural products, as well as solutions to minimize food product loss, thereby contributing to the minimization of damage to our customers and society caused by climate change.

Environmental Management

Fujitsu Group Environmental Action Plan

The Fujitsu Group views contribution to global sustainability as one of the responsibilities that a company must fulfill. With this in mind, we have been formulating environmental action plans once in every three years since 1993 and have expanded activities aimed at continuously reducing environmental impacts. In FY 2016-2018, we implemented and achieved the targets set in the Fujitsu Group Environmental Action Plan (Stage VIII) and strengthened the base for steadily accomplishing our targets for reducing GHG in line with global initiatives, such as SBT and RE100, to create a decarbonized society. We are now implementing the newly formulated Fujitsu Environmental Action Plan (Stage IX) since April 2019.

Fujitsu Group Environmental Action Plan (Stage IX) (FY 2019-2020)

Sustainable Development Goals (SDGs) and Paris Agreement were established as globally common goals to solve various environmental and social issues, including climate change and resource circulation. To achieve these, businesses are expected to collaborate with various stakeholders and take proactive actions to solve these issues. The Fujitsu Group announced its medium- to long-term environmental vision, FUJITSU Climate and Energy Vision, to eliminate all its CO_2 emission and contribute to mitigation and adaptation to climate change. By steadily advancing toward these goals through its Environmental Action Plan Stage IX and simultaneously expanding collaboration with stakeholders, the Fujitsu Group aims to reduce environmental burden in its supply chain and contribute to sustainable growth of society and customers.

Climate Change

Targets (till the end of FY 2020)	
1.	Reduce greenhouse gas (GHG) emission from business sites by more than 14% (compared to FY2013). Reduce GHG emission by 2.1% year-on-year through voluntary efforts.
2.	Improve PUE (Power Usage Effectiveness)*1 of our data centers by 2% or more compared to FY 2017.
3.	Increase renewable energy usage by more than 20% compared to FY2017.

*1 PUE (Power Usage Effectiveness): An indicator of the efficiency of electric power usage by the data center. This value is calculated by dividing the data center's total electric power consumption by the electric power consumption of servers and other ICT devices. The closer the value is to 1.0, the higher is the efficiency.

Resource Circulation

Targets (till the end of FY 2020)	
4.	Promote eco design for resource saving and circulation and increase resource efficiency of newly developed products by 25% or more (compared to FY 2014).
5.	Reduce amounts of waste generated by an average of more than 5% compared to FY 2012-2014.
6.	Maintain over 90% resource reuse rate of business ICT equipment.
7.	Reduce total water usage by 1% compared to FY2017.
8.	Limit the release of chemical pollutants (PRTR) to less than the average of FY 2012-2014.

Supply Chain

Targets (till the end of FY 2020)
9. Reduce CO_2 emission due to power consumption during product usage by more than 14% (compared to FY2013).
10. Drive activities to reduce CO_2 emissions and conserve water resources in the upstream supply chain.

SDGs

Targets (till the end of FY 2020)
11. Contribute to the achievement of SDGs through ICT services.

Fujitsu Group Environmental Action Plan (Stage VIII) (FY 2016-2018)

Fujitsu Group endeavors to help limit the increase in the global average temperature to below 2 degrees Celsius, as adopted in the Paris Agreement at COP21, while striving to achieve zero emissions as a long-term goal. In our Environmental Action Plan (Stage VIII), we further intensified the activities undertaken under Stage VII in terms of our social contribution through business as well as reduction of environmental impact arising from our business activities. In concrete terms, we improved customers' and society's sustainability through ICT services and enhancing our products' energy and resource efficiency. We also reduced greenhouse gas emissions and environmental impact caused by our business throughout the value chain.
Fujitsu Group will work steadily on its Environmental Action Plan to meet the objectives of the FUJITSU Climate and Energy Vision, our medium- to long-term environmental vision through 2050.

Our Society

Targets (till the end of FY 2018)	Performance in 2018	Status*2
Contribute to sustainable development and preservation of biodiversity through ICT services		
1. Contribute to sustainable development of society through ICT services.	Published 18 cases	✓
2. Develop innovative technologies that address environmental issues.	Announced 84 key green technologies*3	✓
Improve environmental value of products throughout their lifecycle		
3. Achieve top-level energy efficiency for 50% or more of the new products.	67.9% achieved	✓
4. Promote eco design for resource saving and circulation and increase resource efficiency of newly developed products by 15% or more. (Compared to FY2014)	25% improvement	✓
5. Maintain over 90% resource reuse rate of business ICT equipment.	91.7% achieved	✓

Our Business

Targets (till the end of FY 2018)		Performance in 2018	Status*2
Reduce greenhouse gas emissions throughout the value chain			
6. Reduce greenhouse gas (GHG) emissions in our business facilities			
	Reduce GHG emissions by 5% or more compared to FY 2013.	30.3% reduction	✓
	Improve PUE of our data centers by 8% or more compared to FY 2013.	6.7% improvement	×
	Improve energy intensity by an average of 1% or more each year.	1.1% improvement	✓
	Increase usage of renewable energy to at least 6%.	8.6% achieved	✓
7. Drive activities to reduce CO_2emissions in the supply chain.		Requested secondary suppliers (over 46,000 companies) to implement CO_2-reduction activities.	✓
8. Reduce CO_2 emissions per sales from transport by an average of 2% or more each year.		6.2% reduction	✓
Reduce environmental impact			
9. Reduce water consumption by 1% in total (128,000 m^3).		2.6% reduction	✓
10. Reduce chemical pollutant (PRTR) release to less than the average level of FY 2012–2014 (20.7 t).		9.3 tons	✓
11. Reduce the amount of waste generated to less than the average level of FY 2012–2014 (25,568 t).		19,056 tons	✓

*2 ✓ : Target achieved ; × : Target unachieved

*3 Key green technologies: Technologies for reducing power and energy, improving man-hour efficiency, conserving resources, and resolving social issues.

Related Links

- Fujitsu Group Environmental Protection Program (Stage VII)
  http://www.fujitsu.com/jp/about/environment/approach/plan/stage7/index.html
- Fujitsu Group Environmental Protection Program (Stage VI)
  http://www.fujitsu.com/jp/about/environment/approach/plan/stage6/index.html
- Fujitsu Group Environmental Protection Program (Stage V)
  http://www.fujitsu.com/jp/about/environment/approach/plan/stage5/index.html
- Fujitsu Group Environmental Protection Program (Stage IV)
  http://www.fujitsu.com/jp/about/environment/approach/plan/stage4/index.html
- Fujitsu Group Environmental Protection Program (Stage III)
  http://www.fujitsu.com/jp/about/environment/approach/plan/stage3/index.html

Environmental Management

Environmental Management System

We are continuously working to improve our ISO14001*1 based environmental management systems and to promote Group-wide environmental management.

*1 ISO14001:
Environmental Management Systems (EMS) standard determined by the International Organization for Standardization (ISO). Certification is granted to environmentally conscious organizations that develop systems for ongoing reductions in their environmental footprint.

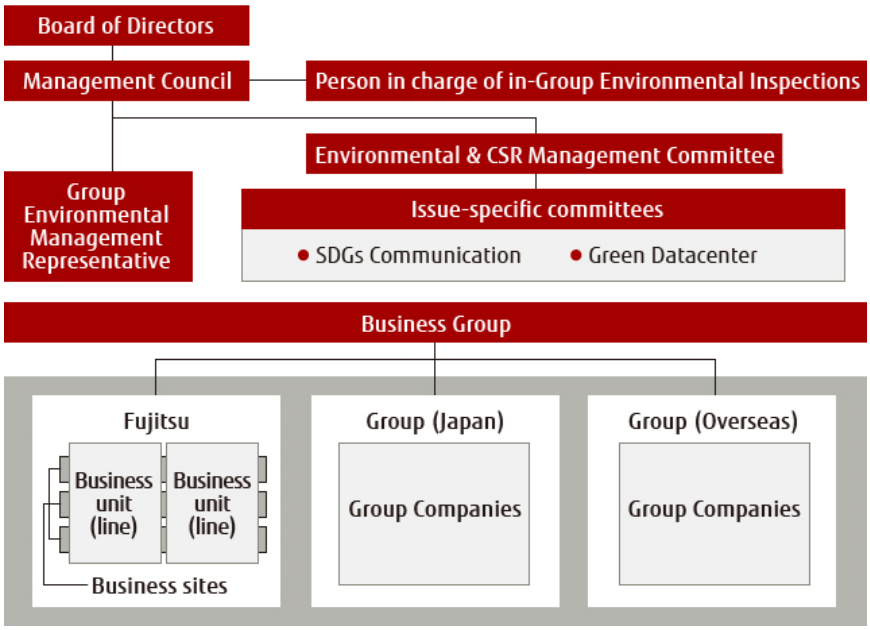
Fujitsu Group's Environmental Management Systems (EMS)

Fujitsu has constructed Environmental Management Systems (EMS) based on the ISO 14001 international standard and is promoting environmental improvement activities across the Group. After acquiring ISO 14001 certification for Japanese consolidated subsidiaries at the end of FY 2004, we expanded this effort to include overseas subsidiaries and acquired global integrated certification in FY 2005.

Environmental Management Framework

To conduct comprehensive discussions on the Fujitsu Group's environmental management, we have established an Environmental & CSR Management Committee chaired by the president. This committee considers medium-to-long term issues, implements policy decisions and discusses methods for handling and sharing operating risks and opportunities from climate change, all with the aim of raising the level of the Group's environmental management and strengthening its governance. Based on that, final decisions on environmental management at the Fujitsu Group are made at meetings of the Management Council and reported to the Board of Directors.
Subordinate to the Environmental & CSR Management Committee, we have organized environmental issue-specific committees composed of concerned parties that go beyond the framework of business groups and business units. Through this promotion structure, we are quickly diffusing initiatives on these issues throughout the Group.
We have also established an Environmental Management Working Group (WG) which is working to unify global information transmission and strengthen environmental management systems (EMS) activities.

Environmental Management Framework (as of March 2019)



Constructing and Operating Environmental Management Systems

The Fujitsu Group has constructed EMS based on the ISO 14001 international standard and is promoting environmental improvement activities across the group. By constructing EMS worldwide, the Fujitsu Group further strengthened its Group governance. This also allows the Group to promote even more efficient and highly effective environmental activities, including understanding the state of activities, legal compliance, and emergency response.
As of March 2019, the Fujitsu Group has acquired global integrated ISO 14001 certification for a total of 119 companies of Fujitsu and its Japanese Group companies, as well as for 12 overseas Group companies.

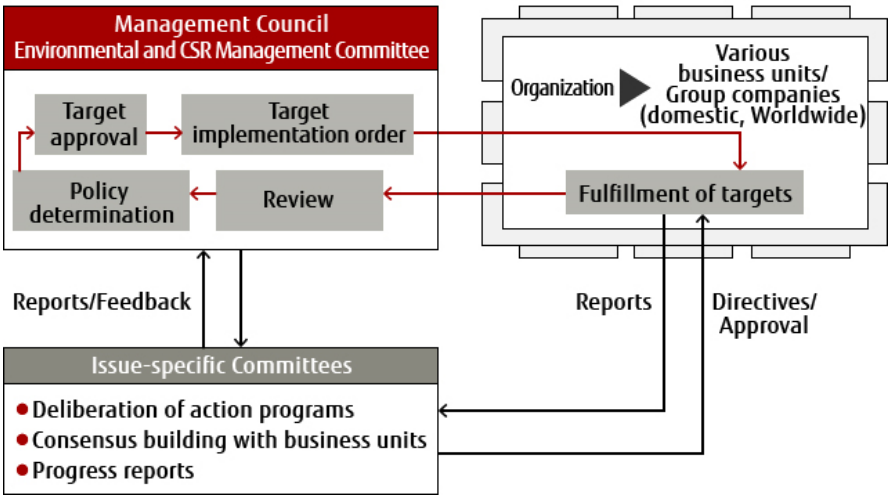
Environmental Management Systems Audit Findings and Result

	FY 2016	FY 2017	FY 2018
Internal audit Findings	145	122	102
External audit Findings	4	8	3
Opportunities for improvement	103	126	113

Activity Flow

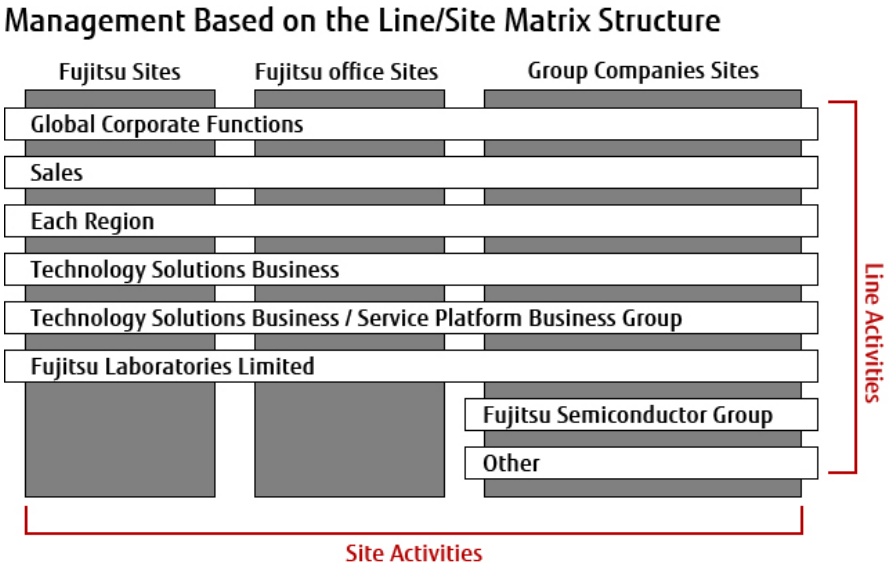
The Environmental & CSR Management Committee proposes, deliberates, and decides upon environmental matters relating to all Group companies. It determines the directions to be taken for energy usage volume, CO_2 emissions reductions, ways to address environmental risk, and other medium-to-long term matters important to environmental management at an overall level. The Environmental & CSR Management Committee also conducts environmental management reviews and is exercising approval authority for the Fujitsu Group Environmental Action Plan.
The issue-specific committees are subcommittees set up by the Environmental & CSR Management Committee to provide dedicated responses to specific issues. Their main role is to discuss targets for the Environmental Action Plan and check on the progress being made for each target. The Environmental & CSR Management Committee gives approvals and directions, according to the issue-specific committees' progress reports and the Environmental Action Plan related WG's progress report.

Activity Flow



Management Based on the Line/Site Matrix Structure

The Fujitsu Group carries out its environmental management within a matrix structure combining (1) "line activities" directly tied to the business operations of various divisions and companies (including development of eco-friendly products and the expansion of environmental contribution solutions) and (2) "site activities" to tackle common themes affecting each factory or business location (such as energy conservation and waste reduction).
In this way we carry our environmental management according to the same framework as our management, while also reducing the environmental footprint generated by our business activities and the sale of our products and services.



Environmental Management

Case Studies, Initiatives in Environmental Management

Operations Utilizing ICT

The Fujitsu Group actively utilizes its own ICT-driven environmental management tools to visualize and boost the efficiency of its environmental management.

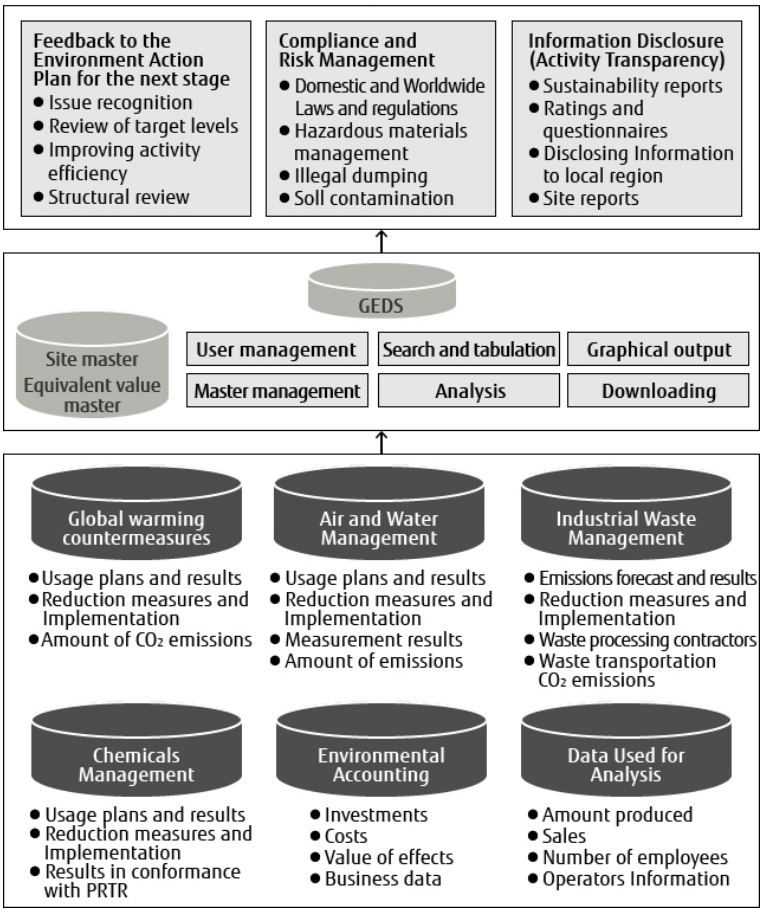
EMS Operations Using ICT

The Fujitsu Group employs its own ICT-driven environmental management tools. Examples include the Global Environment Database System (GEDS) which can centrally manage aspects such as planning, performance, and policy information, at business sites scattered throughout the world, and the ISO 14001 Green Management System (GMS) which centrally manages compliance and risk management status to support EMS operations. These tools are employed to visualize environmental management and make it more efficient. Additionally, the communication infrastructure of all companies in the Fujitsu Group is used for EMS operations, including smart communications for EMS operations such as video conferencing systems used to conduct briefings in each area.

Using the Global Environment Database System

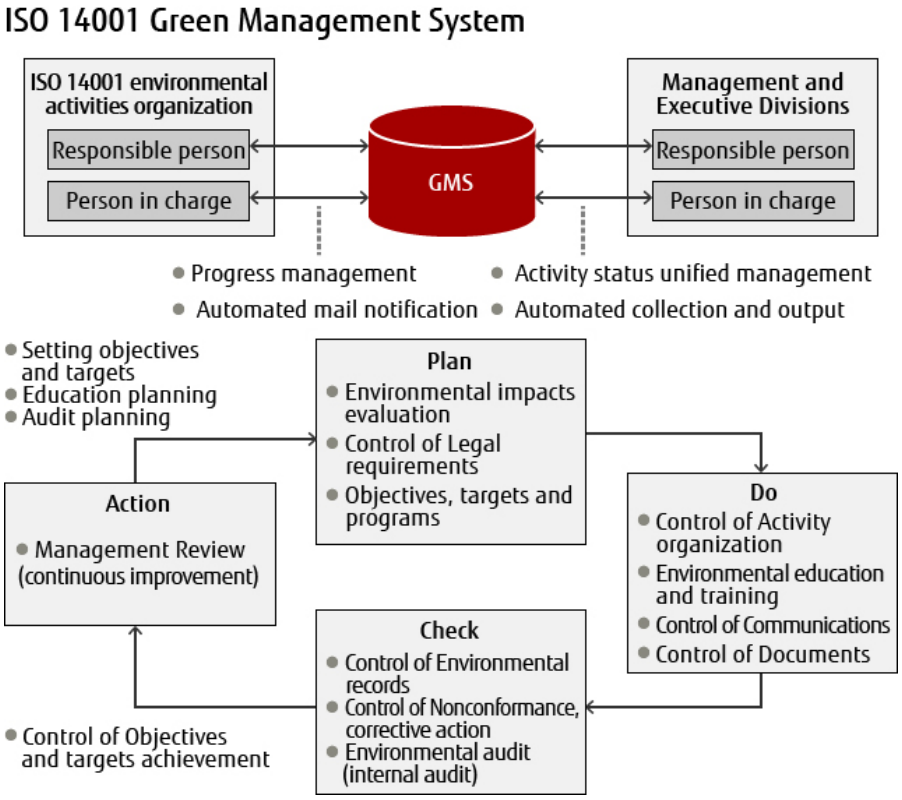
The Global Environment Database System (GEDS) is used to gather information about the environmental footprint (performance) of Fujitsu Group companies and business sites and centrally manage aspects such as planning, performance, and policy information.

Global Environment Database System



Using the ISO 14001 Green Management System

The ISO 14001 Green Management System (GMS) is used to exercise unified control over the operational status of the EMS with regard to improvements in and conformance issues relating to findings from internal audits, communications activities, direct and indirect effects identified in environmental impact assessments, and the setting of environmental management objectives and targets.
GMS enables corrective measures and objectives to be certainly managed, and effectively ensures continual improvement of the activities with reduced risks.



Implementing Environmental Audits

Internal Audit Implementation and Results

The Fujitsu Group conducts internal audits, a requirement of ISO 14001. To ensure the objectivity and independence of internal audits, the Corporate Internal Audit Division, takes the lead, allocating internal auditors who belong to Fujitsu or Fujitsu Group companies and carries them out.
In FY 2018, we carried out internal audits within Fujitsu and Group Company for factories, offices, and other facilities at 340 in Japan and at 19 overseas. When conducting the audits, we scrutinized the results of FY 2017 internal and external audits, took the opinions and instructions of the Environmental Management Committee into consideration, and emphasis was placed on the three main tasks of (1) compliance, (2) operational control, and (3) organization operating original EMS.
There were 102 total findings (both Japan and overseas), of which 36% related to ISO14001:2015, , relating to methods for managing chemical substances and industrial waste. Overseas, receiving cooperation from external experts thoroughly knowledgeable in local laws and regulations and operation, we carried out internal audits with the objective of strengthening compliance and it leads to obtain less finding to point out. Started the same trial to organization in Japan.

External Audit and Results

To maintain our ISO 14001 certification, we are carrying out external audits by a certifying body. In FY 2018, we were audited in Japan by the Japan Audit and Certification Organization for Environment and Quality (JACO). Outside Japan, we were audited by DNV GL Business Assurance Japan K.K.
As the results, opportunities for improvement 67 in Japan and 46 overseas.
Three minor nonconformities were identified at our overseas. We have completed corrective actions by the end of FY 2018. Those were shared throughout the Group in order to help efforts to prevent recurrences.
These audits were carried out, and as a result of the judgment of the two certifying bodies, we were able to continue ISO 14001:2015 certification acquired.

Compliance with Environmental Laws

There were no major legal or regulatory violations or accidents with major impact on the environment in the Fujitsu Group during FY 2018.

Environmental Management

Green Procurement

We are implementing green procurement alongside our business partners, to provide customers with products and services that have light environmental footprints.

Procurement Activities Based on Green Procurement Direction

The Fujitsu Group summarized its requirements for business partners regarding the purchase of green parts, materials, and products, in the "Fujitsu Group Green Procurement Direction." The Group implements green procurement activities under this direction, together with business partners in Japan and overseas, and promotes procurement from business partners that fulfill the green procurement requirements (see below).
Using the Fujitsu Group Environmental Survey Sheet, we conduct annual monitoring of our business partners' statuses with regard to environmental management systems, CO_2 emission reduction, biodiversity preservation, and water resource preservation activities, and ask them to take appropriate measures.

- Fujitsu Group Green Procurement Direction
  https://www.fujitsu.com/global/about/procurement/green/

Green procurement requirements for business partners

Requirements	Business partners (materials/parts)*1	Business partners (non-materials/parts)
1. Establishment of environmental management systems (EMS)	✓	✓
2. Compliance with regulations for Fujitsu Group specified chemical substances	✓	–
3. Establishment of chemical substance management systems (CMS)	✓	–
4. CO_2 emission control/reduction initiatives	✓	✓
5. Biodiversity preservation initiatives	✓	✓
6. Water resource preservation initiatives	✓	✓

*1 Business partners (materials/parts): Business partners that supply components for Fujitsu Group products or OEM/ODM products

Establishment of Environmental Management Systems

We request our business partners to establish environmental management systems (EMS) as a base for ensuring that they independently and continuously improve their environmental-preservation activities. In general, we prefer them to have third party-certified EMS. If this is not possible, we ask them to build EMS incorporating the PDCA cycle suited to their circumstances.

CO_2 Emission Reduction Initiatives

The Fujitsu Group also asks our business partners to work toward CO_2 emission reduction in hopes of addressing climate change. Specifically, we ask them to clearly express the intentions of their initiatives and request that they make efforts to achieve the objectives they set. We also ask them to collaborate with external organizations, where possible, and encourage their own suppliers to make similar efforts, in order to expand the initiatives outside their respective businesses. Our annual Supply Chain Business Continuity Survey gives us a clear picture of how business partners are responding to a variety of climate-change risks, including tsunamis, floods, and torrential rains.

Acquiring and Managing Information on Chemical Substances Contained in Products

Countries around the world are establishing legal regulations as to the chemical substances contained in products, for instance the RoHS directive*2 and the REACH regulation*3. The scope of such regulations is expanding on an almost day-to-day basis, covering more and more substances, products, and applications.
The Fujitsu Group, using chemSHERPA*4 as its standard format, investigates and acquires information on the chemical substances contained in our products. We share our findings with Group companies via our internal system, and allow relevant parties to access the information whenever necessary. We have established a system that allows for quick adaptation to revisions of laws/regulations and the enactment of new legal systems.

*2 RoHS directive:
Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
*3 REACH regulation:
Regulation for Registration, Evaluation, Authorization, and Restriction of Chemicals
*4 chemSHERPA:
Chemical Information Sharing and Exchange under Reporting Partnership in Supply Chain

Establishing a Chemical substance Management System (CMS) for Product Substances

The Fujitsu Group not only asks business partners for information on chemical substances contained in their products; we also ask them to establish a Chemical substances Management System (CMS), based on the industry-standard JAMP*5 guidelines on the management of chemical substances contained in products. Doing so enables the Group to comply even more thoroughly with laws and regulations related to the chemical substances contained in our products.
The Group also carries out CMS audits in order to confirm appropriate establishment and operation of such CMS. More specifically, Fujitsu's auditors implement on-site evaluation of the management status of the chemical substances contained in our business partners' products. If there are any inadequacies, auditors make requests for corrections and provide support for their enactment. Even after the establishment of CMS, we maintain awareness of its operation status through periodic audits.

*5 Joint Article Management Promotion-Consortium.

Environmental Management

Response to Environmental Risks

Environmental Risk Management Structure

The Fujitsu Group built and operates a group-wide risk management system to identify, prevent, and mitigate a variety of potential risks, or prevent their recurrence, including issues related to climate change and environmental pollution. The Risk Management & Compliance Committee, which reports directly to the Board of Directors, assesses the risks associated with the business activities of each division and each group company, and formulates a policy. We also leverage the group's Environmental Management System (EMS), which is based on ISO14001, for minimizing risks to the environment through continuous improvements.

- Risk Management
  https://www.fujitsu.com/global/about/csr/riskmanagement/index.html
- Environmental Management System
  https://www.fujitsu.com/global/about/environment/management/ems/activity/index.html

Efforts to Minimize Risks to the Environment

Dealing with Risks Related to Climate Change

There is a possibility of significant impacts on our business continuity from increases in the frequency and effects of natural disasters as a result of recent climate changes. For that reason, we have formulated a business continuity plan and are devoting effort to continually revising and improving the plan.
Furthermore, the implementation of stricter regulations for greenhouse gas emissions and a carbon taxes creates a risk of increasing the energy cost incurred by the Fujitsu Group, as well as the cost required for measures aimed at reducing greenhouse gases. Additionally, if climate change countermeasures are insufficient, there is a risk of harm to our corporate reputation or a disadvantage at bidding. In order to minimize these risks, we are conducting risk analysis/response within our company-wide risk management structure. Moreover, based on the FUJITSU Climate and Energy Vision, we are working to achieve net zero CO_2 emissions by 2050 and to contribute to mitigation/adaptation for climate change through business.
In accordance with the recommendations issued in 2017 by the Task Force on Climate-Related Financial Disclosures (TCFD), the Fujitsu Group analyzes and discloses information related to risks accompanying climate change that may have an impact on business and financial strategies. Refer to the table below for the currently recognized potential major risks and responses.

Risks Associated with the Transition to a Low Carbon Economy

Policy/Legal Risks	● Risks: Increase in cost in order to respond to the strengthened laws and regulations on greenhouse gas emissions and energy use, and diminished corporate value in the event of a violation. ✓ Response: Complete compliance with laws and regulations through EMS.
Technology Risks	● Risk: Unrecovered investments and market share decline in the event that the company lags behind in a fierce competition in technological development toward a carbon-free society. ✓ Response: Enhance development of energy-efficient products and energy-efficient enabling technologies, solutions, and services through steady implementation of Science Based Targets and our Environmental Action Plan.
Market Risks	● Risk: Losing business opportunities if products, solutions, and services do not meet energy-saving performance needs. ✓ Response: Enhance development of energy-efficient products and energy-efficient enabling technologies, solutions, and services through steady implementation of Science Based Targets and our Environmental Action Plans.

Risks to Reputation	● Risk: Decline in corporate value and an increase in response costs associated with a negative assessment from stakeholders on the response status of measures to counteract climate change. ✓ Response: Enhance measures to counteract climate change and promote reduction of environmental footprint through steady achievement of the group's Science Based Targets and Environmental Action Plan.

Climate Change Related Risks in the Supply chain

Upstream Supply Chain	● Risk: A temporary suspension of the suppliers' business activities due to the occurrence of severe natural disasters such as large-scale floods, sudden heavy downpours, and lightning strikes, which affects the procurement of materials. ✓ Response: Conduct surveys of the business continuity capabilities of suppliers and implement measures to procure materials from multiple sources.
Downstream Supply Chain	● Risk: Losing business opportunities due to the inability to obtain environmental labelling, which is a green procurement requirement of customers. ✓ Response: Conduct trend surveys and risk assessments of the environmental labelling scheme. Develop and provide top-level energy-efficient products through steady implementation of Science Based Targets and our Environmental Action Plan.

Assessing and Monitoring of Potential Water Risks

In recent years, the supply and demand for water has become strained in many areas around the world due to a variety of factors, such as population growth and climate change, and there is a growing concern that this may become a business risk. The Fujitsu Group conducts assessments of and monitors potential water risks for direct operations sites and supply chains.
In particular, the Group uses tools and databases provided by NGOs and governments at both country and municipal levels to check the status of water stress and the risk of natural disasters in the areas where businesses are located. We then comprehensively assess the water risk at each site by analyzing how important water use is in the business activities of each operations base, and we confirm the level of compliance in a variety of activities such as the reduction of water intake, measures to reduce pollution in wastewater, business continuity management (BCM) systems, and others. For the supply chain, we also assess our suppliers' flood preparedness and other water risks based on the supply chain BCM surveys, field surveys conducted according to the Responsible Business Alliance's (RBA) code of conduct and the CDP Supply Chain Program. As a result, we have confirmed that there are no significant risks that could substantially affect our business activities.

- Fujitsu Group response to the CDP Water Questionnaire 2018
  https://www.fujitsu.com/global/documents/about/environment/operation/water/CDP%20Water.pdf

Preventing Water Pollution

In order to preserve the water quality of surrounding waterways, including rivers, groundwater and sewers, we have set voluntary controls that are even tougher than legal mandates, and conduct measurement and monitoring on a regular basis. We recover and recycle chemicals used in production processes, instead of discharging them into wastewater. We are also working to properly manage and reduce discharge of harmful substances and other regulated substances (COD, BOD, etc.) by ensuring appropriate chemical use, preventing chemical leaks and penetration, and properly managing the operations of water treatment and purification facilities, among other measures.

Preventing Air Pollution

We have set voluntary control values that are more stringent than legally mandated emissions standards in order to prevent air pollution and limit acid rain. Regular measurement and monitoring is conducted based on these controls. Efforts are also made to appropriately process dust and soot, sulfur oxide, nitrogen oxide, and other harmful substances, and reduce emissions through measures including combustion management at facilities that produce soot and smoke, use of fuels with low sulfur content, and

managing the operations of exhaust gas processing equipment. Furthermore, we have installed activated carbon adsorption treatment equipment and are reducing our atmospheric emissions of organic solvent vapors containing substances like VOCs. Moreover, with the enactment in April 2015 of the Act on Rational Use and Proper Management of Fluorocarbons, we have set in-house stipulations and striven for proper management of specified products (commercial refrigerators and air conditioners containing fluorocarbon refrigerants) while working to identify the volume of our fluorocarbon leakage. In addition, emission of dioxins has been prevented by suspending use of all in-house incineration facilities as of January 2000.

Preventing Destruction of the Ozone Layer

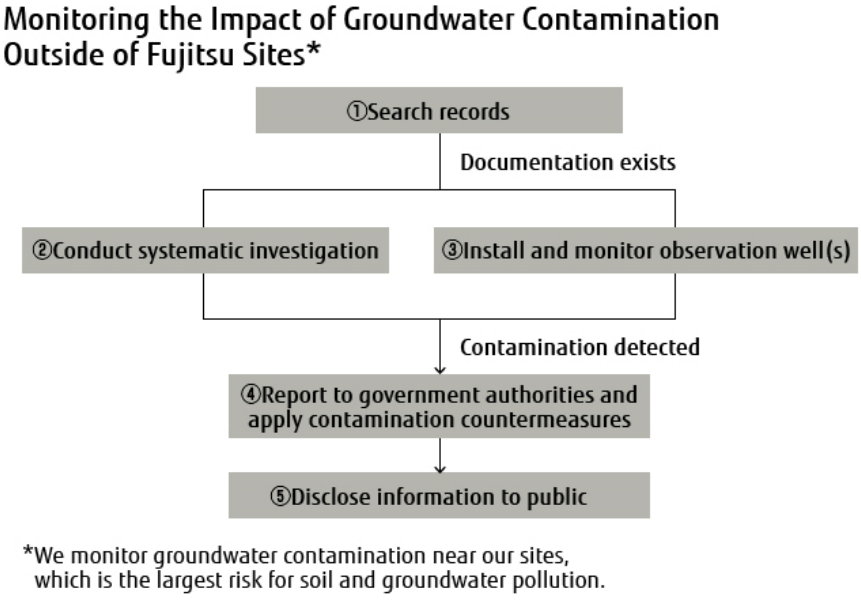
By implementing a precision water-wash system and non-wash soldering technology, we have completely eliminated the use of ozone-depleting substances in manufacturing processes (parts washing and solvents). We have also implemented leakage countermeasures for refrigerant chlorofluorocarbons used in air conditioning facilities (freezers, etc.), and are switching to non-chlorofluorocarbon gas when updating facilities.

Results for complete elimination of ozone-depleting substances

Ozone-depleting substances	Time of complete elimination
Washing chlorofluorocarbons (CFC-113, CFC-115)	End of 1992
Carbon tetrachloride	End of 1992
1,1,1-trichloroethane	End of October 1994
Alternative chlorofluorocarbons (HCFCs)	End of March 1999

Preventing Pollution of Soil and Groundwater

We have established rules for soil and groundwater surveys, measures and disclosures. We review these in accordance with changes in the law and social circumstances and respond based on these rules. We systematically examine soil and groundwater, based on the rules, and if pollution is confirmed, we carry out cleanup and countermeasures at each plant according to the situation, while working together with government authorities to disclose information.
As of FY 2018, there are four business sites where soil and groundwater pollution from prior business activities have been confirmed. At those business sites, we have installed observation wells to observe effects outside the site due to groundwater pollution, while also working on purification measures through water-pumping aeration, etc.



Business Sites Where Soil or Groundwater Contamination Has Been Found

Site Name	Location	Cleanup and Measure Execution Status	Maximum Value Found at Observation Well (mg/L)		Regulated Level (mg/L)
			Substance	Measured Value	
Kawasaki Plant	Kawasaki City, Kanagawa Prefecture	We are continuing to clean up VOCs by pumping and aeration	Cis-1, 2-dichloroethylene	3.6	0.04
Oyama Plant	Oyama City, Tochigi Prefecture	We are continuing to clean up VOCs by pumping and aeration.	Cis-1, 2-dichloroethylene	2.58	0.04
			Trichloroethylene	0.20	0.03
FDK Sanyo Plant	Sanyo-Onoda City, Yamaguchi Prefecture	We are continuing to clean up VOCs by pumping and aeration.	Trichloroethylene	0.031	0.03
FDK Washizu Plant	Kosai City, Shizuoka Prefecture	We are continuing to clean up VOCs by pumping and aeration.	Cis-1, 2-dichloroethylene	0.20	0.04
			Trichloroethylene	0.42	0.03
			Tetrachloroethylene	0.30	0.01

Chemical Substance Control

To prevent pollution of the natural environment or damage to health due to the use of harmful chemical substances, we are controlling the use of some 1,300 substances using our original Chemical Information System called "FACE" and working to appropriately control and reduce emissions at our business sites.

- Fujitsu Group Environmental Action Plan (Stage VIII): Reducing Chemical Substances Emissions
  https://www.fujitsu.com/global/about/environment/operation/chemical/index.html

With regard to chemical substances included in products, we have determined banned substances according to regulations in Japan and worldwide and are working to thoroughly control them, not only inside the Group but also with business partners who deliver materials and products to us.

- Green Procurement
  https://www.fujitsu.com/global/about/environment/management/ems/procurement/index.html

Appropriately Processing Waste

We regularly carry out on-site audits in order to confirm that subcontractors are appropriately handling the waste processing tasks we entrust to them.
In addition, with regard to high concentration polychlorinated biphenyl (PCB) waste (transformers and condensers) processing, we have registered with the Japan Environmental Storage & Safety Corporation (JESCO), which handles temporary storage and disposal of PCB waste under government supervision, and are carefully carrying out processing based on JESCO plans.

Conserving Biodiversity

Recognizing that activities benefit from the riches of the Earth's biodiversity while at the same time impacting it, the Fujitsu Group considers the conservation of biodiversity to be an important issue. In October 2009, we settled on the Fujitsu Group Biodiversity Action Principles, and promote them based on the two pillars of reducing the impact of our business activities on biodiversity and contributing to the creation of a society that conserves biodiversity.

Environmental Management

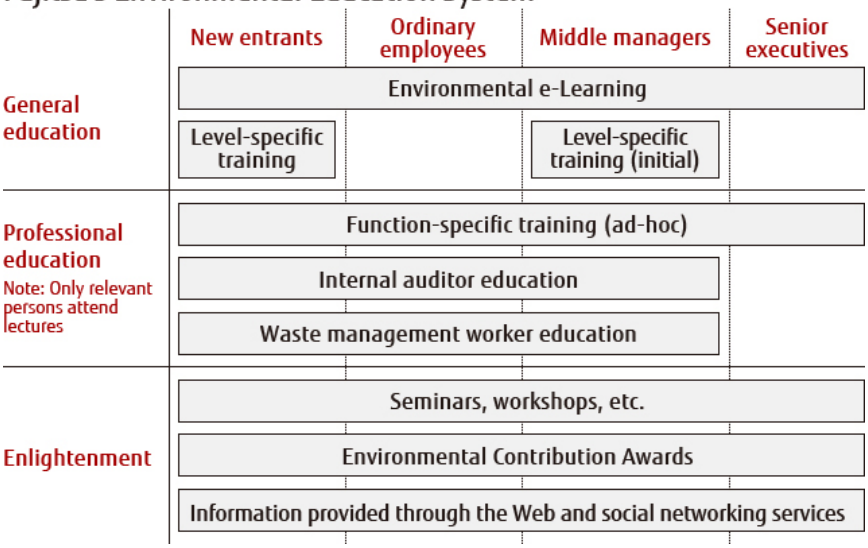
Environmental Training and Awareness Activities for Employees

The Fujitsu Group conducts various environmental education and awareness activities based on the belief that "Greater environmental awareness and proactive efforts among all employees are essential for pursuing environmental management."

Comprehensive Environmental Training

All employees undergo environmental e-Learning to facilitate a basic understanding of environmental management. In addition to training for new employees and for managers, training is also conducted on a per-division basis. Specialized trainings such as internal auditor training and training for those in charge of waste practices are also conducted for employees who are in charge of environment-related tasks.

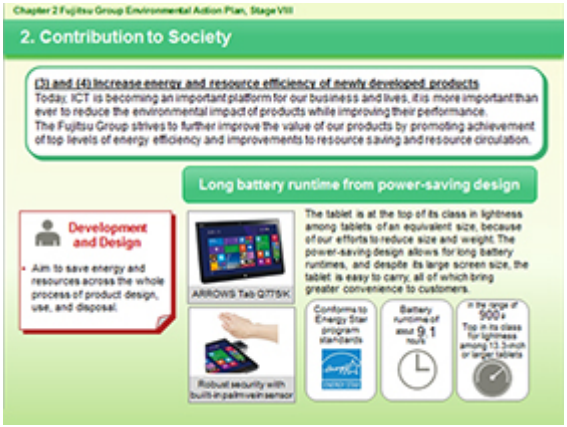
Fujitsu's Environmental Education System



Environmental e-Learning for Group Employees around the World

All employees undergo environmental e-Learning to promote their understanding of the Stage VIII Environmental Action Plan and facilitate their putting it into practice.

Example of an environmental e-Learning screen



Environmental Management

Raising Awareness through an In-House Award Scheme

The Environmental Contribution Award

To raise environmental awareness among employees at all Fujitsu Group companies, we have established an Environmental Contribution Award Scheme to recognize business and activities contributing to the environment. The award scheme is open to all employees and has been implemented every year since 1995.
In FY 2018 too, we received entries from various fields. Winning initiatives include technology for a blockchain-based exchange system for electricity, development of SMD-compatible micro all-solid battery, using AI technology to monitor threatened species with images taken by drones, a space observation system to accurately determine and forecast the risk of collision between artificial satellites and space debris, reducing wastes through a technology to recycle activated carbon filled in organic exhaust gas removal devices, and making gold medals for the Tokyo 2020 Olympic Games by recycling smartphones.

Winner of the FY 2018 Environmental Grand Prize (Environmental Contribution Award)

- **Increasing comfort and energy-saving abilities of domestic appliances using Edge AI technology**
  We installed the AI system based on edge-cloud collaboration framework, a first in the air conditioner industry, developed by Fujitsu and Fujitsu Laboratories in the Nocria X-series of room air conditioners made by Fujitsu General Ltd. These room air conditioners automatically operate in a way that provides comfort tailored to each person, while saving more energy, using real-time control and high-level learning capabilities.

nocria®X AS-X22J

Environmental Management

In-House Environmental Seminar and Workshop

Believing that the first step toward achieving a sustainable society is to be aware of social and environmental issues and international trends, we conduct environmental seminars for our employees periodically. In FY 2018, the following two events were held.

September:
3rd SDGs Seminar by Industry (Finance & Distribution, Administration)

In order to consider the utilization of digital technologies in the fields of finance & distribution and administration from the perspective of SDGs, we hosted lectures concerning cases in China and Demark, which are experiencing digital reform, as well as a lecture concerning Society 5.0 in Japan. These lectures were delivered by Ms. Weilin Zhao of the Fujitsu Research Institute, Mr. Kensuke Nakajima of the Embassy of Denmark, and Ms. Naoko Ogawa of Keidanren (the Japan Business Federation). Following the lectures, we held a panel discussion about the type of digital reform that should be advanced and the types of SDGs that should be achieved in Japan. The moderator of this discussion was Mr. Setsu Mori, chief editor of the magazine *alterna*.

From the left Mr. Setsu Mori, Ms. Naoko Ogawa, Mr. Kensuke Nakajima, Ms. Weilin Zhao

June:
Special Lecture "Will Space Debris Bring About an Age without Satellites?"

We welcomed Mr. Taguchi from Astroscale Pte. Ltd. in order to reacquaint ourselves with the concept that resolving environmental and social issues can lead to business. He delivered a lecture concerning space debris removal, which was previously thought by most space development professionals to be impossible to achieve. In the lecture, Mr. Taguchi addressed subjects such as the circumstances that led to the commercialization of space debris removal, as well as his company's business model.

Mr. Yusuke Taguchi

Environmental Action Plan (Stage VIII)

Contributing to a Sustainable Society Through ICT Services

Our Approach

The Fujitsu Group advocates "Contributing to a sustainable society through ICT services" as one of the goals of our Environmental Action Plan Stage VIII. The United Nations adopted the Sustainable Development Goals (SDGs) in 2015, setting them out as clear international goals. The Fujitsu Group took this as an opportunity to aim for even greater contributions to the sustainability of customers and society.
Achieving a sustainable society will require not only measures to counter global warming by reducing greenhouse gas (GHG) emissions, but we will also need to address a number of other social and environmental problems through efforts such as resource-saving, conservation of biodiversity, stability in food supplies and measures to deal with urbanization, and disaster prevention. Information and communication technology (ICT) that facilitates optimization, efficiency, and automation in a wide variety of fields has the potential to make tremendous contributions toward solving social and environmental problems. Together with our customers, the Fujitsu Group aims to contribute to the SDGs globally through provision of ICT services.

FY 2018 Performance and Results

Targets under the Fujitsu Group Environmental Action Plan (Stage VIII)	Last fiscal year (FY 2018 results)
Contribute to the sustainable development of society through provision of ICT services.	18 cases published externally (25 cases of solutions that contribute to a sustainable society)

Publishing Cases of Initiatives that Contribute to the Development of a Sustainable Society Through ICT Services

Eighteen new cases of contributions have been posted on our website, including automated AI analysis of surveillance footage, and also combining this with the large capacity and high-speed processing technology of supercomputers to provide solutions that achieve smart surveillance of entire cities, and solutions that perform simulation analysis of car crash tests to evaluate crash safety performance without needing to produce large numbers of test cars for actual crash tests.

Initiatives Toward a Sustainable Society: Reducing GHG Emissions Through ICT

Implementing ICT reduces the use of energy and resources and the movement of people and things, cuts down on office space and other things that can be made more efficient, which lead to reduced GHG emissions. The Fujitsu Group is quantifying GHG reduction effects through the implementation of ICT, and will be working to help expand the reduction in GHG emissions of customers and society as a whole.

- GHG Emission Reduction through the Provision of ICT
  https://www.fujitsu.com/global/about/environment/society/sustainability/contribution/

Examples of Contributions to SDGs

The Fujitsu Group contributes to the sustainable society advocated by the SDGs through the provision of ICT services.

- SDG-related Activities in Fujitsu
  https://www.fujitsu.com/global/about/csr/sdgs/

Environmental Action Plan (Stage VIII)

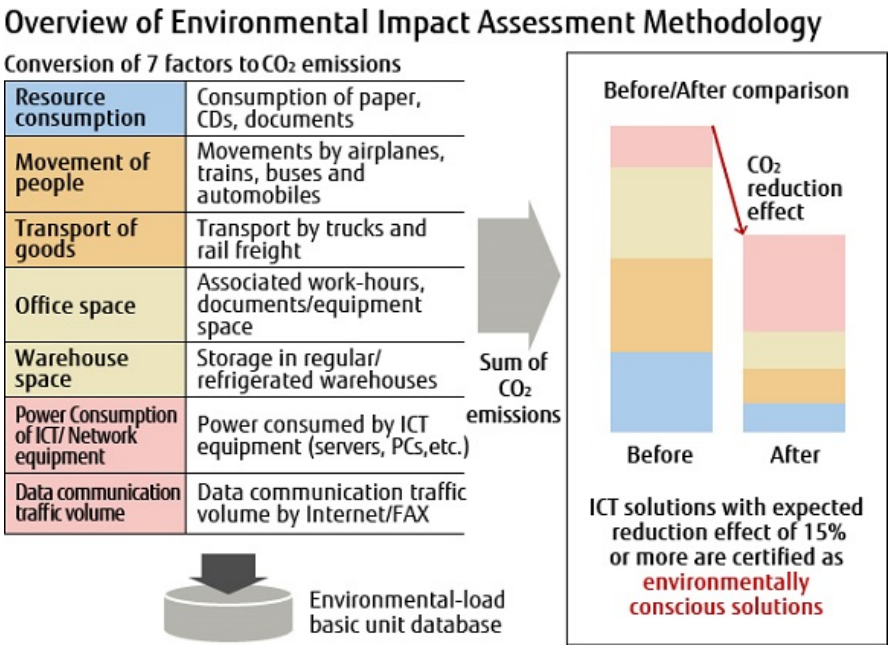
Reducing Greenhouse Gas (GHG) Emissions through ICT

Main Activities in FY 2018

Through the provision of ICT, the Fujitsu Group generates innovations that make energy usage and production activities more efficient and reduce the movement of people and things in a variety of fields in society, with the aim of helping to reduce GHG emissions. We believe that when large numbers of customers use ICT, it reduces GHG emissions for society as a whole while also leading to the sustainable growth of the Fujitsu Group. The Fujitsu Group is working to quantitatively visualize the degree to which its customers' ICT usage contributes to GHG reductions, and to increase this amount, and is working to increase this amount. We recognized 22 new cases of environmentally conscious solutions in FY 2018, bringing the cumulative total to 539 and helping to reduce total CO_2 emissions by 7.35 million tons.

Reference Information **Method to calculate contribution to GHG reduction**

Fujitsu quantitatively assesses the effects of the environmental footprint reduction effects of our ICT implementations in terms of CO_2 emission reductions, using an ICT solution environmental impact assessment method developed by Fujitsu Laboratories Ltd. (at least 500 cases have been assessed to date). Contribution to GHG reduction is calculated in terms of annual reduction amount, using the basic units in the case being assessed plus either the number of users of the solution, the number of clients, or annual sales.



- Environmental Impact Assessment Method for Solution Services
  https://www.fujitsu.com/global/about/environment/society/sustainability/contribution/certification/index.html

Environmental Action Plan (Stage VIII)

Developing Innovative Technologies for Solving Environmental Issues

Our Approach

As the central R&D organization in the Fujitsu Group, Fujitsu Laboratories considers environmental contribution to be a top priority and is pushing forward with R&D activities geared toward the creation of a sustainable society. These R&D activities cover a wide range of fields including advanced materials, next-generation elements, computers, networks, and ICT systems, leading toward the creation of next-generation solutions, services, and business models.
Based on these efforts to develop revolutionary technologies, Fujitsu Laboratories advocates the "development of technologies that help solve social and environmental problems," and is engaged in a variety of environmental initiatives. These include reducing CO_2 emissions by saving energy and making operation more efficient, conserving resources, handling of natural disasters, conserving biodiversity, measures to counteract global warming, and more.

FY 2018 Performance and Results

Targets under the Fujitsu Group Environmental Action Plan (Stage VIII)	Last fiscal year (FY 2018 results)
Developing Innovative Technologies that address Environmental Issues	Announced 84 key green technologies (*1) (Press announcements: 25, announcements at exhibitions & academic conferences: 59)

*1 Key green technologies: Technologies for reducing power and energy consumption, improving work-hour efficiency, conserving resources, and solving social problems

Doing More to Announce the Technologies We Develop

As part of our Environmental Action Plan Stage VIII, we aim to further improve our ability to get messages to the outside world about the key green technologies that we have developed. In FY 2018 we promoted the environmental value of ICT to the outside world at press announcements, academic conferences, and exhibitions.
In terms of the SDGs, the technologies that Fujitsu announced externally in FY 2018 contribute primarily to "Ensure healthy lives and promote well-being for all at all ages" (Goal 3), "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation" (Goal 9), "Make cities and human settlements inclusive, safe, resilient and sustainable" (Goal 11), "Take urgent action to combat climate change and its impact" (Goal 13), and "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss" (Goal 15).

Development Achievements in FY 2018 (announced in the press)

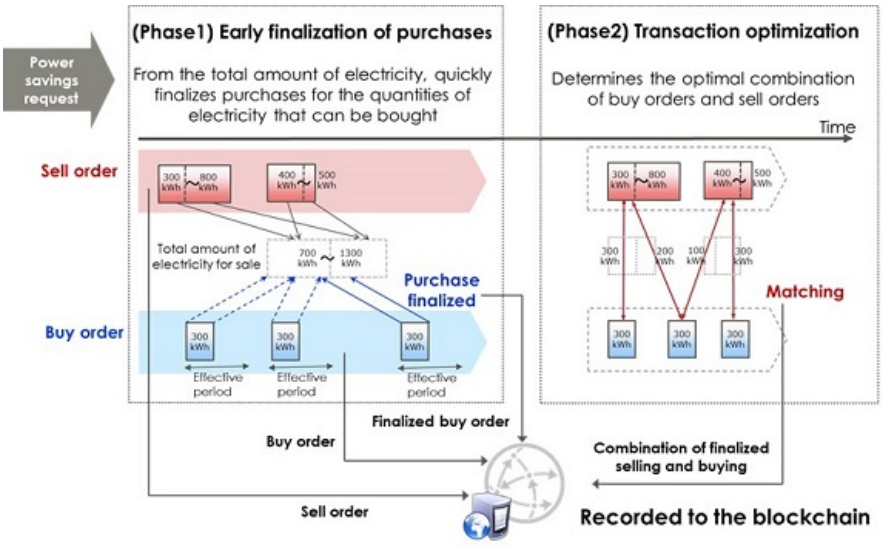
1. Fujitsu and Asahi Shuzo Launch Trial to Brew Sake Using Predictive AI
2. Fujitsu, SMU, and A*STAR Collaborate on Traffic Management Technologies with the Maritime and Port Authority of Singapore
3. Fujitsu Develops Molecular Simulation Technology to Effectively Create New Drug Candidates

4. Fujitsu Develops Design Technology Using AI for Magnetic Material Geometries
5. High-efficiency Router-style Substrate Dividing Machine PBS-SH14A Released for Sale (Shinko Electric Industries)
6. Fujitsu Develops Network Control Technology to Minimize Impact of Cyberattacks on IoT Devices
7. Fujitsu Kyushu Systems Exhibits at Interop Tokyo 2018
8. Fujitsu Puts Blockchain to Use for "Virtuora DX" Data Distribution and Utilization Service
9. University of Tokyo's RCAST, Fujitsu, and Kowa Successfully Create Promising New Compounds to Fight Drug-Resistant Cancer
10. Fujitsu-Developed "ABCI" System Takes 5th Place in TOP500, 8th in Green500 Supercomputer Rankings
11. Academic, Corporate Collaboration Succeeds at World's Most Efficient Solar Power-Generated Hydrogen Production
12. Fujitsu Successfully Triples the Output Power of Gallium-Nitride Transistors
13. Fujitsu Technology to Solve Combinatorial Optimization Problems for Medium-Sized Drug Discovery
14. Fujitsu Laboratories and Waseda University Agree to Comprehensively Collaborate on Digital Annealer Research
15. Fujitsu Develops Technology to Improv Reliability of Data Distribution across Industries
16. Fujitsu Develops Novel Technology to Massively Boost Optical Data Transfer Throughput Using Existing Equipment
17. Fujitsu Begins Field Trials on High-Satisfaction Customer Experience Based on Psychological Analysis, Provided on the e-Commerce Website of Himaraya
18. Fujitsu Signs IP License Agreements for Green Technologies with Kyushu University and University of the Ryukyus
19. Fujitsu Releases New Version of "COLMINA" Digital Solution for the Manufacturing Industry
20. The International Gymnastics Federation to Implement Fujitsu's Judging Support System
21. Fujitsu Develops World's First Single-Panel Antenna to Simultaneously Support Multiple 5G Communications
22. Fujitsu Releases Nocria X-Series AI Air Conditioner with Wi-Fi Adaptor
23. Fujitsu Launches Automated Antenna Design Tool for Low-Cost Design of IoT Devices
24. Fujitsu Develops Blockchain-based Exchange System for Electricity Consumers
25. Fujitsu Detects 13 Types of Potential Risks of Enterprise Blockchain System

Major Development Initiatives in FY 2018

Developing a System for Energy Trading Between Consumers on the Blockchain

We developed a system that allows consumers such as factories and stores to trade surplus energy amongst each other. Demand Response (DR), an initiative which adjusts electric power usage through cooperation between electric utilities and consumers, has been attracting attention in recent years. However, it has been hard to control, and has therefore suffered from a low success rate. Fujitsu addressed this problem by applying Blockchain technology to develop mechanisms that facilitate efficient coordination between consumers, which has resulted in a confirmed improvement of around 40% in the DR success rate.



Environmental Action Plan (Stage VIII)

Development of Top-Level Energy Efficient Products

Our Approach

As ICT grows more and more common, we expect there to be an increase in energy demand in proportion to the higher performance and higher-density integration of servers and other ICT products. Various countries and regions are also expanding their energy-related regulations for ICT products, and energy efficiency is taking on increasing social importance as a factor in energy label conformance and green procurement requirements.
Here at the Fujitsu Group, we believe that we should work to improve the energy performance of our products during their use, in order to reduce GHG emissions. As such, we will actively implement energy-saving technologies and continue working to further improve the energy efficiency of products. Through these efforts, we will work to develop products that consume less power during customer usage.

FY 2018 Performance and Results

Targets under the Fujitsu Group Environmental Action Plan (Stage VIII)	Last fiscal year (FY 2018 results)
Achieve top-level energy efficiency for 50% or more of new products.	Made 67.9% of new products top-level energy efficient.

Actively Applying Energy-Saving Technologies

We have set division-specific targets for the achievement of top-level energy efficiency based on the number of product series we expect to develop in FY 2016-18. Applications of energy-saving technologies include new, high-efficiency microprocessors and power supplies, energy-saving displays, optimized energy-saving controls, and the strengthening of power management features. In addition to these, we are actively pushing for the aggregation of LSIs, reductions in the numbers of components, and the implementation of eco-friendly devices.

Achieved Top-Level Energy Efficiency for 67.9% of New Products

As a result of applying and expanding energy-saving technologies in our servers, PCs, network devices, and imaging devices, we were able to achieve top-level energy efficiency for 67.9% of new products, against the 50% target value set in the Fujitsu Group Environmental Action Plan (Stage VIII).

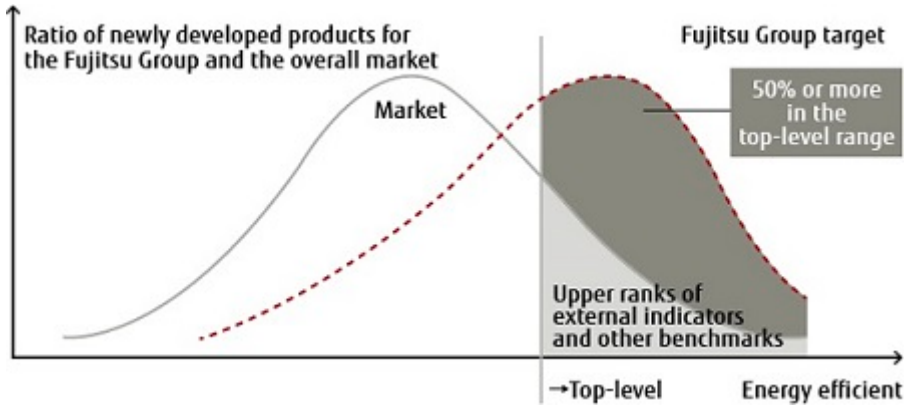
Working Toward Our Targets

In order to achieve the targets set in the Fujitsu Group Environmental Action Plan (Stage Ⅸ), we will continue to advance our efforts to develop products with top-level energy efficiency, starting with the top products in each division. We will also implement advanced energy-saving technologies and expand their application to our products, as part of our cross-Group policy to improve energy efficiency.
Looking toward the future, we aim to push the development of advanced eco-friendly devices, which will contribute to revolutionary improvements in energy efficiency and allow early product development.

Reference Information

Top-Level Energy Efficient Products

These are products, including our top products with regards to energy efficiency (first in the world or industry, best of the world or industry), that meet criteria equivalent to the upper ranks of external indicators and other benchmarks of energy efficiency.



Reference Information

Top-Level Energy Efficient Product Target Standards

Fujitsu sets targets that recognize top-level energy efficiency standards in each product area, compared with the overall market or with conventional products.
Main Target Standards *1

Standards	Product Categories
ENERGY STAR criteria compliant	PCs, displays, imaging equipment, etc.
Top-level Top Runner achievement rate under the Energy Conservation Law	Servers, storage systems, etc.
Industry-leading energy efficiency	LSIs, products for specified fields, etc.
Industry's highest-level battery life	Smartphones
Reduction in power consumption as compared to prior products/prior performance	Network products *2, electronic components, etc.

*1 Standard values differ even for products within the same category, depending on product specifications.
*2 "Top-level" status for products evaluated under the "Ecology Guideline for the ICT Industry" is shown by the number of stars (multi-stage evaluation).

Main Activities in FY 2018

Next-Generation ScanSnap Combines Energy and Resource Conservation

The ScanSnap iX1500 scans paper documents and stores them as electronic data. It is made to be as easy to use and easy to understand as possible, and aims to make people's lives more "smart" and convenient. The various advantages that come from converting physical data into digital data can help revolutionize work styles and lifestyles, act as a foundation for work-style reform, and even help reduce the environmental burden of such data.

By reevaluating the scanning control process and improving power efficiency, we have been able to speed up the data reading process for this product by 20% (30 pages per minute; high-speed scanning of 60 sides), and reduce power consumption by approximately 15% as compared to previous models, all while maintaining compatibility with Wi-Fi at both 2.4GHz and 5GHz *3 frequency bands. We also added a large 4.3-inch, easy-to-read touch panel onto the product, in order to make it even easier to use and understand, and updated the software (which comes with a learning function) to allow for one-touch controls for everything from the actual scanning to the use of the files scanned.

In light of recent advancements in Internet availability, we have also decided to eliminate the use of data drives to install applications, opting to ask customers to download manuals, etc., from the Internet, and thereby reducing in-box supplemental items to a minimum. We also use recycled plastic sourced from plastic bottles in the components for this product. Through these and other efforts, we have worked to reduce the environmental burden on the component end as well.

*3 Japan/North America/China Only

- ScanSnap
  https://scansnap.fujitsu.com/jp/

- Case Studies
  https://www.fujitsu.com/global/about/environment/society/energyefficiency/casestudy/index.html

Environmental Action Plan (Stage VIII)

Improving the Resource Efficiency and Resource Circulation of Products

Our Approach

In recent years, we have seen a rise in the risks that threaten the sustainability of companies and society in general, from environmental destruction due to resource shortages and excessive mining, to severe fluctuations in resource costs worldwide, and anxieties surrounding the supply of rare metals. Resource efficiency is thus taking on growing importance worldwide. Examples can be seen in the EU's designation of resource efficiency as a growth strategy and its establishment of the Resource Efficiency Flagship Initiative. We believe it is important for us to make efficient use of the resources in the ICT products that we provide to customers. We have engaged in a 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 amount of resources we use. We are also making efforts to improve resource efficiency and reduce our environmental burden 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 such products so that they provide even the customer with benefits, whether it be by making these products smaller, more lightweight, or designing them so they take up less space.

FY 2018 Performance and Results

Targets under the Fujitsu Group Environmental Action Plan (Stage VIII)	Last Fiscal Year (FY 2018 results)
Promote eco design for resource saving and circulation and increase resource efficiency of newly developed products by 15% or more (Compared to FY 2014).	Improved by 25%

Improving the Resource Efficiency of New Products

In FY 2012, the Fujitsu Group created its own definition of resource efficiency, as the Group had previously not had a system that could comprehensively and quantitatively evaluate improvements in resource efficiency, and due to the fact that there were as of yet no public indices that could measure resource efficiency.
In FY 2018, we continued to use our indicators to evaluate products newly developed by Fujitsu *1, and worked to reduce product part quantities and reduce product size through smaller, thinner, and lighter parts and higher-density mountings.

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

Achieved 25% Improvement in Resource Efficiency

By reducing the size and weight of our PCs, smartphones, mission critical x86 servers, POS tenant devices, and mobile phone radio base stations, and more, we were able to achieve an improvement in resource efficiency of 25%, against the 15% target value we set in the Fujitsu Group Environmental Action Plan (Stage VIII).

Working Toward Our Targets

To improve new product resource efficiency by at least 15%, Fujitsu will continue current initiatives, while expanding development of new lightweight, rigid materials and the use of recycled materials. We will also widely publicize the eco-friendliness of our products in order to expand sales.

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.

$$\text{Resource efficiency} = \frac{\text{Product value}}{\text{Environmental burden from resource usage} + \text{Environmental burden from resource disposal}}$$

Environmental burden from resource usage = Σ (Resource burden coefficient x Resource usage volume)

Environmental burden from resource disposal = Σ (Resource burden coefficient x 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".

Main Activities in FY 2018

The High-Performance SR-S352TR1/SR-S752TR1 Layer 2/Layer 3 Switch Combines Compact Size with Energy Conservation

The SR-S352TR1 and SR-S752TR1 is a 52-port (10G x 4 / 1G x 44 / SFP/SFP+x4) Layer 2/Layer 3 network switch that comes equipped with a 10G interface. The Layer 2 switch in particular qualifies as a Category A product under Japan's Energy Conservation Law.

The SR-S352TR1 and SR-S752TR1 are made with the latest ASIC switches, with their high performance and low power consumption, and as such require only one ASIC switch for features that previously required two ASIC switches. This, as well as the use of many components with low power consumption, allowed us to reduce power consumption during this product's use by 45% as compared to previous models).

SR-S752TR1

All of the Ethernet ports, other than the SFP/SFP+ ports, also come with a power-saving Ethernet technology called Energy Efficient Ethernet (EEE) *2 that reduces power consumption during standby (not sending or receiving data) by 42% (compared to previous products). The product also comes with a technology that can limit the speed with which the cooling fans spin in multiple stages, depending on the temperature of the surrounding environment, helping save even more energy.

Previous models had the redundant power supply attached to the outside of the product (2U*2, including the body of the product). By reevaluating the product substrate and the structure of the components, however, we were able to redesign the product with high-density mounting, and install a hot swappable redundant power supply on the 19-inch rack, 1 U *3 case. In doing so, we were able to make the product smaller as a whole. The new model is also only 12% heavier than previous models, even with the redundant power supply now located within the main body, and is a step forward with regard to making the product more lightweight. The product is also now completely free of lead, as we have opted for lead-free soldering to mount the electronic components onto the printed circuit board.
We also improved cooling efficiency within the case, and incorporated a front intake air panel/rear exhaust air flow system in order to allow more efficient cooling when installed within the same rack as the server. This allowed us to equip the cooling system on the rack without wasting space, thus allowing us to make the product smaller in general.

*2 Compatible with IEEE802.3az, the IEEE standard specification.
*3 1U = The size of one unit in EIA specifications (height of 44.45 mm)

- Case Studies
  https://www.fujitsu.com/global/about/environment/society/energyefficiency/casestudy/index.html

Environmental Action Plan (Stage VIII)

Product Recycling

Our Approach

The Fujitsu Group's product recycling programs are based on Extended Producer Responsibility (EPR) and Individual Producer Responsibility (IPR). EPR holds that producers bear responsibility for products, from design and manufacturing to disposal and recycling. IPR holds that producers bear responsibility for their own products. IPR in particular has been a major challenge for the Fujitsu Group as we expand our business globally. However, we believe that responding to this challenge, and that of EPR, in collaboration with industry associations and governments, will allow us to help create a recycling-minded society that meets the requirements and demands of all stakeholders.
The Fujitsu Group thus carries out recycling programs that comply with the laws and regulations of the various countries in which it operates.
In Japan, Fujitsu is certified under the Industrial Waste National Permit System, which is based on the Act on the Promotion of Effective Utilization of Resources, and as such, accepts industrial waste and puts them through appropriate processing at Fujitsu recycling centers across Japan. We also try to do as much collection, reuse, and recycling as we can, even in countries where recycling is not obligatory.

FY 2018 Performance and Results

Targets under the Fujitsu Group Environmental Action Plan (Stage VIII)	Last fiscal year (FY 2018 results)
Maintain over 90% resource reuse rate for business ICT equipment at Fujitsu recycling centers.	Achieved a 91.7% resource reuse rate.

Promoting Recycling of ICT Products

The Fujitsu Group has built a recycling system that covers the entire country of Japan. We have worked steadily to implement Extended Producer Responsibility, providing safe and secure services with high resource reuse rates in order to promote the recycling of ICT products. We have, at the same time, also ensured thorough traceability and security of these processes.

Achieved a 90% or Higher Reuse Rate

We processed 3,436 tons of recycled ICT products (used ICT products for business applications) from corporate customers in Japan, and achieved a resource reuse rate of 91.7%. We have now also collected a total of 53,481 end-of-life PCs from individual customers.

Changes in Resource Reuse Rates of End-of-Life Business ICT Products (Japan)

FY	2015	2016	2017	2018
Resource reuse rate*1 (%)	92.0	92.0	91.5	91.7
Amount processed (tons)	5,203	4,185	3,844	3,436

*1 Weight percent ratio of recycled parts and materials to end-of-life products.

Changes in Numbers of End-of-Life PCs Collected from Individual Customers (Japan)

FY	2015	2016	2017	2018
End-of-life PCs collected (units)	69,801	61,435	59,144	53,481

- Case Studies
  https://www.fujitsu.com/global/about/environment/society/recycle/casestudy/index.html

Environmental Action Plan (Stage VIII)

Reducing Greenhouse Gas (GHG) Emissions and Boosting Energy Intensity at Our Business Sites

Our Approach

The Fujitsu Group considers the prevention of global warming an important issue. We have, therefore, formulated our medium- to long-term environmental vision, the FUJITSU Climate and Energy Vision, and aim to eliminate all CO_2 emissions from our business activities by 2050.
Among GHGs, our business sites (plants, offices and datacenters) primarily emit CO_2 when energy (electricity, fuel oil, gas) is used, and perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulfur hexafluoride (SF_6) and nitrogen trifluoride (NF_3) during the semiconductor manufacturing processes. We are striving to decrease and control the volume of emission of these gases by complying with relevant laws and setting reduction targets.

Reducing CO_2 Emitted During Energy Consumption

About 90% of the Fujitsu Group's total GHG emissions arise from CO_2 emissions due to energy consumption. Therefore, we continuously promote the following energy-saving measures to reduce CO_2 emissions.

- Appropriate operation of equipment, improvement in management, and energy-saving measures focused on motive-power facilities (introduction of free cooling, inverters and energy saving equipment, fuel conversion, etc.)
- Increasing efficiency by reviewing the manufacturing process (innovations in production, development of green production technology)
- Maintaining appropriate room temperature for office air conditioning, saving electricity used in lighting and office automation equipment
- Measuring energy consumption for visualization and promoting use of the data so collected

Reducing Emission of GHGs Other Than CO_2

As for GHGs other than CO_2, the Fujitsu Group mainly uses perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulfur hexafluoride (SF_6) and nitrogen trifluoride (NF_3) at the semiconductor divisions. We are taking continuous steps to switch to gases with lower global warming potential (GWP) and install equipment to remove harmful gases in our new and existing production lines.

FY 2018 Performance and Results

Targets under the Fujitsu Group Environmental Action Plan (Stage VIII)	Last fiscal year (FY 2018 results)
Reduce GHG emissions by 5% or more(compared to FY 2013)	Reduced by 30.3%
Improve energy intensity by an annual average of 1% or more	Improvement of 1.1%

Promoting Reduction in CO_2 Emitted During Energy Consumption

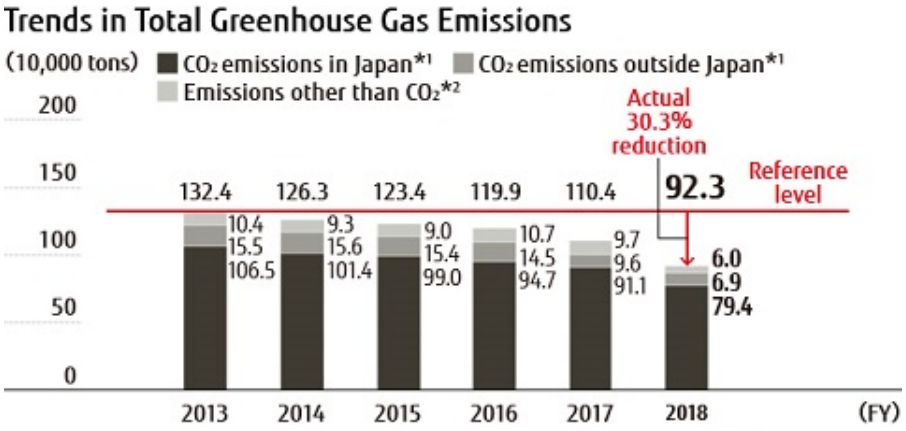
We continue to invest in energy-saving equipment (introduction and upgrade of BAT*1 equipment, mainly for air conditioning and lighting) and ensure their appropriate operation at the facilities at all business sites. We are also streamlining our production processes, saving electricity used for air conditioning, lighting and automation in offices, making energy consumption visible, and leveraging measurement data.

For instance, we improved facility operations (2,300 tons) at the Tatebayashi System Center by controlling the number of air conditioners, reviewing their operation, suspending operation of devices and taking other measures. We also reviewed the appropriateness of the position of production devices (980 tons) at Fujitsu Interconnect Technologies Limited.

As a result of these efforts, the total emission of GHGs in FY 2018 was about 923,000 tons (specific consumption/sales revenue: 218,000 tons/100 million yen), which is 30.3% less in comparison to FY 2013. Although part of this decrease is attributable to transfer of business and other factors, we also reduced another 25,000 tons or so through measures implemented.

The energy intensity improved to an annual average improvement of 1.1% from FY 2016 to FY 2018.

*1 BAT (Best Available Technologies): Usable state-of-the-art technologies to reduce GHGs



***1 CO_2 emissions in Japan and abroad:** The CO_2 conversion factor for purchased electric power has been calculated with a fixed value of 0.570 tons-CO_2/MWh from FY 2013 to FY 2015, 0.534 tons-CO_2/MWh for FY 2016, 0.518 tons-CO_2/MWh for FY 2017 and 0.497 tons-CO_2/MWh for FY 2018 for performance reports in our Environmental Action Plan.

***2 Emissions other than CO_2:** These are converted to equivalent amounts of CO_2 using the global warming potential (GWP) of each gas.

- Case Studies
  https://www.fujitsu.com/global/about/environment/operation/activities/casestudy/index.html

Environmental Action Plan (Stage VIII)

Improve Power Usage Effectiveness (PUE) at Our Data Centers

Our Approach

Energy consumption at data centers is increasing due to the spread and growth of cloud computing, and society is paying greater attention to the environmental performance of data centers.
Data centers account for 25% of the CO_2 emissions (FY 2018) for each business in the Fujitsu Group, and the annual rate of increase for CO_2 emissions at our 34 main data centers in Japan and around the world has been around 2.0% over the five years from FY 2013 until FY 2018. Since data center CO_2 emissions are expected to continue increasing along with the growth of cloud business, it is the social responsibility of the Fujitsu Group to work toward having environmentally-friendly data centers. At the same time, it has also become an important topic to look at from a long-term perspective in terms of enhancing our business infrastructure.
The Fujitsu Group has designated roughly 80% of all Group data centers (relative to the area of server rooms) for this activity*1, and is working to achieve better environmental performance.

*1 Data centers for the activity
Globally, data centers with area of 1,000m2 or more, or data centers for which business divisions have requested for inclusion.

FY 2018 Performance and Results

Targets under the Fujitsu Group Environmental Action Plan (Stage VIII)	Last Fiscal Year (FY 2018 results)
Improve PUE*2 at data centers by 8% or more.(compared to FY 2013)	PUE 1.59 - Improvement of 6.7%

*2 PUE (Power Usage Effectiveness):
An index for power usage effectiveness at data centers. Expresses overall power consumption at data centers as a value divided by the power consumption of servers and other ICT devices. The closer the number is to 1.0, the greater the efficiency.

Actions to Achieve the Goal

Activities to improve PUE are under way at data centers in Japan and around the world, based on the Fujitsu Environmental Action Plan. With effects from the global heat wave in FY 2018 also a factor, we were unable to reach the target improvement rate with the scope and speed of improvements thus far, but improvements have consistently been at least 1% each year. Working mainly on improving the efficiency of air conditioning, energy use has been made more efficient and power usage by facilities and ICT has been continuously reduced thanks to fine-tuning type operational improvements such as longer hours using outdoor air and maximum use of free cooling, plus the implementation of revolutionary AI technologies.
We are also working to expand our use of renewable energies to make progress toward the “carbon-free society” sought under the Paris Agreement.*3

*3 Paris Agreement:
A new framework to counteract global warming by reducing greenhouse gases through international cooperation, with participation by over 190 developed and developing countries. The agreement entered into effect in November 2016.

PUE values and calculation methods

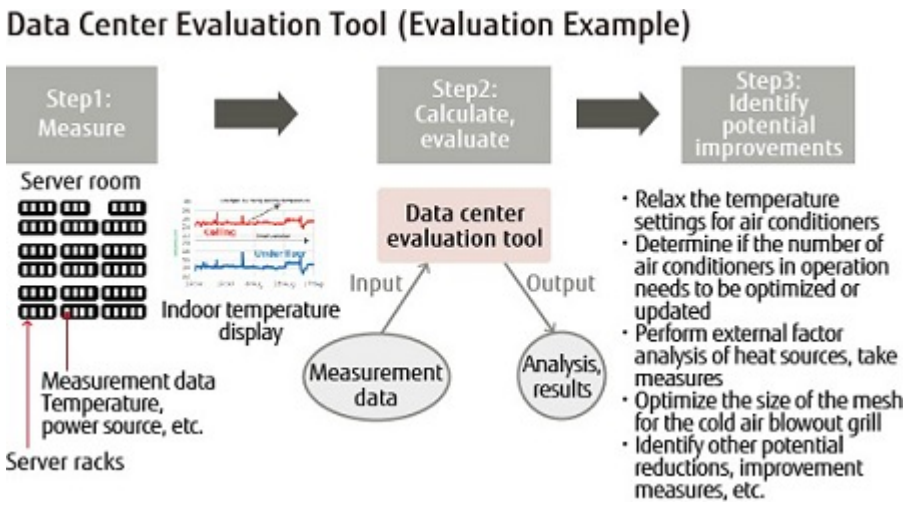
PUE Value	PUE calculation method, other
Range: 1.31 to 3.04 No. of data centers: 34	• Apply The Green Grid • Work to implement improvements using DCMM

Examples of Initiatives in FY 2018

Driving Improvements by Enhancing Information Linkage with Overseas Data Centers

We developed the *4 Data Center Evaluation Tool which analyzes whether the cooling energy for ICT devices at data centers is being managed efficiently.
This initiative had been conducted before at data centers in Japan, but in FY 2018 it was rolled out to main data centers overseas, and optimization proposals were made. Additionally, information is being shared on company intranet websites and face-to-face meetings are also being held in order to connect and bolster improvement activities with overseas locations.
To facilitate smoother improvements, we are planning to compile evaluation methods and expertise gained at each site into guidelines which we plan to share with the Fujitsu Group.

*4 Data Center Evaluation Tool:
A tool that uses analysis based on heat and airflow balance from the structural and equipment specifications of data centers to calculate potential energy reduction amounts, as well as optimization proposals for PUE improvements and the related effects



Expanding Use of Renewable Energy

We are also currently working to shift in stages toward the use of renewable energies to supply the power used in our data centers, based on our in-house environmental vision for the creation of a carbon-free society which we published in May 2017. Implementations are particularly progressing in overseas locations where green power procurement is possible. Renewable energy now accounts for 19% of all the power used at our 34 main data centers in Japan and around the world.
Most of those are overseas data centers, and we plan to continue to actively increase usage of renewable energies at overseas data centers.

- Case Studies
  https://www.fujitsu.com/global/about/environment/operation/pue/casestudy/index.html

Environmental Action Plan (Stage VIII)

Expand the Use of Renewable Energy

Our Approach

The popularization and widespread use of renewable energy is becoming increasingly necessary as a way of addressing global warming, securing stable energy supplies through the diversification of our energy sources, and as an energy-based foundation for economic growth.
The Fujitsu Group has established an environmental vision aimed at realizing a decarbonized society. The main pillars for this vision are a dedication to energy conservation, and the active implementation of renewable energy. To achieve this vision, we have set new quantitative targets in the Environmental Action Plan, and are actively promoting the installation of solar power generation equipment at our business sites, as well as the use, purchase, and expansion of green power (electric power generated with 100% renewable energy) at overseas business sites, where costs are relatively reasonable.

FY 2018 Performance and Results

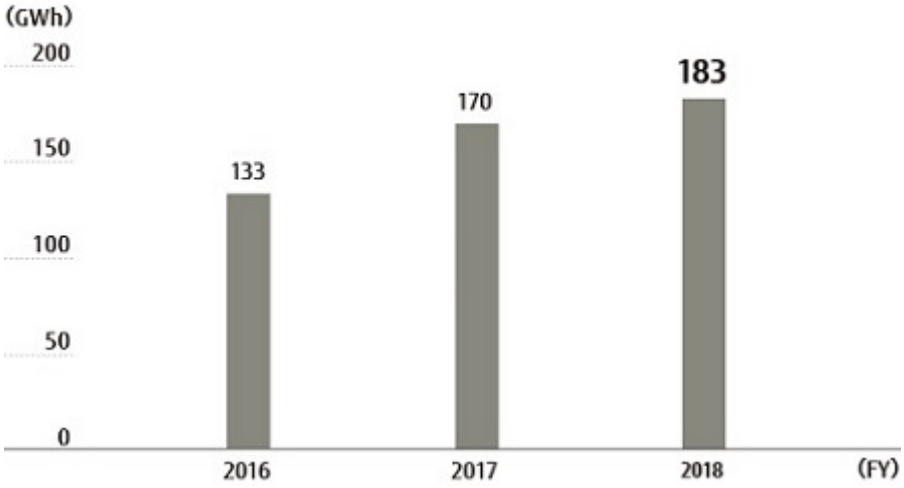
Targets under the Fujitsu Group Environmental Action Plan (Stage VIII)	Last fiscal year (FY 2018 results)
Expand the renewable energy usage rate to 6% or higher.	8.6%

Usage Rate Target Increased to 8.6%

The amount of renewable energy we used in FY 2018 was approximately 183 GWh, due to our purchase of green energy, solar power generation through solar panels, etc. This made up 8.6% of our entire energy consumption, and meant we achieved the target value set in the Fujitsu Group Environmental Action Plan (Stage VIII).
We will continue to work toward the implementation of renewable energy in both our domestic and overseas business offices, in order to further our purchase and usage of renewable energy.

Fujitsu Finland Ltd. Green Power Certificate

Change in Amount of Renewable Energy Used by the Fujitsu Group



- Case Studies
  https://www.fujitsu.com/global/about/environment/operation/renewable-energy/casestudy/index.html

Environmental Action Plan (Stage VIII)

Drive Activities to Reduce CO_2 Emissions in the Supply Chain

Our Approach

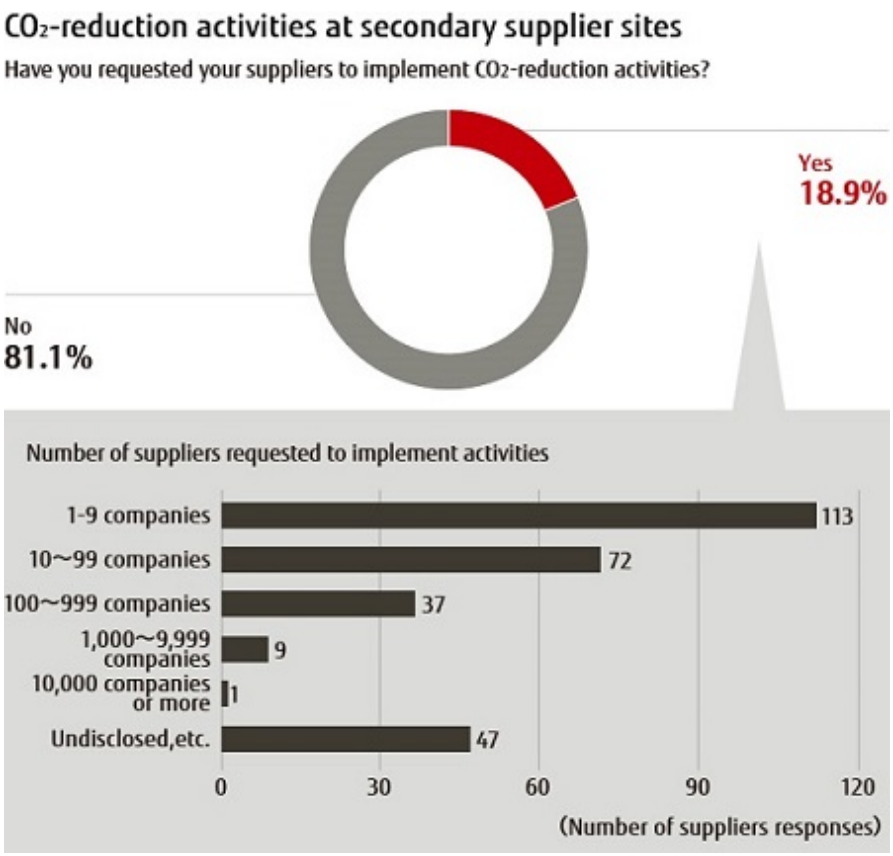
In addition to reducing our own emissions, as a green procurement initiative the Fujitsu Group has also been requesting its suppliers to act toward reducing their own CO_2 emissions in order to help contain global warming. As a result, all of our main suppliers have undertaken efforts to reduce their CO_2 emissions. Starting in FY 2016, we have also been expanding these efforts further upstream in the supply chain by including efforts by the suppliers of those companies (secondary suppliers from the perspective of the Fujitsu Group) in our requests.
We expect that having the supply chain as a whole work toward reducing emissions can produce even greater reduction effects (synergies), while also expanding the network of these activities through the supply chain to cover an even wider area spreading beyond national boundaries. Through efforts such as these, the Fujitsu Group hopes to help create a carbon-free future society.

FY 2018 Performance and Results

Targets under the Fujitsu Group Environmental Action Plan (Stage VIII)	Last fiscal year (FY 2018 results)
Drive Activities to Reduce CO_2 Emissions in the Supply Chain	Requested emission reductions action by secondary suppliers (46,000 companies or more) via main suppliers of the Fujitsu Group (approximately 1,500 companies)

Requesting and Supporting the Expansion of Activities to Secondary Suppliers

The Fujitsu Group communicated requests to its main suppliers who account for at least 98% of the Group's procurement volume to engage in activities to reduce their CO_2 emissions, and to expand these efforts to also include their own suppliers (the Fujitsu Group's secondary suppliers). We also conducted our own environmental survey to ascertain the activity status of these suppliers. As a reference for their future activities, we then provided suppliers who responded to the survey with feedback in the form of a report that analyzed survey responses to show trends in emissions reduction activities, while also requesting further activities and expansion to the activities of their own suppliers.
As of the end of FY 2018 only 18.9% of suppliers responded that they had requested their own suppliers to engage in emissions reduction activities, but this still amounted to a total of at least 46,000 secondary suppliers receiving such requests

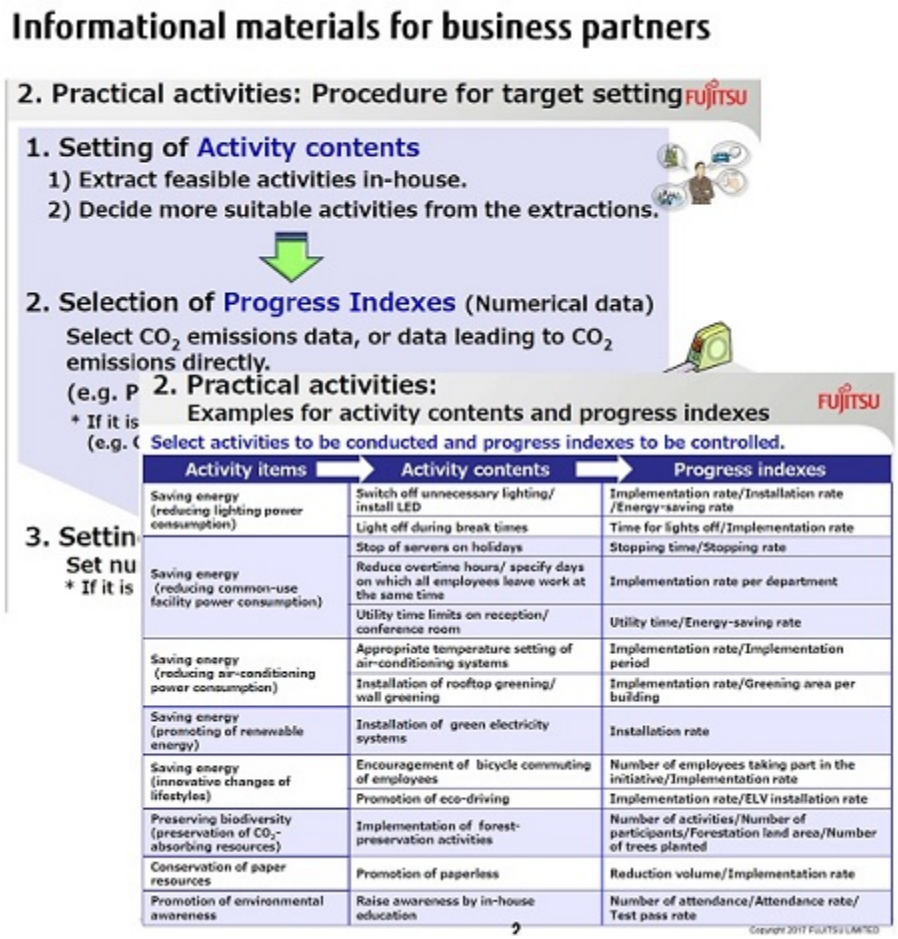


Providing guideline for activities for reducing CO_2 emissions

In order to facilitate the spread of CO_2 emissions reduction activities throughout the entirety of our supply chain, the Fujitsu Group produced an original set of explanatory materials and began providing these to suppliers. The purpose of these materials was not only to give suppliers a greater understanding of the importance of these activities taking place in the supply chain, but also to serve as something they could use to request and assist such activities amongst their own suppliers. The materials have had a strong response, including over 1,200 accesses since they were posted on our website at the end of November 2017. To fulfill our responsibilities as a global enterprise, the Fujitsu Group will continue to think about what must be done to contain global warming and will continue to take action.

"Guideline for activities for reducing CO_2 emissions" can be downloaded from the following sites.

- Japan
  https://www.fujitsu.com/jp/about/procurement/material/green/
- Global
  https://www.fujitsu.com/global/about/procurement/green/



Informational materials for business partners

2. Practical activities: Procedure for target setting

1. Setting of Activity contents
1) Extract feasible activities in-house.
2) Decide more suitable activities from the extractions.

2. Selection of Progress Indexes (Numerical data)
Select CO_2 emissions data, or data leading to CO_2 emissions directly.

2. Practical activities:
Examples for activity contents and progress indexes

Select activities to be conducted and progress indexes to be controlled.

Activity items	Activity contents	Progress indexes
Saving energy (reducing lighting power consumption)	Switch off unnecessary lighting/ install LED	Implementation rate/Installation rate /Energy-saving rate
	Light off during break times	Time for lights off/Implementation rate
Saving energy (reducing common-use facility power consumption)	Stop of servers on holidays	Stopping time/Stopping rate
	Reduce overtime hours/ specify days on which all employees leave work at the same time	Implementation rate per department
	Utility time limits on reception/ conference room	Utility time/Energy-saving rate
Saving energy (reducing air-conditioning power consumption)	Appropriate temperature setting of air-conditioning systems	Implementation rate/Implementation period
	Installation of rooftop greening/ wall greening	Implementation rate/Greening area per building
Saving energy (promoting of renewable energy)	Installation of green electricity systems	Installation rate
Saving energy (innovative changes of lifestyles)	Encouragement of bicycle commuting of employees	Number of employees taking part in the initiative/Implementation rate
	Promotion of eco-driving	Implementation rate/ELV installation rate
Preserving biodiversity (preservation of CO_2-absorbing resources)	Implementation of forest-preservation activities	Number of activities/Number of participants/Forestation land area/Number of trees planted
Conservation of paper resources	Promotion of paperless	Reduction volume/Implementation rate
Promotion of environmental awareness	Raise awareness by in-house education	Number of attendance/Attendance rate/ Test pass rate

Examples of initiatives in FY 2018

Starting activities to reduce CO_2 emissions together with Suppliers

Without stopping at providing customers with the "Guidance on activities for reducing CO_2 emissions," the Fujitsu Group also began sending its employees with extensive practical experience in CO_2 reduction activities to visit factories of Suppliers and engage in problem-solving efforts together with them. Utilizing the "diagnostic for CO_2 reduction potential"*1 which incorporates Fujitsu's expertise, they are engaging in activities to help Suppliers reduce their CO_2 emissions. These efforts are reducing the CO_2 emissions from materials procurement in the Fujitsu Group, while also helping reduce environmental impact throughout the supply chain as a whole.

Supplier collaboration example

Collaborative efforts began on reducing CO_2 in the production process for products at one of the Fujitsu Group's main Suppliers, Atago Manufacturing Co., Ltd. Based in the city of Midori in Japan's Gunma Prefecture, Atago Manufacturing produces air blowers, heat exchangers, and other equipment.

In order to get an understanding of the circumstances at Atago Manucacturing's production plant, their people in charge worked with experts from Fujitsu to conduct a diagnostic for CO_2 reduction potential. The results of the diagnostic revealed that the production facilities had high potential for CO_2 reduction. Efforts are currently under way to decide on reduction measures through mutual consultations, and subsequently achieve them.

Supplier testimonial (Noboru Otomo, Managing Director, Atago Manufacturing)

Since our company has trouble visualizing the cost-effectiveness of our environmental initiatives, we understood them from a social perspective but had been slow to act and hardly accomplished any real progress. Speaking with Fujitsu, we were able to get a logical understanding, with the effects also clearly expressed numerically. As a result, we decided to go ahead and work together with them. If we can also reduce manufacturing costs even a little by focusing in on our high energy cost electrical furnaces, we will be killing two birds with one stone.

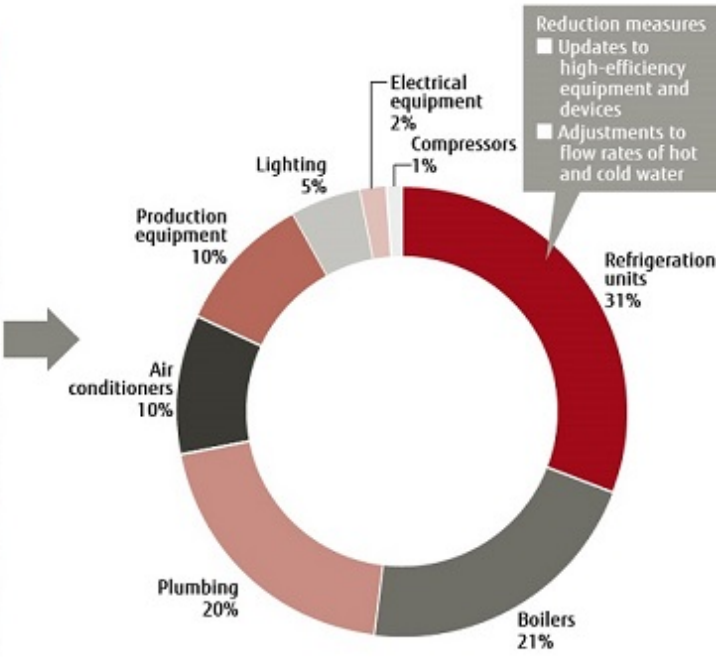
*1 Diagnostic for CO_2 reduction potential

This is a diagnostic method using the Energy Conservation Measure Implementation Status Diagnostic Sheet which reflects the Fujitsu Group's in-house practical expertise, based on the CO_2 Reduction Potential Diagnostic Guidelines (Ministry of the Environment). In four stages it determines the implementation status for 128 items pertaining to eight types of equipment that emit large amounts of CO_2 at production plants (boilers, refrigeration units, air conditioners, production equipment, compressors, electrical equipment, lighting, and plumbing). The results can be used to calculate reduction potential and at the same time point the way toward reduction measures that can be effective.

Decision Process for CO_2 Reduction Measures

Equipment	Measure
Boiler	Adjust the routes of the heating pipes
	Implement efficient operation management
	…
Air conditioner	Install heat exchangers
	Shut off air conditioning in empty rooms and when away
	…
Refrigeration unit	Update to high efficiency equipment and devices
	Adjust the flow rates of hot and cold water
	…
Production equipment	Save energy from air conditioning by fitting heating devices with insulating jackets
	Reduce air leaks
	…
Compressor	Implement systems to control number of compressors, etc.
	Manage the discharge pressure of compressors
	…
Electrical equipment	Implement demand control
	Reduce contracted power
	…
Lighting	Install LED lighting
	Install control devices for lighting
	…
Plumbing	Shift to inverters, such as plumbing pumps
	Adjust temperature of hot water being supplied, and amount of circulating water
	…

Examples of Questions on the Energy Conservation Measure Implementation Status Diagnostic Sheet



Reduction Potential Diagnostic Results (illustration)

Environmental Action Plan (Stage VIII)

Reduce CO_2 Emissions from Transportation

Our Approach

With Group companies and business sites worldwide, and materials/parts sourced from a significant number of business partners, reducing CO_2 emissions accompanying logistics and transportation activities is a priority for the Fujitsu Group.
The Fujitsu Group has worked toward its targets for reducing CO_2 emissions from domestic transport. Since the establishment of our Environmental Action Plan (Stage VII), we have expanded the scope of reductions to transport within regions overseas, as well as international transport. Stage VIII also drives more streamlined, efficient global logistics. The Group is working toward lowering the environmental impact of our logistics throughout the supply chain, for instance by distributing copies of the Fujitsu Group Green Logistics Procurement Directions to our business partners , to strengthen our partnerships and work toward our efforts together . Lastly, as an initiative in our overall distribution process, the Group is working toward the 3Rs (Reduce, Reuse, Recycle) in packaging products and materials/parts.

- Fujitsu Group Green Logistics Procurement Direction Edition1.0 [In Japanese]
  https://www.fujitsu.com/downloads/JP/archive/imgjp/jeco/products/logistics_guide.pdf

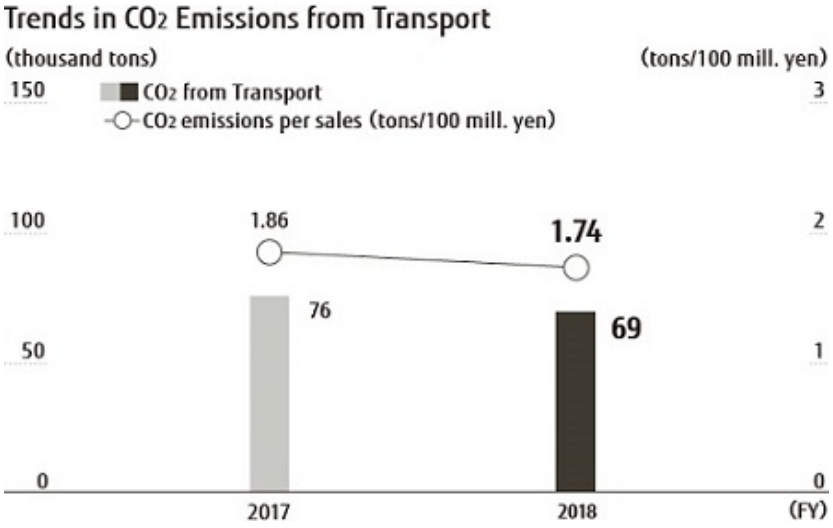
FY 2018 Performance and Results

Targets under the Fujitsu Group Environmental Action Plan(Stage VIII)	Last fiscal year (FY 2018 results)
Reduce by over 2% on average every year CO_2 emissions per sales*1 from transport (compared to previous fiscal year).	6.2%

*1 Net sales: Excludes the impact of exchange rates

Reduced by 6.2% Compared to Previous FY; FY 2018 Results Met Targets

The amount of CO_2 emissions produced from transportation in FY 2018 was 69,000 tons. Of that amount, 22,000 tons of CO_2 were emitted during transport in Japan, while 47,000 tons were emitted during transport overseas and transport in foreign regions. The amount of CO_2 emissions per sales was reduced by 6.2% compared to FY 2017, which means that the Group succeeded in meeting its targets for FY 2018.



Initiatives in FY 2018

Promoting Modal Shifts

Fujitsu Technology Solutions GmBH in Germany has been working to streamline their logistics, and are actively promoting a modal shift from air shipment to ocean shipments for international transport. Group companies in Japan have also switched from trucks to railways for transport between plants, and have succeeded in reducing their transport-related CO_2 emissions.

Reducing Transport Distances

Fujitsu managed to cut down the transport distance for the export of laptop computers*2 to overseas Group companies, by switching the airport for export from Narita International Airport to Kansai International Airport. In doing so, Fujitsu managed to reduce their transport-related CO_2 emissions. They also switched from route-based delivery to direct delivery for the delivery of products to major clients, and in doing so cut down on the transport distance for their products.

*2 Manufactured in Shimane Prefecture (Shimane Fujitsu Limited)

Reducing the Amount of Transportation CO_2 Emissions through Various Measures for Increasing Efficiency

Under the "Green Logistics Case Studies handbook of Transportation CO_2 Reductions" created in FY 2016, Group companies in Japan and overseas actively engaged in efforts to reduce the amount of CO_2 emissions produced through transport. This included revising transportation plans, formulating measures for increased loading rate, and revising packaging materials.

- Case Studies
  https://www.fujitsu.com/global/about/environment/operation/logistics/casestudy/index.html

Environmental Action Plan (Stage VIII)

Reducing the Amount of Water Used

Our Approach

The risk of a global water shortage is on the rise, due to such factors as climate change, the destruction of forests, and the economic growth and population boom in emerging and developing countries. Such a water shortage is a risk for companies as well, since it may very well affect the survival of their businesses. As such, it is important for us to recycle and reduce the amount of water we use.

Since the Fujitsu Group uses particularly large amounts of water in the manufacture of semiconductors and printed circuit boards, we believe it is necessary to reduce our water consumption in these areas especially. In addition to our general water conservation efforts, we have also worked to reuse and recirculate water, through methods such as pure water recycling and the reuse of rainwater. Under the Environmental Action Plan (Stage VIII), we have strengthened our efforts to use water resources even more effectively than in the past.

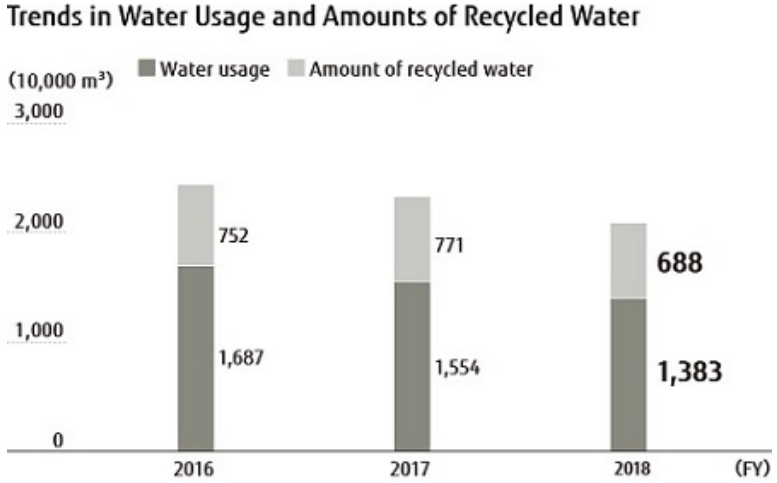
FY 2018 Performance and Results

Targets under the Fujitsu Group Environmental Action Plan (Stage VIII)	Last fiscal year (FY 2018 results)
Reduce water consumption by 1% in total (compared to FY 2013 128,000 m^3).	Cumulative Water Usage: 2.6% reduction (326,800 m^3 reduction compared to FY 2013)

326,800 m^3 Cumulative Reduction in Water Usage from FY 2013

The policies we established in FY 2018 to reduce water usage include reducing the amount of water used in coating and cleaning processes and optimizing the water supply for our scrubbers. These policies and various others were implemented at each business site, plant, etc., so that we could make more efficient use of our water resources. As a result, we were able to reduce our total water usage by 326,800 m^3 (FY 2016: 139,300 m^3 / FY 2017: 108,200 m^3 / FY 2018: 79,300 m^3), which is significantly more than the target value of 128,000 m^3 that was set in the Fujitsu Group Environmental Action Plan (Stage VIII).

The amount of water we used in FY 2018 was 13.83 million m^3 (output level per sales amount: 349.9 m^3/million yen), an 11.0% reduction as compared to FY 2017. Recycled water also comprised 49.8% of our total water usage—a 0.2% increase from FY 2017.



- Case Studies
  https://www.fujitsu.com/global/about/environment/operation/water/casestudy/index.html

Environmental Action Plan (Stage VIII)

Reducing Chemical Substances Emissions

Our Approach

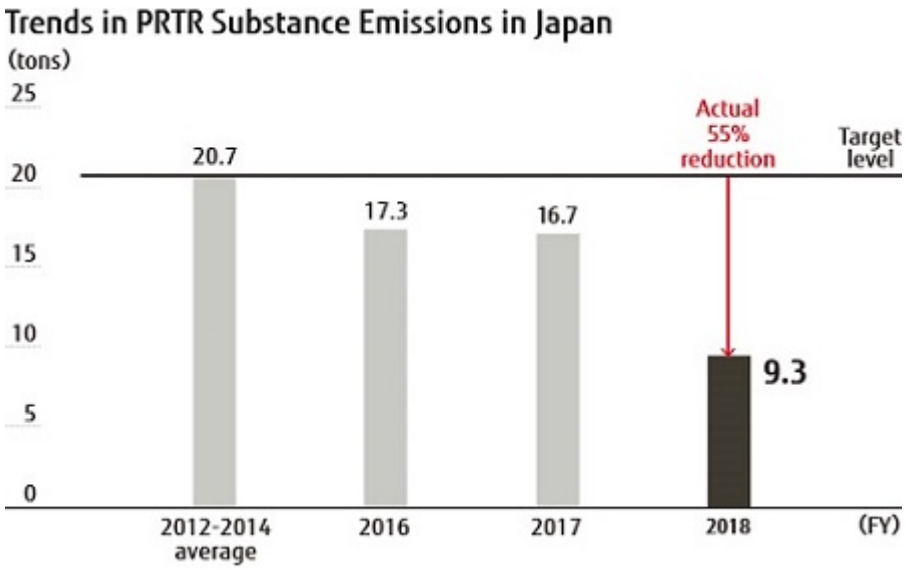
Here at the Fujitsu Group, we manage approximately 1,300 types of chemical substances, in order to prevent the risks associated with the use of toxic chemical substances (health issues, pollution of the natural environment, etc.).
We operate a chemical information system called "FACE," which we use to register and monitor chemicals at every site, manage Safety Data Sheet (SDS), control income and expenditures using purchasing data and inventory data, and boost our level of management and efficiency with respect to chemical usage.

FY 2018 Performance and Results

Targets under the Fujitsu Group Environmental Action Plan (Stage VIII)	Last fiscal year (FY 2018 results)
Reduce chemical pollutant (PRTR) release to less than the average level of FY 2012-2014 (20.7 tons).	PRTR: 9.3 tons

Achieved Current PRTR Substance Emission Target

In FY 2018, we were able to limit our Group-wide chemical substance emissions to 9.3 tons of PRTR, which is under the target value set in the Environmental Action Plan (Stage VIII).



- Case Studies
  https://www.fujitsu.com/global/about/environment/operation/chemical/casestudy/index.html

Environmental Action Plan (Stage VIII)

Limiting the Amount of Waste Generated

Our Approach

The Fujitsu Group considers wastes as valuable resources and has continued to work toward recovering resources from its waste or using the waste as a source of energy. In Japan, our volume of final waste disposal has been decreasing every year. However, the environment surrounding waste disposal remains challenging as building new disposal sites is difficult and the existing ones have limited lifespans.
We are actively working to install new equipment and reuse waste with the objective to reduce the amounts of waste acid, waste alkali and sludge generated in the production of semiconductors and printed circuit boards. These efforts are in line with Japan's Fundamental Law for Establishing a Sound Material-Cycle Society to (1) reduce waste generated, (2) reuse it, (3) recycle it and (4) recover heat from it.
We have also established the company-wide Standards for Consignment of Waste Disposal to properly dispose waste, based on the Waste Management and Public Cleansing Law.

On-site Audits for Outsourcing Contractors

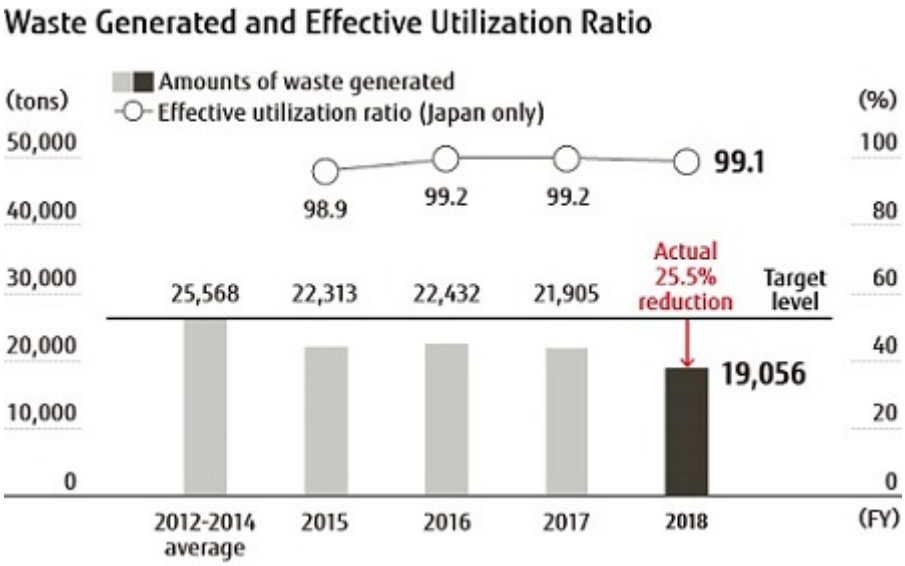
We conclude contracts with waste processing companies. These contracts are common for the whole Fujitsu Group. We conduct on-site audits of the waste processing companies with which we have contracts to periodically confirm that waste is being appropriately processed. If multiple business sites have contracts with the same processing company, then a representative business site conducts on-site audits based on the representative auditing regulations. In other cases, each business site individually conducts audits to confirm that waste processing is appropriate.

FY 2018 Performance and Results

Targets of the Fujitsu Group Environmental Action Plan (Stage VIII)	Last Fiscal Year (FY 2018 results)
Reduce the amount of waste generated to less than the average level of FY 2012-2014 (25,568 tons)	19,056 tons

Promoting Measures to Reduce Waste Generation and Plastic Waste

At our Nagano Plant, we had been subcontracting the processing of organic renewal effluents as industrial waste to a waste processing company. However, we can now process this waste in-house and have reduced effluents by 206 ton/year.
Such efforts have enabled us to achieve our target by reducing the amount of waste generated to 19,056 tons (generation rate/sales revenue: 0.48 tons/100 million yen).
From 2018, China has prohibited the import of waste plastic. This is gradually turning waste plastic, which was being sold as a valuable product until now, into industrial waste. To deal with this issue, we are striving to reduce plastic waste by taking various measures, such as collaborating with external reuse companies to partially reuse parts trays used at the time of delivery of procured parts.



Waste Generated, Effective Use, and Final Disposal (tons)

Waste Type	Waste Generated	Effective Utilization	Final Disposal
Sludge	4,015	3,963	52
Waste oil	1,023	987	35
Waste acid	3,211	3,211	0
Waste alkali	3,848	3,597	251
Waste plastic	3,055	3,005	50
Waste wood	789	777	12
Waste metal	477	477	0
Glass/ceramic waste	386	383	3
Other (*1)	2,252	1,952	299
Total	19,056	18,353	703

*1 Other includes general waste, wastepaper, septic tank sludge, cinders, rubble, textile waste, animal and plant residue, and infectious waste

- Case Studies
  https://www.fujitsu.com/global/about/environment/operation/waste/casestudy/index.html

Environmental Data

Environmental Accounting and Environmental Liabilities

To promote environmental management, the Fujitsu Group introduced environmental accounting in FY 1998. We evaluate the efficiency of our environmental protection activities by monitoring required costs and benefits of these activities. Through this process, we have clarified issues and promoted sharing of the results.

Basic Environmental Accounting Elements in FY 2018

- To clarify our corporate stance through disclosure of information to stakeholders
- To implement long-term, continuous environmental measures
- To raise the efficiency of investment in environmental protection measures
- To energize environmental protection activities

Purpose of Introducing the Environmental Accounting System

- Applicable period
  April 1, 2018 to March 31, 2019
- Accounting coverage
  Fujitsu and its major consolidated subsidiaries worldwide *1
- Calculation basis for environmental protection costs
  - Accounting method for depreciation and amortization:
    Depreciation and amortization expenses for investments are included in expenses using straight line depreciation (with no residual value) based on a useful life of 5 years. The useful life of 5 years was chosen based on the average length of the actual period from the introduction of environmental facilities to their implementation of repairs and upgrades.
  - Basis for recording composite costs:
    In regard to composite costs, in which environmental protection costs are coupled with other costs, the Fujitsu Group records only the portion corresponding to environmental protection in conformance with the Environmental Accounting Guidelines 2005 issued by the Japanese Ministry of Environment.
- Calculation basis for the economic benefits of environmental protection measures
  - Scope of benefits in environmental accounting:
    The Fujitsu Group records the actual benefits and estimated benefits (risk avoidance benefit and deemed benefit) of reducing environmental impact related to the following items.
    - Benefits of reducing environmental impact related to resources used in business activities
    - Benefits of reducing environmental impact related to environmental loads and waste emissions resulting from business activities
    - Benefits of reducing environmental impact related to goods and services produced by business activities
    - Benefits of reducing environmental impact related to transportation and other activities
  - Investment benefit materialization period and basis:
    The accounting period for actual economic benefits has been aligned with the depreciation and amortization period for investments (60 months). However, the accounting period for economic benefits derived from reducing personnel costs related to the environmental management system is 12 months, in line with the main thrust of the environmental management system, which is reviewed every year.
    With regard to estimated economic benefits, the accounting period for economic benefits derived from capital investment is the same as the depreciation and amortization period (60 months) for actual economic benefits. Benefits corresponding to a given fiscal year, such as the amount of contribution to environmental protection and

the avoidance of operational losses, are recorded only for that fiscal year. The basis for accounting for economic benefits is as follows:

- Contribution of environmental protection activities to added value derived from production activities
  The Fujitsu Group recognizes support provided by environmental protection activities to production activities as an economic benefit. Accordingly, the amount of contribution is determined by multiplying the added value derived from production activities by the ratio of the maintenance and operation cost for environmental protection facilities to the total cost of each site.
  Contribution = Added value x Maintenance and operation cost for environmental protection facilities / total facility cost
- Avoidance of operational loss at business site due to non-compliance with laws and regulations
  The Fujitsu Group recognizes the avoidance of operation loss as the amount of loss that is avoided in the event of the materialization of risk arising from neglect to make upfront investments needed to comply with laws and regulations. The number of operational loss days is determined based on the size of investment related to environment, but it must not exceed three days.
  Benefit = Added value / Operational days x Operational loss days
- Benefit of public relations activities
  This benefit is calculated by converting publicity efforts related to environmental protection activities, in newspapers, magazines and TV, into an advertising cost.
  Benefit = Cost of advertising through newspapers, magazines and TV x Number of advertisements ran and programs broadcast.
- R&D benefits
  The Fujitsu Group calculates the amount of additional earnings resulting from the contributions of R&D achievements for environmental protection purposes, such as Super Green Products and environmental solutions.

*1 Major consolidated subsidiaries worldwide:
FUJITSU ISOTEC LIMITED, FUJITSU IT PRODUCTS LIMITED, Fujitsu I-Network Systems Limited, Fujitsu Interconnect Technologies Limited, Ecolity Service Limited, FDK CORPORATION, FUJITSU OPTICAL COMPONENTS LIMITED, FUJITSU KASEI LIMITED, FUJITSU CLIENT COMPUTING LIMITED, Fujitsu Laboratories Limited, FUJITSU CONNECTED TECHNOLOGIES LIMITED, FUJITSU COMPONENT LIMITED, Shimane Fujitsu Limited, FUJITSU PERIPHERALS LIMITED, SHINKO ELECTRIC INDUSTRIES CO., LTD., Fujitsu Telecom Networks Limited, TRANSTRON Inc., PFU Limited, FUJITSU FRONTECH LIMITED, MIE FUJITSU SEMICONDUCTOR LIMITED, AIZU FUJITSU SEMICONDUCTOR WAFER SOLUTION LIMITED, AIZU FUJITSU SEMICONDUCTOR MANUFACTURING LIMITED (currently ON Semiconductor Aizu Co., Ltd.), Fujitsu Network Communications Inc., FUJITSU TECHNOLOGY SOLUTIONS (HOLDING) B.V.

The Fujitsu Group also aggregates data on R&D costs and benefits from environmental solutions offered by subsidiaries other than those shown above. However, the date is aggregated solely for environmental solutions costs and benefits, so the relevant subsidiaries are not included in the scope of disclosure for major consolidated subsidiaries.

FY 2018 Environmental Accounting Results

Breakdown of results (Investments and costs) (billion yen)

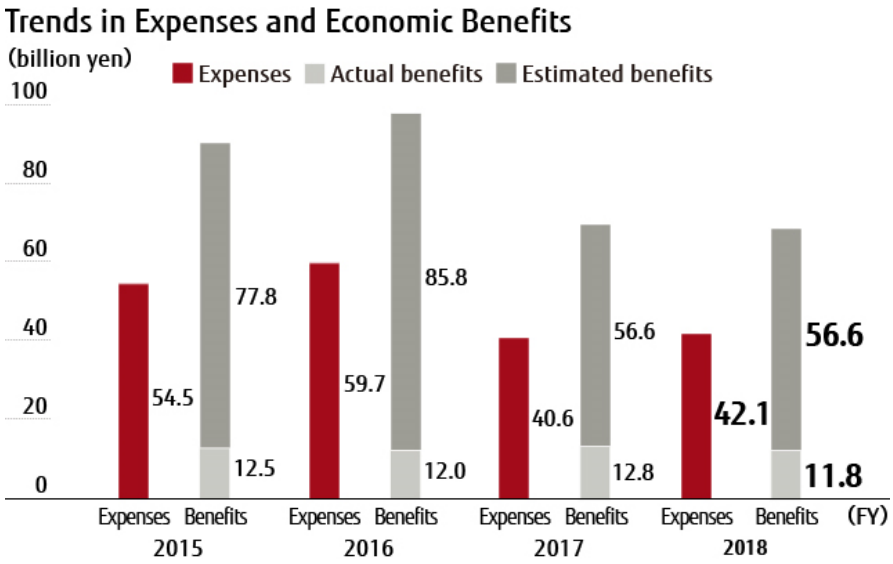
Fiscal 2018 Breakdown of Results (Capital investments, Expenses, Economic benefits)

Item		Main Areas Covered	Capital Investment (billion yen)	Expenses (billion yen)	Economic Benefit (billion yen)
Business area costs/benefits	Pollution prevention costs/benefits	Air/water pollution prevention, etc.	0.32 (-1.7)	5.09 (+0.54)	6.14 (-1.54)
	Global environmental protection costs/benefits	Global warming prevention, saving energy, etc.	0.27 (+0.02)	2.20 (-0.17)	1.15 (-0.32)
	Resource circulation costs/benefits	Waste disposal, efficient utilization of resources, etc.	0.0 (-0.01)	2.24 (-0.04)	10.38 (-0.60)
Upstream/downstream costs/benefits		Collection, recycling, reuse, and proper disposal of products, etc.	0.0 (-0.01)	0.62 (-0.22)	0.27 (-0.09)
Administration costs/benefits		Provision and operation of environmental management systems, environmental education of employees, etc.	0.03 (-0.0)	2.14 (-0.10)	0.31 (+0.01)
R&D costs/benefits		R&D on products and solutions that contribute to environmental protection, etc.	0.15 (+0.06)	29.65 (＋1.35)	50.13 (+1.52)
Social activity costs		Donation to, and support for, environmental groups, etc.	0.0 (＋0.0)	0.04 (+0.01)	-
Environmental remediation costs/benefits		Restoration and other measures related to soil and groundwater contamination, etc.	0.05 (+0.05)	0.08 (+0.04)	0.0 (＋0.0)
Total			0.82 (-1.59)	42.05 (+1.41)	68.37 (-1.02)

- Numbers in parentheses indicate increase or decrease in comparison with the previous year
- Due to rounding, the figures in columns may not add up to the totals shown
- Amounts shown as “0.0” include amounts for which the value was smaller than the display units used

Costs and Economic Benefits in FY 2018

The results of environmental accounting for FY 2018 showed expenses of 42.1 billion yen (14% increase year on year) and economic benefits (calculated by our original estimating method) of 68.4 billion yen (10% decrease year on year), indicating that expenses increased, and economic benefits decreased in comparison to the previous fiscal year.
Also, our capital investments dropped by 0.8 billion yen (16% increase year on year) due to large-scale water pollution prevention measures implemented in FY 2017.



Environmental Liabilities

The Fujitsu Group, in properly forecasting expected future environmental liabilities and communicating our soundness and stance of not deferring environmental liabilities, has recorded a liability of 4.33 billion yen in soil-pollution cleanup costs, high-level polychlorinated biphenyl (PCB) waste disposal costs, and asbestos processing costs during facilities demolition. This total is the amount we calculate, as of the end of FY 2018, to be necessary for the Fujitsu Group in Japan to carry out these tasks in the next fiscal year and beyond.

Past Records up to FY 2017

Past records of our environmental accounting up to FY 2017 are included in the Sustainability Report.

- Fujitsu Group Sustainability Report
  https://www.fujitsu.com/global/about/resources/reports/sustainabilityreport/

Environmental Data

Material Balance

INPUT

Stage		Unit	FY2015	FY2016	FY2017	FY2018
Development / Design Planning / Design	Raw Materials					
	Metal	ktons	18	25	16	15
	Plastic	ktons	9	11	9	7
	Others	ktons	15	15	13	12
	Chemical Substances *1					
	VOC	ktons	1.3	1.4	1.3	1.1
	PRTR	ktons	9.7	9.8	9.5	10.4
	Water					
	Water usage	Mm^3	15.83	16.87	15.54	13.83
	Energy					
	Total	PJ	18.37	20.38	19.25	1735
	Purchased electricity	GWh	1,680	1,899	1,800	1,614
	Heavy oil, kerosene, etc.	kL	8,590	10,118	10,100	6,822
	LPG、LNG	tons	3,454	3,059	2,954	2,222
	Natural gas, city gas	Mm^3	29.92	29.99	29.76	28.01
	District heating and cooling	TJ	42	43	43	41
Distribution / Sales	Energy					
	Fuel (light oil, gasoline, etc.)	PJ	1.50	1.46	1.18	1.02
Usage	Energy					
	Electricity	GWh (PJ)	7,898 (77.64)	8,111 (80.87)	6,680 (66.60)	7,356 (73.34)
Collection / Reuse / Recycling	Resources recycling rate	%	94.5	92	91.5	91.7
	Amount processed	tons	5,203	4,185	3,844	3,436

OUTPUT

Stage		Unit	FY2015	FY2016	FY2017	FY2018
Development / Design Planning / Design	Raw Materials					
	CO_2 emissions	ktons-CO_2	630	640	520	410
	Chemical Substances *1					
	VOC	tons	212	245	228	178
	PRTR	tons	10	11	10	9
	Atmospheric Release					
	Total GHG emissions	ktons	876	1,229	1,137	955
	CO_2	ktons-CO_2	786	1122	1040	895
	GHG other than CO_2 (PFCs, HFCs, SF6, NF3, others)	ktons	90	107	97	60
	NOx	ktons	103	104	63	32
	SOx	ktons	108	30	11	4
	Water Discharge					
	合計	km^3	14,080	15,280	14,610	12,650
	BOD	tons	397	391	290	270
	COD	tons	160	179	94	55
	Waste					
	Amount of Waste Generated	ktons	20.7	22.4	21.9	19.0
	Thermal recycling volume	ktons	4.6	4.7	4.8	4.0
	Material recycling volume	ktons	14.9	15.6	16.0	14.3
	Disposal volume	ktons	1.1	2.1	1.1	0.7
Distribution / Sales	Atmospheric Release					
	CO_2	ktons-CO_2	100	99	80	69
Usage	Atmospheric Release					
	CO_2	ktons-CO_2	4,410	4,570	3,460	3,650

*1 Substances that qualify as both a PRTR targeted chemical and a VOC are included under "VOCs" only.

Environmental Data

GHG Emissions Report Based on GHG Protocol Standards

Indicator		FY2015	FY2016 *1	FY2017 *2	FY2018
Upstream (Scope3) [ktons]					
	Purchased goods and services	2,317	2,432	2,169	1,840
	Capital goods	82	31	13	6
	Fuel and energy-related activities not included in Scopes 1 and 2	68	76	72	71
	Transportation and distribution (Upstream)	102	99	80	69
	Waste generated in operations	8	8	7	5
	Business travel	107	107	86	93
	Employee commuting	76	87	69	68
	Leased assets (Upstream)	123	373	288	281
Reporting company (Scope1,2) [ktons]					
	Direct emissions	189	208	198	147
	Indirect emissions from energy sources	686	1,021	939 *3 912 *4	808 *3 771 *4
Downstream (Scope 3) [ktons]					
	Transportation and distribution (Downstream)	N/A *5	N/A	N/A	N/A
	Processing of sold products	23	21	27	23
	Use of sold products	4,407	4,566	3,460	3,649
	End-of-life treatment of sold products	N/A	N/A	N/A	N/A
	Leased assets (Downstream)	N/A	N/A	N/A	N/A
	Franchises	N/A	N/A	N/A	N/A
	Investment	N/A	N/A	N/A	N/A

*1 Estimate on not applicable and other items
- Transportation and distribution (downstream): 5.4 ktons.
  Amount of emissions accompanying movement when individual customers purchase personal computers etc.
- Other items: 311 tons.
  Emissions due to movements of visitors to the exhibition.

*2 Estimate on not applicable and other items
- Transportation and distribution (downstream): 6 ktons.
- Disposal of products sold: 1 ktons.

*3 Emissions from location standards. Market standard is 912 ktons

*4 Emissions from location standards. Market standard is 771 ktons.

*5 N/A : Not Applicable

Environmental Data

Environmental Performance Data Calculation Standards

- Applicable Period: April 1, 2018 – March 31, 2019
- Scope: Fujitsu and the Fujitsu Group (For details, refer to the List of Companies Covered by the Report on Environmental Activities)

Fujitsu Group Environmental Action Plan (Stage VIII)

https://www.fujitsu.com/global/about/environment/approach/plan/

Target Item	Indicator	Unit	Calculation Method
Our Society			
Achieve top-level energy efficiency for 50% or more of the new products.	The percentage of new products that are top-level energy efficient	%	The percentage top-level*1 energy efficient products with respect to the number of product series that are expected to be developed *1 Top-level energy efficiency: Achieve an upper level benchmark based on outside indicators, etc., in energy efficiency, on par with "top-runner" products (first in the world or industry, top of the world or industry, etc.)
Promote eco design for resource saving and circulation and increase resource efficiency of newly developed products by 15% or more.	Rate of improvement of resource efficiency of new products	%	The average rate of improvement of resource efficiency (versus FY 2014) of products*. * Hardware products, under the Fujitsu Brand, newly developed in FY 2016-2018. Excludes products not designed by Fujitsu (OEM products) and products designed under customer specifications. * Refer to "Improving resource efficiency of new products" for the resource efficiency calculation method.
Maintain over 90% resource reuse rate of business ICT products at Fujitsu recycling centers.	Resource reuse rate of business ICT products	%	Based on the calculation method provided by JEITA, recycled components and resources as a percentage of the weight of used products processed in Japan. Excludes collected waste other than used electronic products
Our Business			
Reduce greenhouse gas emissions by 5% or more compared to FY 2013.	GHG emissions	tons CO_2	CO_2 emissions: Σ[(Electricity, fuel oil, gas, and district heating and cooling annual usage) x CO_2 conversion factor for each type of energy*] * CO_2 conversion factor: The factor is based on the Electric Power Council for a Low Carbon Society. In FY 2013, the conversion factor for electricity was 0.570 tons CO_2/MWh and in FY 2018 its was 0.497 tons CO_2/MWh.
			GHG emissions other than CO_2: Annual emissions of HFCs, PFCs, SF_6 and NF_3 at three semiconductor plants (Mie Fujitsu Semiconductor Limited, Aizu Fujitsu Semiconductor Wafer Solution Limited and Aizu Fujitsu Semiconductor Manufacturing Limited) Σ[Annual emissions for each type of gas*1 x Global warming potential for each gas*2] *1 Based on the calculation method used by the industries of electric and electronics: Amount of each gas used (or purchased) x Reactant consumption rate x Removal efficiency, etc. *2 Global Warming Potential (GWP): IPCC (Intergovernmental Panel on Climate Change) Fourth Assessment Report "Climate Change 2007"

	Percentage reduction in total greenhouse gas emissions	% reduction	(Total GHG emissions in FY 2013 – Total GHG emissions in the fiscal year) / Total GHG emissions in FY 2013 x 100
Improve PUE of our major data centers (DC) by 8% or more compared to FY 2013.	Rate of improvement of PUE	%	PUE = Σ(Total DC energy consumption) ÷ Σ(Total IT device energy consumption) Σ: Combined total energy of the 34 main DCs Rate of improvement (%) - (Base fiscal year PUE - PUE for the current fiscal year) ÷ Base fiscal year PUE x 100 Base fiscal year: FY 2013
Improve energy intensity by an average of 1% or more each year.	Rate of improvement of energy intensity	%	The improvement rate, year on year, for each business site's energy rate index is a weighted average of the proportion to the site's overall energy usage. These values are added to calculate our total improvement rate. Σ[% improvement year-on-year in each business site's rate index x wt% proportion of overall energy usage] Target business sites: Japan (energy management plants specified under the Act on the Rational Use, etc., of Energy), UK and Australia offices
Increase usage of renewable energy to at least 6%.	Renewable energy usage rate	%	Power generated by the company through renewable energy (solar, wind, hydraulic, biomass, geothermal, etc.) or purchased from an outside source ÷ total amount of electric power used
Reduce CO_2 emissions per sales from transport by an average of 2% or more.	CO_2 emissions per sales from transport	tons/100 million yen	Transport CO_2 emissions / sales (100 million yen)
	Reduction rate of CO_2 emissions compared to the previous fiscal year	% reduction	(Previous fiscal year's transport CO_2 emissions per sales – Current fiscal year's transport CO_2 emissions per sales) / Previous fiscal year's transport CO_2 emissions per sales x 100
Reduce water consumption by 1% in total (128,000 m^3)	Amount of reduction of water used	m^3	Build up the water use reduction impact (actual or estimated) of measures implemented at each business site, and calculate the amount of reduction for the current fiscal year
Reduce chemical pollutant (PRTR) release to less than the average level of FY 2012-2014. (20.7t)	Volume of PRTR-targeted substances released	tons	For the substances covered by the PRTR law (Act on Confirmation, etc., of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof), released totals are provided for those substances handled on quantities exceeding 100 kg annually per business site in Japan
Reduce the amount of waste to less than the average level of FY 2012-2014. (25,568t)	Amount of waste generated	tons	Total amount of industrial waste and general waste generated by factories and offices (Thermal recycling volume + Material recycling volume + Disposal volume)
	Effective utilization ratio (Japan only)	%	(Amount of effective use (thermal recycling & material recycling) / Amount of waste generated) x 100

Environmental Liabilities

https://www.fujitsu.com/global/about/environment/management/ems/accounting/

Indicator	Unit	Calculation Method
Cost of environmental liabilities	Yen	1. Asset retirement obligation (Only asbestos removal cost related to facility disposal) 2. Cost for soil contamination countermeasures 3. Disposal processing cost for waste with high concentration of PCB (polychlorinated biphenyl)

GHG Emissions Report based on GHG Protocol Standards

https://www.fujitsu.com/global/about/environment/performance/ghg.html

Indicator		Unit	Calculation Method
Upstream (Scope 3)	Purchased goods and services	tons	Components purchased during the fiscal year x Emissions per unit of purchase (Source: Embodied Energy and Emissions Intensity Data (3EID) published by the National Institute for Environmental Studies Center for Global Environmental Research)
	Capital goods	tons	Monetary value of capital x Emissions value per unit of capital value (Source: Same as above)
	Fuel and energy–related items not included in Scopes 1 and 2	tons	Annual amounts of fuel oil and gas, electricity and heat purchased (consumed) mainly at business sites owned by Fujitsu x Emissions per unit (Source: Basic Guidelines for Calculating Greenhouse Gas Emissions Via Supply Chains and the Carbon Footprint Communication Program Basic Database Ver. 1 published by the Ministry of the Environment and the Ministry of Economy, Trade and Industry)
	Transportation and distribution (upstream)	tons	Transportation of goods within Japan: CO_2 emissions related to the transportation of goods within Japan by the Fujitsu Group * CO_2 emissions related to domestic transportation by the Fujitsu Group, based on the Act on the Rational Use, etc., of Energy. The fuel economy method (for some vehicles) or the improved ton-kilometer method (vehicle, rail, air, ship)
		tons	International transport/overseas local transport: transportation ton-kilometer x Emission per unit (Source: GHG protocol emissions coefficient database)
	Waste generated in operations	tons	Annual amounts of waste (discharged mainly by business sites owned by Fujitsu) processed or recycled, by type and processing method x Emissions per unit of annual amount of waste processed or recycled (Source: Basic Guidelines for Calculating Greenhouse Gas Emissions Via Supply Chains published by the Ministry of the Environment and the Ministry of Economy, Trade and Industry)
	Business travel	tons	(By means of transport) Σ(Transportation expense payment x Emissions per unit) (Source: Basic Guidelines for Calculating Greenhouse Gas Emissions Via Supply Chains Ver. 2.3 and Emissions per Unit Database Ver. 2.6 published by the Ministry of the Environment and the Ministry of Economy, Trade and Industry)
	Employee commuting	tons	For portions of commute by public transportation: (By means of transport) Σ(Transportation expense payment x Emissions per unit) (Source: Same as above) For portions of commute by private automobile: Σ(Transported persons-kilometer x Emissions per unit) (Source: Same as above) Transported persons-kilometer is calculated from transportation expense payment, price of gasoline, and fuel efficiency
	Leased assets (Upstream)	tons	Annual amounts of fuel oil, gas, electricity, and heat consumed mainly at leased business sites x Emissions per unit of fuel oil, gas, electricity, and heat consumed (Sources – Japan: Act on Promotion of Global Warning Countermeasures – GHG Emissions Accounting, Reporting, and Disclosure System; Overseas: IEA CO_2 Emissions from Fuel Combustion Highlights 2018)
Reporting company (Scope 1, 2)	Direct emissions	tons	Amount of CO_2 emissions from the consumption of fuel oil and gas (burning of fuel) and GHG emissions other than CO_2, mainly at business sites owned by Fujitsu * For the calculation method, see "Greenhouse gas emission (CO2 emissions, greenhouse gas emissions other than CO_2) from business sites" in the Environmental Action Plan (Stage VIII)
	Indirect emissions from energy sources	tons	CO_2 emissions from the consumption (purchase) of electricity and heat mainly at business sites owned by Fujitsu * For the calculation method, see "Greenhouse gas emission (CO_2 emissions) at business sites" in the Environmental Action Plan (Stage VIII). Use IEA CO_2 Emissions from Fuel Combustion Highlights 2018 for some overseas business sites.
Downstream (Scope 3)	Processing of sold products	tons	Intermediate product sales volume x Emissions per unit of processing volume Intermediate product sales volume refers to Fujitsu's device solution sales

			Emissions per unit of processing volume is calculated from Fujitsu's FY 2015 assembly plant data
	Use of sold products	tons	Electricity consumption during product use x Emissions per unit electricity (Source: The Electric Power Council for a Low Carbon Society, Actions for Global Warming Countermeasures in the Electricity Business-FY 2018 Follow-up on FY 2017 Results (prior to adjustment)) Electricity consumption during product use is calculated as electricity usage for the anticipated usage time per product unit x Units shipped for the subject fiscal year. Electricity usage for the anticipated usage time per product unit is calculated as electricity consumed (kW) x Time used (h) / Days x Number of days used / Year x Number of years used. Time used (h), number of days used per year, and number of years used are set according to Fujitsu's internal scenarios
	End-of-life treatment of sold products	tons	(Weight of all sold products / Weight of products processed at Fujitsu's recycling centers during the year) x Electricity used at Fujitsu's recycling centers during the year x Emissions per unit of electricity (Source: Actual emission factor for each electricity utility based on ministerial ordinances on calculation and adjustment emission factor for each electricity utility based on reporting orders, announced for each fiscal year from FY 2011 to FY 2015)

Response to Environmental Risks / Supplementary Data

https://www.fujitsu.com/global/about/environment/management/ems/risk/

Indicator	Unit	Calculation Method
Measured value of groundwater pollution	mg/L	The highest value in the fiscal year for substances detected at levels exceeding regulated levels set in the Soil Contamination Countermeasures Act, etc., at monitoring wells at the boundaries of sites where past business activities have resulted in soil contamination

Operating Activities and Environmental Load

https://www.fujitsu.com/global/about/environment/performance/burden.html

Indicator			Unit	Calculation Method
INPUT				
Design/ Procurement/ Manufacturing/ Development	Raw Materials		tons	Material inputs to our major products*1 shipped in the fiscal year (raw materials per unit for each product x The number of units shipped in the fiscal year)
	Chemical Substances	Volume of substances subject to VOC emissions restrictions	tons	Of the 20 VOCs (Volatile Organic Compounds) specified in the environmental voluntary action plans of the four electrical and electronic industry associations*2, total amounts handled are provided for those substances handled in quantities exceeding 100 kg annually at individual business sites, including overseas sites Substances subject to VOC emissions controls that are also covered by the PRTR law are included in the section on substances subject to VOC emissions controls
		Volume of PRTR-targeted substances	tons	Of the substances covered by the PRTR law (Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environmental and Promotion of Improvements to the Management Thereof), totals are provided for those substances handled in quantities exceeding 100 kg annually per business site, including overseas sites
	Water usage		m^3	Annual use of clean water, industrial water and groundwater (not including groundwater used for melting snow or extracted for purification.)
	Amount of Recycled water		m^3	Annual amount of water used for manufacturing and other purposes once, then recovered, processed, and used again for manufacturing and

				other processes.
	Energy consumption (calorie basis)		GJ	Σ[(Electricity, fuel oil and gas, and district heating and cooling annual usage) x Thermal conversion factor for each type of energy*] * Thermal conversion factor (Heating value unit): According to the "Act on the Rational Use, etc., of Energy," conversion factors from each supplier or 44.8 GJ/1000m3 were used for town gas.
		Purchased electricity	MWh	Annual electricity usage
		Bunker A, fuel oil, light oil, benzine, gasoline	kL	Annual fuel oil usage (or purchases)
		Natural gas	m^3	Annual natural gas usage (or purchases)
		Town gas	m^3	Annual town gas usage (or purchases)
		LPG	tons	Annual LPG usage (or purchases)
		LNG	tons	Annual LNG usage (or purchases)
		District heating and cooling	GJ	Annual district heating and cooling (cold and hot water for cooling and heating) usage (or purchases)
Distribution / Sales	Energy consumed for transport		GJ	Total value of transport energy consumption for Fujitsu*1 and Fujitsu Group companies*2 *1 Fujitsu (domestic transport): Energy consumption related to domestic transport by the Fujitsu Group, based on the Act on the Rational Use of Energy "Logistics." *2 Fujitsu Group Companies: Calculated from the transport CO^2 emissions from OUTPUT (distribution and sales) using the ratio of Fujitsu (domestic transport) transport energy consumption to transport CO^2 emissions.
Usage	Energy	Electricity	GWh GJ	Electricity consumed in connection with major products ** shipped during the fiscal year (Amount of electricity used for time estimated per product unit x Units shipped in the fiscal year)
Recycling of resources	Resource recycling rate		%	Based on the calculation method provided by JEITA, recycled components and resources are calculated as a percentage of the weight of used products processed in Japan. Excludes collected waste other than used electronic products.
	Processed volume		tons	
Output				
Design/ Procurement/ Manufacturing/ Development	Raw Materials	CO_2 emissions	tons -CO_2	CO_2 emissions related to all stages from resource extraction through processing into raw materials (CO_2 emissions equivalent for raw materials used per product unit x Units shipped in the fiscal year) for the raw materials used in major products*1 shipped in the fiscal year
	Chemical Substances	Volume of substances subject to VOC emissions restrictions	tons	Of the 20 VOCs (Volatile Organic Compounds) specified in the environmental voluntary action plans of the four electrical and electronic industry associations*2, total amounts released are provided for those substances handled in quantities exceeding 100 kg annually at individual business sites, including overseas sites. Substances subject to VOC emissions controls that are also covered by the PRTR law are included in the section on substances subject to VOC emissions controls.
		Volume of PRTR-targeted substances released	tons	Of the substances covered by the PRTR law (Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof), released totals are provided for those substances handled in quantities exceeding 100 kg annually per business site, including overseas sites.
	Atmospheric	CO_2 emissions	tons-CO_2	* For the calculation method, see "Greenhouse gas emissions (CO_2

	pollution			emissions) from business sites" in the Environmental Action Plan (Stage VIII).
		GHG emissions other than CO_2	tons	* For the calculation method, see "Greenhouse gas emissions (GHG emissions other than CO2) from business sites" in the Environmental Action Plan (Stage VIII).
		NOx emissions	tons	NOx concentration (ppm) x 10^{-6} x Dry gas emissions (m^3N/hr) x Operating time (hr/yr) x 46/22.4 x 10^{-3}
		Sox emissions	tons	SOx concentration (ppm) x 10^{-6} x Dry gas emissions (m^3N/hr) x Operating time (hr/yr) x 64/22.4 x 10^{-3}
	Water Discharge	Wastewater discharges	m^3	Annual water discharge into public waterways and sewers (not including groundwater used for melting snow, but including groundwater extracted for purification when the amount of water is known)
		BOD emissions	tons	BOD concentration (mg/l) x Water discharges (m^3/yr) x 10^{-6}
		COD emissions	tons	COD concentration (mg/l) x Water discharges (m^3/yr) x 10^{-6}
	Waste	Amount of waste generated	tons	* For the calculation method, see "Waste generated" in the Environmental Action Plan (Stage VIII).
		Thermal recycling volume	tons	Among all types of waste put to effective use, the total volume used in thermal recycling * Thermal recycling: Recovery and use of the heat energy generated by incinerating waste
		Material recycling volume	tons	Among all types of waste put to effective use, the total volume used in material recycling * Material recycling: Processing of waste to facilitate its reuse, and re-use of processed waste as material or raw materials for new products
		Disposal volume	tons	Volume of industrial and general waste processed by, for example, landfilling or simple incineration
Distribution / Sales	Atmospheric Release		tons-CO_2	* For the calculation method, see "Transportation and distribution (upstream)" in the GHG Emissions Report based on GHG Protocol Standards.
Usage	Atmospheric Release		tons-CO_2	Emission intensity per electricity has changed since FY 2017. For the calculation method, see "Use of sold products" in the GHG Emissions Report based on GHG Protocol Standards.

*1 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

*2 Four electrical and electronic industry associations:
The Japan Electrical Manufactures' Association (JEMA), Japan Electronics and Information Technology Industries Association (JEITA), Communications and Information Network Association of Japan (CIAJ), and Japan Business Machine and Information System Industries Association (JBMIA).

Environmental Data

List of Organizations Covered by the Report on Environmental Activities in FY2018

Organizations Covered

The coverage is of Fujitsu itself plus a total of 191 companies (including companies outside Japan) centering on consolidated subsidiaries that have built environmental management systems.
The table below shows the organizations for which individual performance data is gathered.

Regarding the Indicators:

- Environmental burden: Organizations and Fujitsu's overseas non-manufacturing business sites for which business site environmental burden data is calculated
- Scope 1, 2, 3: Organizations that are the subject of calculations used in the GHG Emissions Report based on GHG Protocol Standards
- Logistics: Organizations for which logistics and transport data is calculated
- Environmental Accounting: Organizations for which environmental accounting data is calculated
- EMS: Organizations with Environmental Management Systems (EMS)

* The following company names are as of March 31, 2019.

No.	Company name (*)	Environmental burden	Scope 1,2,3	Logistics	Environmental Accounting	EMS
1	Fujitsu Limited	✓	✓	✓	✓	✓

Fujitsu Group companies in Japan (138 companies)

No.	Company name (*)	Environmental burden	Scope 1,2,3	Logistics	Environmental Accounting	EMS
1	Fujitsu Advanced Printing & Publishing Co., Ltd.		✓	✓		✓
2	FUJITSU HOME & OFFICE SERVICES LIMITED		✓			✓
3	Fujitsu University		✓			✓
4	Kawasaki Frontale Limited		✓			✓
5	Fujitsu Travelance Ltd.		✓			✓
6	Fujitsu Human Resource Professionals Limited		✓			✓
7	Fujitsu Techno Research Limited		✓			✓
8	Fujitsu CIT Limited		✓			✓
9	Toyama Fujitsu Limited	✓	✓			✓
10	Fujitsu Facilities Limited		✓			✓
11	OKINAWA FUJITSU SYSTEMS ENGINEERING LIMITED		✓			✓
12	DIGITAL PROCESS LTD.		✓	✓	✓	✓
13	PFU LIMITED	✓	✓	✓	✓	✓
14	FUJITSU BANKING SOLUTIONS LIMITED		✓			✓
15	SHIGA FUJITSU SOFTWARE LIMITED		✓			✓
16	FUJITSU BROAD SOLUTION & CONSULTING Inc.		✓			✓
17	FUJITSU SOCIAL SCIENCE LABORATORY LIMITED		✓			✓
18	FUJITSU YFC LIMITED		✓			✓
19	FUJITSU NIIGATA SYSTEMS LIMITED		✓			✓

No.	Company name (*)	Environmental burden	Scope 1,2,3	Logistics	Environmental Accounting	EMS
20	FUJITSU HOKURIKU SYSTEMS LIMITED		✓			✓
21	FUJITSU KYUSHU SYSTEMS LIMITED		✓			✓
22	FUJITSU KAGOSHIMA INFORNET LIMITED		✓			✓
23	FUJITSU FIP CORPORATION	✓	✓			✓
24	FUJITSU FIP SYSTEMS CORPORATION		✓			✓
25	FUJITSU FIP DC CORPORATION		✓			✓
26	FUJITSU FIP KYUSHU CORPORATION		✓			✓
27	FUJITSU CLOUD TECHNOLOGIES LIMITED		✓			✓
28	G-Search Limited		✓			✓
29	FUJITSU FSAS INC.		✓	✓		✓
30	Fujitsu FSAS Creative Inc.		✓			✓
31	Fujitsu FSAS Systems Inc.		✓			✓
32	Fujitsu FSAS Customer Service Inc.		✓			✓
33	Fujitsu FSAS Higashi-Nihon Customer Service Inc.		✓			✓
34	Fujitsu FSAS Tokai Customer Service Inc.		✓			✓
35	Fujitsu FSAS Hokuriku Customer Service Inc.		✓			✓
36	Fujitsu FSAS Kansai Customer Service Inc.		✓			✓
37	Fujitsu FSAS Shikoku Customer Service Inc.		✓			✓
38	Fujitsu FSAS & Sun LTD.		✓			✓
39	FUJITSU COMMUNICATION SERVICES LIMITED		✓			✓
40	FUJITSU NETWORK SOLUTIONS LIMITED		✓			✓
41	Fujitsu Frontech Limited	✓	✓	✓	✓	✓
42	LIFE CREATE LIMITED		✓			✓
43	FUJITSU FRONTECH SYSTEMS LIMITED		✓			✓
44	FUJITSU SYSTEM INTEGRATION LABORATORIES LIMITED		✓			✓
45	FUJITSU TOKKI SYSTEMS LIMITED		✓			✓
46	FUJITSU DEFENSE SYSTEMS ENGINEERING LIMITED		✓			✓
47	Fujitsu Applications, Ltd.		✓			✓
48	FUJITSU LEARNING MEDIA LIMITED		✓			✓
49	FUJITSU RESEARCH INSTITUTE		✓			✓
50	Fujitsu Marketing Limited		✓	✓		✓
51	Fujitsu Marketing Agent Ltd.		✓			✓
52	Fujitsu Marketing Office Services Ltd.		✓			✓
53	FUJITSU FOM LIMITED		✓	✓		✓
54	FUJITSU CoWorCo LIMITED		✓	✓		✓
55	TWO-ONE LIMITED		✓			✓
56	FUJITSU I-NETWORK SYSTEMS LIMITED	✓	✓	✓	✓	✓
57	ECOLITY SERVICE LIMITED		✓		✓	✓
58	FUJITSU ADVANCED ENGINEERING LIMITED		✓			✓
59	Fujitsu Software Technologies Limited		✓			✓
60	FUJITSU MIDDLEWARE LIMITED		✓			✓
61	Fujitsu Kyushu Network Technologies Limited		✓			✓
62	Fujitsu Telecom Networks Limited	✓	✓	✓	✓	✓
63	Fujitsu Telecom Networks Fukushima Limited	✓	✓			✓
64	Fujitsu Telecom Networks Kowa Limited	✓	✓			✓
65	FUJITSU COMPUTER TECHNOLOGIES LIMITED		✓			✓

No.	Company name (*)	Environmental burden	Scope 1,2,3	Logistics	Environmental Accounting	EMS
66	FUJITSU IT PRODUCTS LIMITED	✓	✓	✓	✓	✓
67	Fujitsu Isotec Limited	✓	✓	✓	✓	✓
68	FIT FRONTIER LIMITED	✓	✓			✓
69	FUJITSU PERIPHERALS LIMITED	✓	✓	✓	✓	✓
70	FUJITSU PERSONAL SYSTEM LIMITED		✓	✓		✓
71	Shimane Fujitsu Limited	✓	✓		✓	✓
72	FUJITSU KASEI LIMIED	✓	✓	✓	✓	✓
73	FUJITSU KASEI RECYCLE LIMITED		✓			✓
74	Fujitsu Interconnect Technologies Limited	✓	✓	✓	✓	✓
75	FUJITSU QUALITY LABORATORY LIMITED		✓			✓
76	FUJITSU QUALITY LABORATORY ENVIRONMENT CENTER LTD.		✓			✓
77	Eco Analysis Corporation		✓			✓
78	Fujitsu Optical Components Limited	✓	✓	✓	✓	✓
79	FUJITSU KANSAI-CHUBU NET-TECH LIMITED		✓			✓
80	Fujitsu Mission Critical Software LTD.		✓			✓
81	FDK CORPORATION	✓	✓	✓	✓	✓
82	FDK SALES CO., LTD.		✓			✓
83	FDK ENGINEERING CO., LTD.	✓	✓			✓
84	FDK PARTNERS CORPORATION		✓			✓
85	FDK ECOTEC CO., LTD.	✓	✓			✓
86	FUJITSU COMPONENT LIMITED	✓	✓	✓	✓	✓
87	SHINANO FUJITSU LIMITED	✓	✓			✓
88	TEC CO., LTD.		✓			✓
89	CHIKUMA TSUSHIN INDUSTRY CO., LTD.	✓	✓			✓
90	MIYAZAKI FUJITSU COMPONENTS LIMITED	✓	✓			✓
91	TAKAMISAWA ELECTRIC CO., LTD. Shinshu Plant	✓	✓			✓
92	Transtron Inc.		✓	✓	✓	✓
93	FUJITSU ELECTRONICS INC.		✓	✓		✓
94	Fujitsu Devices Inc.		✓			✓
95	SHINKO ELECTRIC INDUSTRIES CO. LTD.	✓	✓	✓	✓	✓
96	SHINKO PARTS CO., LTD.		✓			✓
97	SHINKO TECHNOSERVE CO., LTD.		✓			✓
98	FUJITSU LABORATORIES LTD	✓	✓		✓	✓
99	FUJITSU SEMICONDUCTOR LIMITED	✓	✓	✓		✓
100	Fujitsu Design Limited		✓			✓
101	Fujitsu Advanced Technologies Limited		✓			✓
102	FUJITSU CAPITAL LIMITED		✓			✓
103	MIE FUJITSU SEMICONDUCTOR LIMITED	✓	✓		✓	✓
104	AIZU FUJITSU SEMICONDUCTOR LIMITED	✓	✓			✓
105	AIZU FUJITSU SEMICONDUCTOR WAFER SOLUTION LIMITED	✓	✓		✓	✓
106	ON Semiconductor Aizu Co., Ltd.	✓	✓		✓	✓
107	Fujitsu IT Management Partner Co. Ltd.		✓			✓
108	Fujitsu IS Service Limited		✓			✓
109	Fujitsu Quality & Wisdom Limited		✓			✓
110	FUJITSU CLIENT COMPUTING LIMITED		✓		✓	✓
111	FUJITSU PUBLIC SOLUTIONS LIMITED		✓			✓

No.	Company name (*)	Environmental burden	Scope 1,2,3	Logistics	Environmental Accounting	EMS
112	FUJITSU ADVANCED SYSTEMS LIMITED		✓			✓
113	Fujitsu Systems Applications & Support Limited		✓			✓
114	FUJITSU YAMAGUCHI INFORMATION CO.,LTD		✓			✓
115	FUJITSU SHIKOKU INFOTEC LIMITED		✓			✓
116	FUJITSU SYSTEMS WEB TECHNOLOGY LIMITED		✓			✓
117	FUJITSU NETWORK SERVICE ENGINEERING LIMITED		✓			✓
118	FUJITSU SOCIAL LIFE SYSTEMS LIMITED		✓			✓
119	Mobile Techno Corp.		✓			✓
120	Carenet Limited		✓			✓
121	Fujitsu Advance Accounting service Limited		✓			✓
122	Fujitsu Harmony Limited		✓			✓
123	Fujitsu Banking Information Technology Limited		✓			✓
124	UCOT Infotechno co., Ltd		✓			✓
125	AB System Solutions Limited		✓			✓
126	ZIS INFORMATION TECHNOLOGY CORPORATION		✓			✓
127	Fujitsu Yamagata Information Technology Limited.		✓			✓
128	BANKING CHANNEL SOLUTIONS Limited		✓			✓
129	IT MANAGEMENT PARTNERS LIMITED		✓			✓
130	YJK Solutions Co., Ltd.		✓			✓
131	Best Life Promotion Ltd.		✓			✓
132	Fujitsu Traffic & Road Data Service Limited		✓			✓
133	Future City Solutions Limited		✓			✓
134	TechShop Japan Limited		✓			✓
135	Fujitsu Engineering Technologies Limited		✓			✓
136	Smart Agriculture IWATA Co., Ltd.		✓			✓
137	Grand Bouquet Otaki, K.K.		✓			✓
138	FITEC		✓			✓

Fujitsu Group companies worldwide (52 companies)

No.	Company name (*)	Environmental burden	Scope 1,2,3	Logistics	Environmental Accounting	EMS
1	Jiangsu Fujitsu Telecommunications Technology Co., Ltd.		✔			✔
2	Fujitsu Electronics Pacific Asia Limited		✔			✔
3	Fujitsu Electronics (Shanghai) Co., Ltd.		✔			✔
4	FUJITSU HONG KONG LIMITED		✔			✔
5	FUJITSU DO BRASIL LIMITADA	✔	✔			✔
6	FUJITSU ASIA PTE LTD		✔			✔
7	FUJITSU NETWORK COMMUNICATIONS INC.	✔	✔	✔	✔	✔
8	Fujitsu America, Inc.	✔	✔	✔		✔
9	Fujitsu (Thailand) Co., Ltd.		✔			✔
10	FUJITSU BUSINESS TECHNOLOGIES ASIA PACIFIC LIMITED		✔	✔		✔
11	FUJITSU AUSTRALIA LTD.	✔	✔	✔		✔
12	Fujitsu Technology Solutions GmbH	✔	✔	✔	✔	✔
13	Fujitsu Electronics Europe GmbH		✔			✔
14	Fujitsu Nanda Software Technology Co., Ltd		✔			✔
15	FUJITSU SERVICES HOLDINGS PLC		✔	✔		✔
16	FUJITSU KOREA LTD.		✔			✔

No.	Company name (*)	Environmental burden	Scope 1,2,3	Logistics	Environmental Accounting	EMS
17	FUJITSU TAIWAN LIMITED		✔			✔
18	Fujitsu Telecommunication Asia Sdn. Bhd.		✔			✔
19	Fujitsu (China) Holdings Co., Ltd.		✔			✔
20	Fujitsu Technology and Business of America, Inc.		✔			✔
21	FUJITSU (XI'AN) SYSTEM ENGINEERING Co., Ltd.		✔			✔
22	Beijing Fujitsu System Engineering Co., LTD.		✔			✔
23	Fujitsu Glovia, Inc.		✔			✔
24	FUJITSU AUSTRALIA SOFTWARE TECHNOLOGY PTY. LTD.		✔			✔
25	FUJITSU Enabling Software Technology GmbH		✔			✔
26	Fujitsu Electronics America, Inc		✔			✔
27	Fujitsu Electronics Korea Ltd.		✔			✔
28	Fujitsu Research and Development Center Co., LTD.		✔			✔
29	Fujitsu Computer Products of America		✔	✔		✔
30	Fujitsu Frontec North America	✔	✔	✔		✔
31	FUJITSU COMPONENTS (CHANGZHOU) CO., LTD.	✔	✔			
32	QINGDAO KOWA SEIKO CO., LTD.	✔	✔			
33	FUJITSU COMPONENT (MALAYSIA) SDN. BHD.	✔	✔			
34	PT FDK INDONESIA	✔	✔			
35	XIAMEN FDK CORPORATION	✔	✔			
36	SUZHOU FDK CO., LTD.	✔	✔			
37	FUCHI ELECTRONICS CO., LTD.	✔	✔			
38	FUJITSU DIE-TECH CORPORATION OF THE PHILIPPINES	✔	✔			✔
39	SHINKO ELECTRIC INDUSTRIES (WUXI) CO., LTD.	✔	✔			
40	KOREA SHINKO MICROELECTRONICS CO., LTD.	✔	✔			
41	SHINKO ELECTRONICS (MALAYSIA) SDN. BHD.	✔	✔			
42	TRANSTRON (THAILAND) CO., LTD.		✔			✔
43	Fujitsu Consulting India	✔	✔			
44	FUJITSU (CHINA) Co., Ltd.		✔			✔
45	Fujitsu Finance America, Inc.		✔			✔
46	FUJITSU EMEA PLC		✔			✔
47	Fujitsu RunMyProcess SAS		✔			✔
48	UShareSoft, SAS		✔			✔
49	Fujitsu Greenhouse Technology Finland Oy		✔			✔
50	Fujitsu Systems Global Solutions Management Sdn. Bhd.		✔			✔
51	Fujitsu Sweden AB		✔			
52	Fujitsu New Zealand Limited		✔			