Environmental Management at Fujitsu Group

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The year 2015 saw the establishment of international targets for realizing a sustainable society, including the Sustainable Development Goals (SDGs) adopted by the UN General Assembly and the Paris Agreement targets adopted at the 21st session of the Conference of the Parties (COP21) of the UN Framework Convention on Climate Change (UNFCCC). Proactive efforts to meet these targets are expected not only from nations and regions but also from the private sector. The Fujitsu Group formulated the Fujitsu Group Environmental Action Plan (Stage VIII) on the basis of two pillars: "contributing to society through the development of ICT solutions" and "reducing the environmental impact of our business." This plan has been followed since April 2016. We are working to make contributions to society by providing information and communications technology (ICT) services and products that lead to a sustainable society. We are working to reduce the environmental impact of Fujitsu's own businesses by aiming for the Paris Agreement's reduction target for greenhouse gas emissions and engaging in initiatives to achieve it along the entire value chain. This paper introduces Fujitsu Group's environmental management activities, including our Environmental Action Plan (Stage VIII) and specific initiatives.

1. Introduction

There are currently two major sets of targets agreed upon by the international community toward a sustainable society. The first consists of the Sustainable Development Goals (SDGs)[1] adopted by the UN in September 2015. These 17 goals to be achieved by 2030 include the eradication of poverty, the creation of sustainable cities, the formulation of action plans to combat climate change, and the preservation of ecosystems.

The second set of targets constitutes the Paris Agreement[2] agreed upon at the 21st session of the Conference of the Parties (COP21) of the UN Framework Convention on Climate Change (UNFCCC) in December 2015. As a new framework to combat climate change from 2020 on, the parties agreed to limit the rise of the global average temperature to less than 2℃ relative to the pre-industrial level. This agreement went into effect in November 2016 upon its ratification by the United States, China, and other countries.

Since the adoption of the Paris Agreement, activities toward a low-carbon society and economy have been accelerating globally. For example, nearly 100 companies from Europe, the United States, and other parts of the world have joined RE100,[3] an international initiative that aims for a transition to the 100% use of renewable energy. According to the World Energy Outlook 2015[4] report, the carbon price[note] is expected to rise to 140 dollars per ton of CO_2 by 2040 from 8 dollars per ton in 2014 and thus promote a rapid transition towards a low-carbon society.

A proactive approach to meeting these targets is expected not only from countries and regions but also from the private sector. In September 2015, Japan's Government Pension Investment Fund (GPIF), the world's largest institutional investor, became a signatory to the UN's Principles for Responsible Investment (PRI),[5] which treats environmental, social, and governance (ESG) factors as criteria for making investment decisions. In this way, importance is being increasingly placed on environmental activities in the corporate

note)   A tax corresponding to a certain amount of emissions levied on emitters of carbon to promote reduction in CO_2 emissions.

environment, even from the viewpoint of investment. As a result of such public and private trends, corporate activities synchronized with policies are expected to intensify, such as the use of bilateral credits through the provision of green technology and the use of green bonds to procure funds.

In light of the Paris Agreement and adoption of SDGs, the Fujitsu Group Environmental Action Plan (Stage VIII)[6] was put into effect in FY2016.

This paper describes the framework and concept of environmental management in the Fujitsu Group including the Environmental Action Plan (Stage VIII) and introduces environmental strategies and specific initiatives based on this framework.

2. Overview of environmental management

The FUJITSU Way[7] embodying the corporate philosophy and principles of the Fujitsu Group clearly describes Fujitsu's approach to preserving the global environment as part of its corporate principles and code of conduct, treats the environment as an important target of management, and promotes environmental activities as an integral element of business. The Fujitsu Group Environmental Policy[8] enables these

environmental activities to be put into practice on an ongoing basis. It calls for the Fujitsu Group to make ongoing contributions to sustainable development in society as an information and communications technology (ICT) enterprise while independently pursuing activities toward preservation of the global environment.

On the basis of this policy, specific action items have been established every three years as an action plan since the first Fujitsu Group Environmental Action Plan was formulated in 1993. Over the years, these environmental action plans have evolved in response to various factors, such as changes in public concern about global environmental issues, tightening of laws and regulations concerning the environment in countries around the world, the increase in environmental risk surrounding companies, and growing demand in relation to corporate social responsibility (**Figure 1**).

Today, we can look at the impact of ICT on society and the environment in both negative and positive terms: a negative impact due to increasing energy consumption in the use of servers, network devices, sensors, etc. and a positive impact due to contributions made to solving environmental problems such as climate change through solutions and services using ICT.
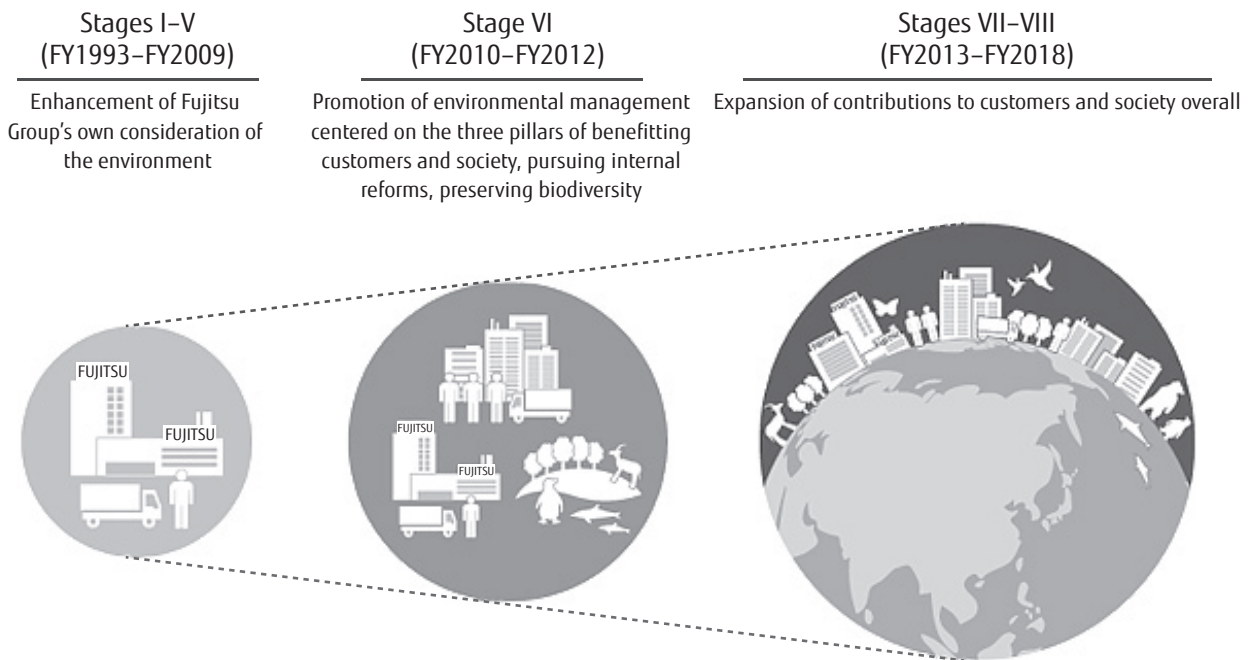
Stages I–V (FY1993–FY2009)	Stage VI (FY2010–FY2012)	Stages VII–VIII (FY2013–FY2018)
Enhancement of Fujitsu Group's own consideration of the environment	Promotion of environmental management centered on the three pillars of benefitting customers and society, pursuing internal reforms, preserving biodiversity	Expansion of contributions to customers and society overall

Figure 1
Fujitsu Group Environmental Action Plan

Fujitsu is promoting its environmental activities from two perspectives: "expanding our contribution to customers and society" by minimizing the negative impact and maximizing the positive impact of ICT while simultaneously "reducing the environmental load of our own business activities" by minimizing the negative impact of our business lifecycles. The Environmental Action Plan (Stage VII) that ran from FY2013 to FY2015 called for a "reduction in greenhouse gas (GHG) emissions through the provision of ICT." In this regard, we are working to quantitatively visualize how the provision of solutions helps to reduce GHG emissions for our customers and society, and, for that period, our calculations show that we achieved a large reduction effect of approximately 40 million tons.

The following section describes in more detail the Fujitsu Group Environmental Action Plan (Stage VIII) launched in FY2016.

3. Environmental Action Plan (Stage VIII)

The Fujitsu Group launched its Environmental Action Plan (Stage VIII) in April 2016 with the aim of achieving sustainable development in society and long-term GHG zero emissions.

The Environmental Action Plan (Stage VIII) expands upon the two pillars set forth in Stage VII—(1) contribution to customers and society through business solutions and (2) reduction of the environmental impacts of our own business activities—in light of the SDGs and the Paris Agreement of FY2015 (**Table 1**).

As for the first pillar, Fujitsu aims to contribute to customers and society sustainability by providing ICT services and improving the energy and resource efficiency of its products. In Stage VII, the Environmental Action Plan defined the meaning of "sustainability solutions," and Fujitsu came to contribute to customers and society sustainability by providing such solutions. In Stage VIII, we seek to expand upon this idea by bringing into view the customers of our customers and contributing to the achievement of the SDGs. We also would like to connect the above to corporate growth by creating and taking advantage of business opportunities.

As for the second pillar, we place importance on

Table 1
The Environmental Action Plan (Stage VIII).

	Target Items		
	Contribute to sustainable development and biodiversity preservation through provision of ICT services		
		(1) Contribute to sustainable development of society through provision of ICT services	
		(2) Develop innovative technologies that address environmental issues	
Our Society	Improve environmental performance of products throughout their lifecycle		
		(3) Achieve top-level energy efficiency for more than 50% of newly developed products	
		(4) Promote eco design for resource saving and circulation and increase resource efficiency of newly developed products by 15%	
		(5) Maintain over 90% resource reuse rate of business ICT equipment	
	Reduce GHG emission throughout the value chain		
		(6) Reduce GHG emission in our business facilities	
			(6)-1 Reduce GHG emission over 5% compared to FY2013
			(6)-2 Improve PUE of our major data centers over 8% compared to FY2013
			(6)-3 Improve energy intensity over 1% each year
			(6)-4 Increase usage of renewable energy to more than 6% of total usage*
Our Business		(7) Drive activities for reducing CO_2 emissions in supply chain	
		(8) Reduce CO_2 emissions per sales from transport over 2% each year	
	Reduce environmental impact		
		(9) Reduce total water consumption over 1% in total (128,000 m³)	
		(10) Reduce chemical pollutant release to less than average level of FY2012–FY2014 (20.7 tons)	
		(11) Reduce amount of waste to less than average level of FY2012–FY2014 (25,568 tons)	

*Change to quantitative target from qualitative one.

achieving the internationally agreed upon GHG emissions reduction target along the entire value chain. For Fujitsu business offices, Japan's GHG emissions reduction target for FY2030 will be applied to the Fujitsu Group with the reduction target for FY2018 set to a 5% reduction relative to 2013. Next, for data centers, where GHG emissions are expected to increase together with business growth, Fujitsu took the lead in setting a clear numerical target of 8% or better improvement in power usage effectiveness (PUE, an energy efficiency index for data centers) by FY2018 relative to 2013, which reflects its commitment to saving energy in data centers.

To roll out the Environmental Action Plan (Stage VIII) to the entire Fujitsu Group, we have established an e-Learning curriculum on the environment globally targeting all Fujitsu Group employees. The objective is to encourage proactive environmentally conscious activities in the work of each and every employee.

4. Major initiatives toward achieving Environmental Action Plan (Stage VIII)

The Paris Agreement includes the goal of drastically reducing GHG emissions to achieve a balance between the emission and absorption of GHG in the second half of the 21st century. Realistic measures for dealing with a rise in the carbon price will thus become necessary.

As an ICT enterprise, the Fujitsu Group will leverage its technologies and creative abilities to contribute to a reduction in GHG emissions by customers and society through a variety of solutions. The Group will also aim for zero emissions from its own business activities including those using its ICT infrastructure supporting the above technologies, and it will proactively contribute to achieving targets set by the international community.

One example of a solution for reducing GHG emissions by customers and society is smart mobility using FUJITSU Intelligent Society Solution SPATIOWL,[9] a location information cloud service, which Fujitsu has begun providing in Indonesia. This service obtains data such as location and speed of vehicles from a special app installed in smartphones carried in commercial vehicles patrolling toll roads and local roads. The data collected is made available to all drivers, enabling them to use roads with lighter traffic, thereby easing congestion.

This solution achieves fuel savings for vehicles traveling in the target area and reduces GHG emissions while also helping to reduce accidents. In this way, Fujitsu aims to implement an ecosystem within social systems through co-creation with customers and to provide solutions to social issues, including GHG reduction.

Application of a GHG-reduction solution to the data centers constituting Fujitsu's core business will be an issue in achieving zero emissions from our own business activities. Leveraging its strengths as both a data center provider and an ICT vendor, Fujitsu seeks to make further improvements in energy efficiency in both ICT equipment and facilities. For example, in the area of ICT equipment, the use of water-cooling technology for cooling server CPUs and memory can reduce power consumption in the server's cooling fans. In addition, reevaluating server design and developing a server that can operate in even a 45°C temperature environment can contribute to reducing the energy used by air conditioning equipment for cooling the entire data center. At the same time, Fujitsu intends to proactively introduce advanced technologies into the data center infrastructure. These include liquid immersion technologies for cooling ICT equipment by complete immersion in a liquid with good insulation properties and best available technologies (BATs), that is, state-of-the-art technologies for reducing GHG. Fujitsu will also promote total optimization through the application of artificial intelligence (AI) to air conditioning control in data centers.

For GHG reduction in plants, Fujitsu will promote energy savings through automation and localization of air conditioning and lighting. It will also pursue efficient operations by analyzing big data obtained from all sorts of sensors to predict system failures and reduce inspection person-hours.

As an ICT enterprise, Fujitsu is actively introducing such new technologies as in-house reference material and accumulating know-how while working to save energy within the company. Fujitsu believes that offering products that incorporate this know-how to its customers is one way of enhancing product reliability while expanding and growing business opportunities.

Given that the carbon price is expected to rise, Fujitsu will not only have to promote energy savings in its own business activities at plants, data centers, and other facilities but also strive for a low-carbon

transformation through the introduction of renewable energy. To this end, Fujitsu aims to promote facility investments and the purchasing of "green power" on the basis of the stability of power supplies, regional power configurations, and long-term economic rationality. Some Fujitsu Group companies in Europe such as Fujitsu Finland are already migrating to renewable energy taking into account regulations on GHG emissions and incentives for reducing emissions.

Additionally, considering that achieving zero GHG emissions will be difficult by merely extending existing technologies, developing innovative technologies will be an important element in this transition. Fujitsu is a manufacturer and developer of supercomputers, and it intends to contribute to reducing the energy, time, and costs required for research and manufacturing by applying its expertise in achieving world-class computational and processing performance to the design and development of revolutionary energy-saving, high-function devices and high-accuracy simulation techniques.

An important key to environmental management will be collaboration with a variety of stakeholders. Fujitsu has been holding "environmental dialogues" since 2011 to facilitate interacting with a wide range of players. To date, a total of 80 experts from a variety of fields representing NPOs, research institutions, the media, etc. have participated in discussions on diverse themes centered about the environment. Through dialogues such as these, awareness of Fujitsu Group activities and information dispatches has been growing, in some cases expanding into co-creation activities. For FY2016, we intend to use these dialogues as a forum for concrete exchange of opinions with the aim of contributing to the achievement of long-term zero emissions and a sustainable society. Fujitsu sees these dialogues as a way of enhancing its understanding of what society expects and demands of the Fujitsu Group and as a way of improving and strengthening its approach to environmental management.

5. Conclusion

This paper described the framework and concept of environmental management in the Fujitsu Group, outlined the Fujitsu Group Environmental Action Plan (Stage VIII) consisting of medium-term environmental goals, and introduced examples of major initiatives.

Actions are well underway for achieving the

international goal of holding the increase in the global average temperature to less than 2°C as stipulated in the SDGs and the Paris Agreement. The Fujitsu Group believes that ICT can play a major role in meeting this goal. Going forward, Fujitsu aims to create an ecosystem together with its customers and partners toward a safe, prosperous, and sustainable society.

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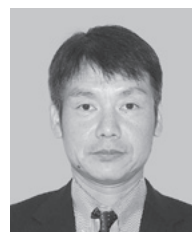
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