International Symposium on Design for the Sustainable Society via Digital Technology - Cooperated by Digital Transformation, Semiconductor, and Manufacturing

Cross-Industry Collaboration Challenge of Scope3 CO2 emissions data exchange through Data Visualization Project of Green x Digital Consortium

Green x Digital コンソーシアムの見える化 WGを通じたScope3のCO2排出量データ の産業連携チャレンジ

February 3rd, 2023

Tomoko Konishi-Nagano

Ph.D. in Environmental Science, Manager

Environmental Design Dept. Environment Div., Sustainability Unit Fujitsu Limited

Green × Digital Consortium, JEITA (Japan Electronics and Information Technology Industries Association) Green × Digital Consortium



- 1. Why we do efforts to reduce Scop3 CO2 emissions? Case of Fujitsu's efforts to realize Carbon Neutrality.
- 2. Data Visualization Project of Green x Digital Consortium

## of the world Situation

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JITSU

121

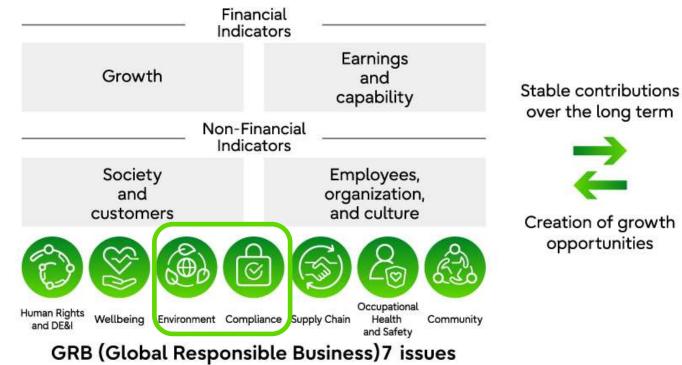
## Our Purpose Our purpose is to make the world more sustainable by building trust in society through innovation.

FUjitsu

### Management Direction: Financial and Non-Financial Targets



### Management Based on Our Purpose



Making the world more sustainable

## SUSTAINABLE DEVELOPMENT GCALS

## **Global Trends and Fujitsu Group Environmental Vision**



#### World:

- Common Goals: SDGs
- ➤ Common goal: Paris Agreement ➡ Carbon Neutral
- Policy: European Circular Economy (CE)
- Consumer-oriented: Sharing and social issues

#### Fujitsu Group:

FUJITSU Climate and Energy Vision:

Mid- to long-term environmental vision announced in May 2017. Based on SBT (Science Based Targets), Reduce CO2 emissions from Fujitsu Group activities to 0 by 2050.



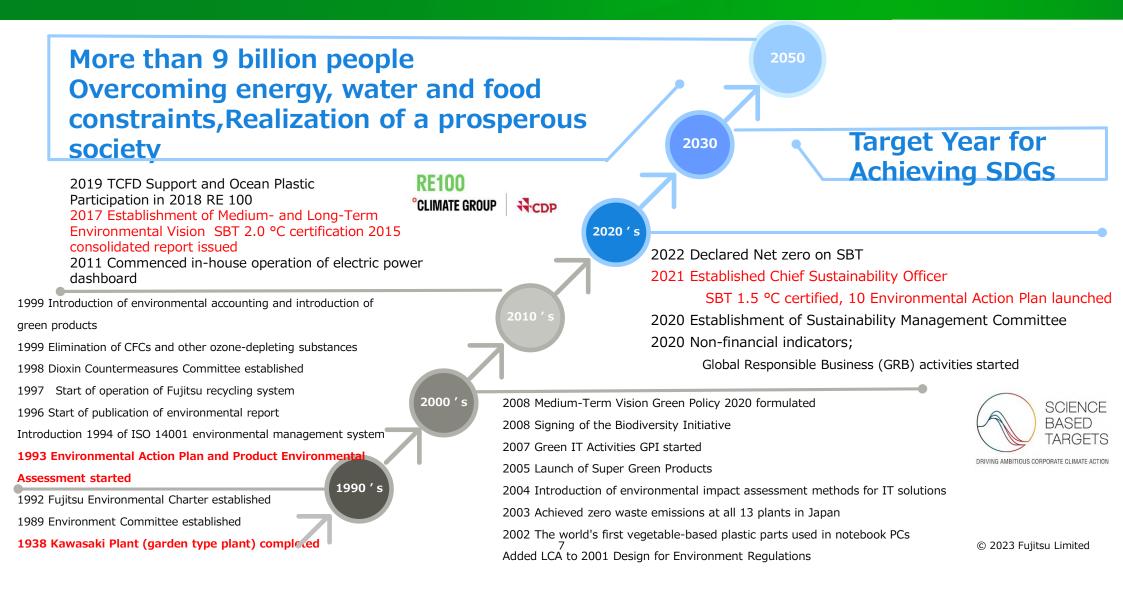




Figure. FUJITSU Climate and Energy Vision

## **Fujitsu's Approach to Environmental Issues**

FUJITSU



## Reducing GHG emissions based on global common rules FUjitsu

8

- Accelerating "thorough energy conservation" and "renewable energy utilization" (SBT certified at 1.5 °C compared to FY 2013) aiming at 71.4% reduction by 2030
- Became Japan's first gold member of the RE 100 Initiative (2018)

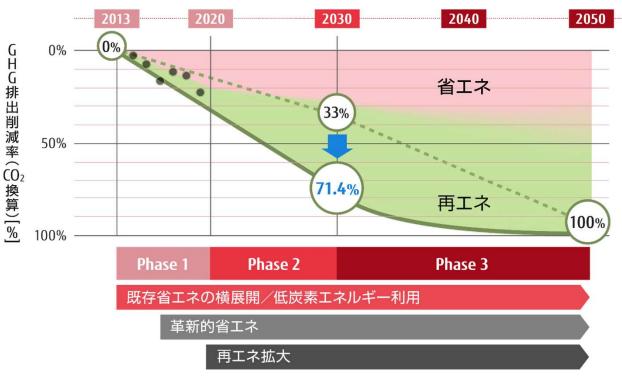
\*RE 100 be an international NGO Climate Group in partnership with CDP an initiative that operates. Comprised of companies that aim to use 100% of their electricity from renewable energy sources.

aim

**RE100** 

°CLIMATE GROUP

- Collection of information to expand the use of renewable energy
- To the global common rules introduction of renewable energy based on
- Implementation of government and policy recommendations



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SCIENCE

BASED TARGETS

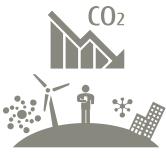
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

### Fujitsu Medium- to Long-Term Environmental Vision FUJITSU Climate and Energy Vision



Achieving carbon neutrality through technologies and services that support digital innovation Contributing to Zero CO2 Emissions by 2050





Innovative energy conservation through cutting-edge technologies renewable energy, Strategic use of carbon credits

#### ② carbon-neutral Contribution to society





connecting ecosystems in society, As a whole social system Achieving optimal use of energy

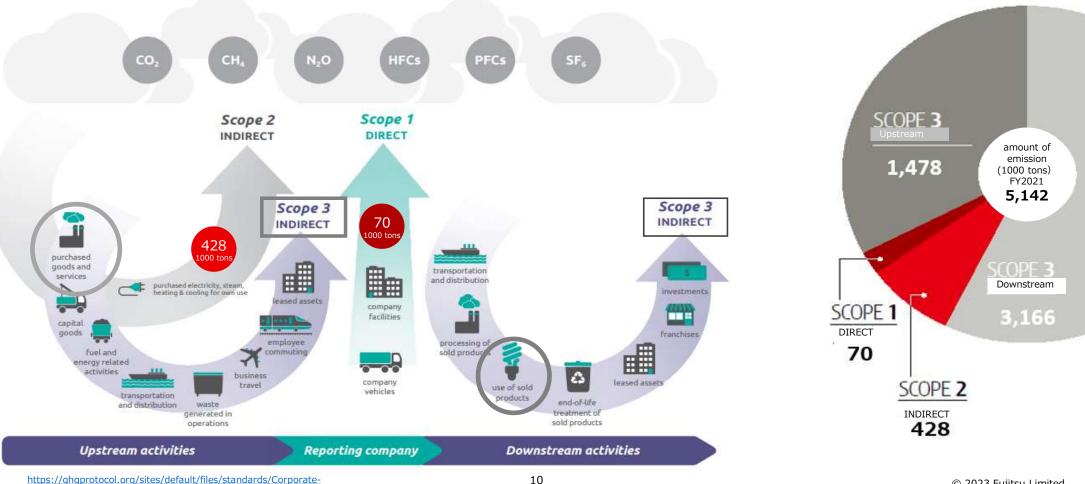
#### 3 due to climate change Contribution to society's adaptation measures



Building resilient social infrastructure the stable supply of crops, Realization of food loss reduction

## Greenhouse gas emissions based on GHG protocol standards FUITSU

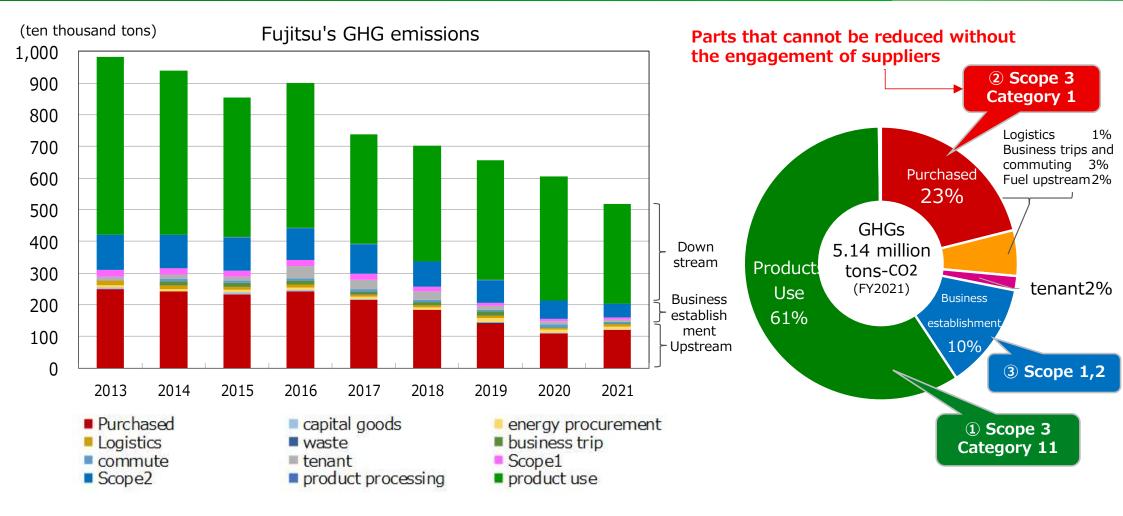
Figure [1.1] Overview of GHG Protocol scopes and emissions across the value chain



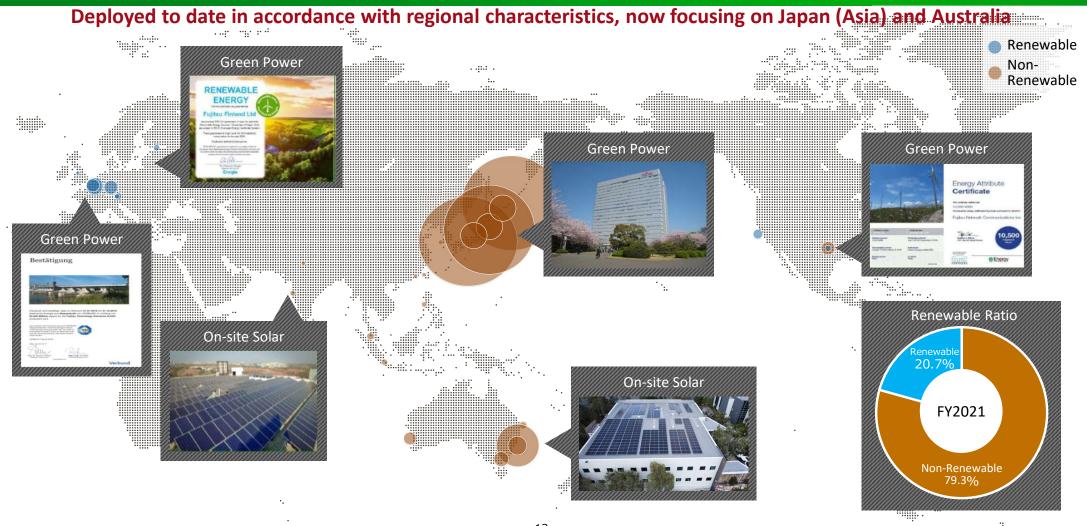
Value-Chain-Accounting-Reporting-Standard 041613 2.pdf

## **Trends in Fujitsu's GHG emissions**



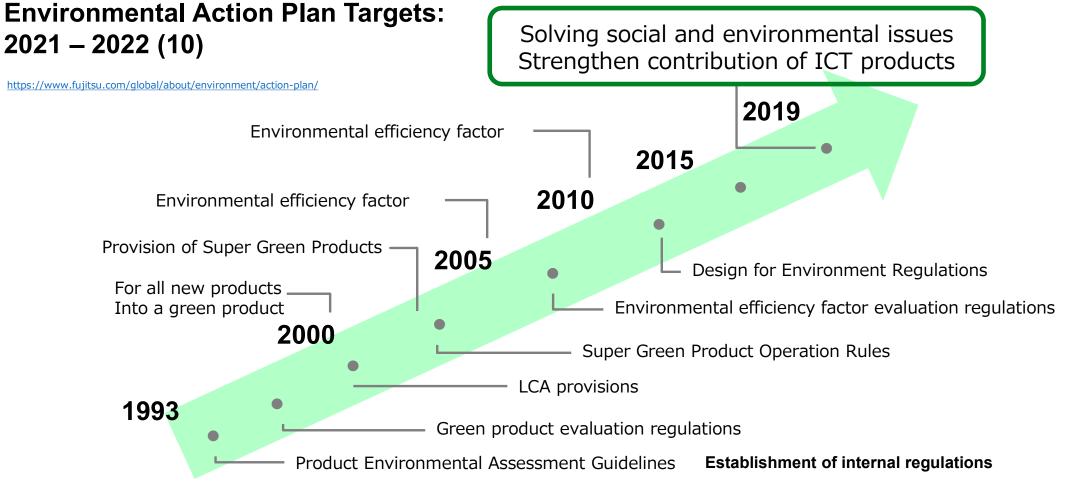


## Promoting Renewable Energy : Joining the RE 100 Initiative FUITSU



<sup>© 2023</sup> Fujitsu Limited

## History of Design for Environmentof of Fujitsu Group Products



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## **Design for Environment**



Life Cycle Assessment and Carbon Foot Print in Fujitsu

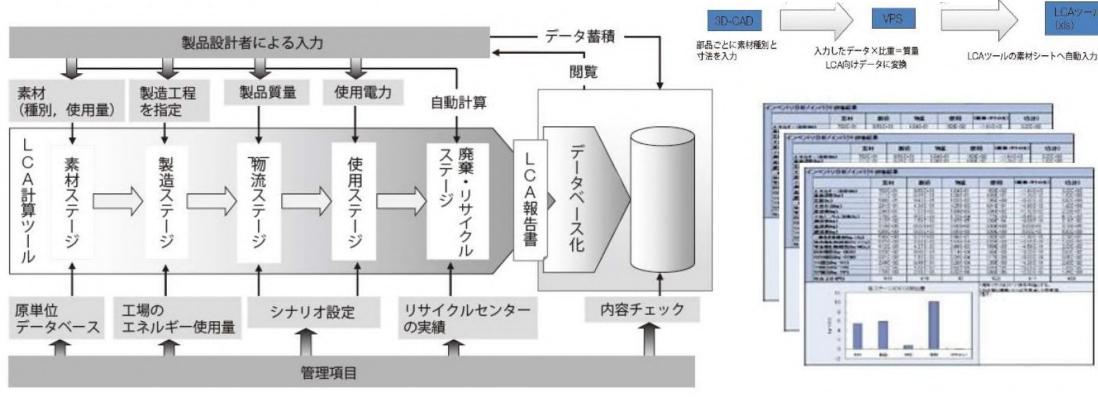


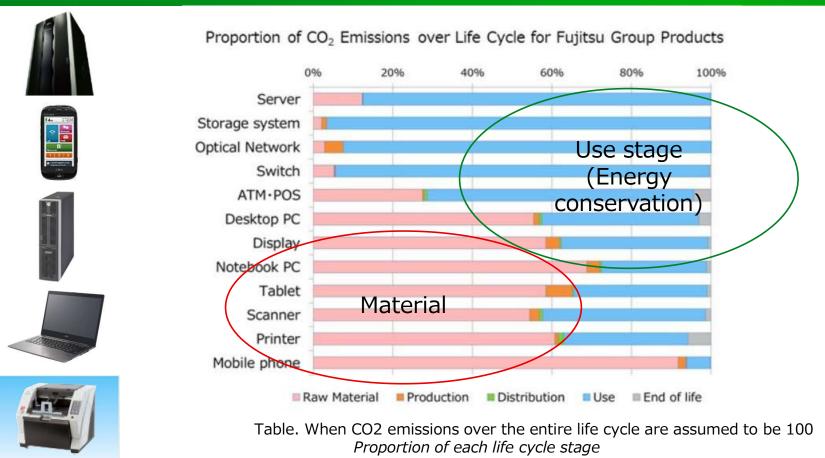
Figure: Steps of Life Cycle Assessment in Fujitsu tool

Source: Fujitsu Journal https://www.fujitsu.com/downloads/JP/archive/imgjp/jmag/vol62-6/paper07.pdf

Figure: LCA report each product

# **Product LCA: Comparison of product groups and identification of focus points**

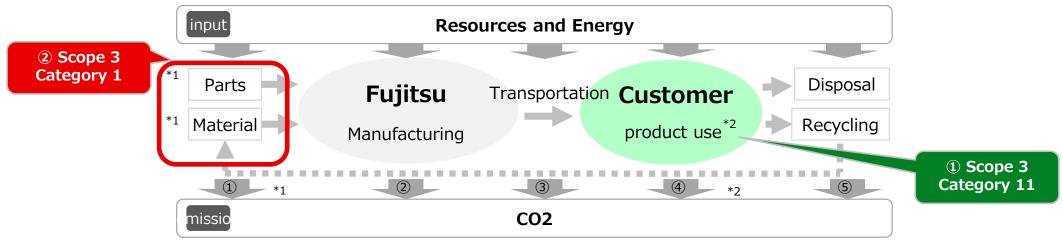




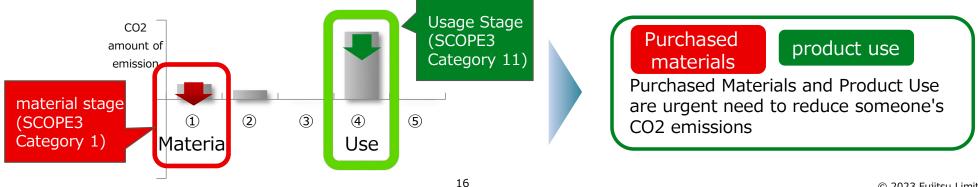
Source: https://www.fujitsu.com/global/about/environment/lca/

## **Environmental impact of Fujitsu products**

#### ○ Life Cycle Stage and CO2 Emissions



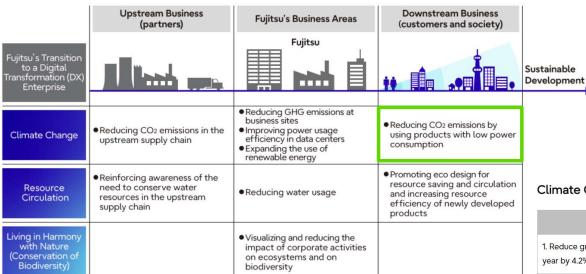
• Product Characteristics of the Fujitsu Group



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## The 10th Environmental Action Plan (FY 2021 to FY 2022) FUITSU

#### **Environmental Action Plan**



https://www.fujitsu.com/global/about/environment/action-plan/

#### **Climate Change**

Targets (to be achieved by FY2022)	FY2021 Achievements (FY2021 Target)
1. Reduce greenhouse gas (GHG) emissions from business sites each year by 4.2% or more, compared with the base year of FY2013	11.7% reduction (37.2% reduction from the base year)
2. Improve PUE (*3) (Power Usage Effectiveness) of our data centers by 3%, compared with FY2017	1.56 (FY2021 target : 1.57)
3. Increase renewable energy usage to 16% of total electricity	20%(FY2021 target : 13%)
<ol> <li>Reduce CO<sub>2</sub> emissions due to power consumption during product usage by 17% or more, compared with FY2013</li> </ol>	37% reduction (FY2021 target : 16% reduction)
5. Drive activities to reduce $\rm CO_2$ emissions in the upstream supply chain.	Requests to key partners to undertake reduction activities 100% completed

#### We are working to improve energy efficiency of individual products in order to reduce CO2 emissions during customer use.

## The 10th Environmental Action Plan (FY 2021 to FY 2022) FUJITSU

#### **Environmental Action Plan**

	Upstream Business (partners)	Fujitsu's Business Areas	Downstream Business (customers and society)	
Fujitsu's Transition to a Digital Transformation (DX) Enterprise		Fujitsu	••	Sustainable Development
Climate Change	<ul> <li>Reducing CO<sub>2</sub> emissions in the upstream supply chain</li> </ul>	<ul> <li>Reducing GHG emissions at business sites</li> <li>Improving power usage efficiency in data centers</li> <li>Expanding the use of renewable energy</li> </ul>	• Reducing CO2 emissions by using products with low power consumption	
Resource Circulation	• Reinforcing awareness of the need to conserve water resources in the upstream supply chain	<ul> <li>Reducing water usage</li> </ul>	<ul> <li>Promoting eco design for resource saving and circulation and increasing resource efficiency of newly developed products</li> </ul>	Resource
Living in Harmony with Nature (Conservation of Biodiversity)		<ul> <li>Visualizing and reducing the impact of corporate activities on ecosystems and on biodiversity</li> </ul>		6. Promote e

https://www.fujitsu.com/global/about/environment/action-plan/

#### Resource Circulation

Targets (to be achieved by FY2022)	FY2021 Achievements (FY2021 Target)
6. Promote eco design for resource saving and circulation and increase resource efficiency of newly developed products by 10% or more, compared with FY2019	10.1% improvement (FY2021 target : 5% improvement)
7. Reduce water usage by 30,000 kiloliters or more by implementing water resource conservation measures	56,671 kiloliters reduction (FY2021 target : 19,000 kiloliters reduction or more)
8. Reinforce awareness of the need to conserve water resources in the upstream supply chain	Requests to key partners to undertake conservation activities 100% completed

#### In order to reduce Scope Category 1, we are working to conserve resources on the product itself.

## Development of energy efficient top-level products FUjitsu

#### Examples of Initiatives in FY 2021

## Featuring state-of-the-art optical transport technology, the 1FINITY T700 has improved resource efficiency and reduced energy consumption

The 1FINITY series are optical transport systems that support telecommunications carrier systems. Optical transport equipment transmits information and it sends data. The 1FINITY series separates the functionality of conventional optical transport equipment to enable capital investment suitable for the scale of the network, continuous network evolution, minimization of running costs, and flexible operation.

We have developed the 1FINITY T700 as part of the 1FINITY series. The 1FINITY T700 Transport Blade is capable of long-distance transport at 400 Gbps\*. The 1FINITY T700 is equipped with

state-of-the-art optical transport technology and it allows flexible optical path (line) management.

From an environmental perspective, the 1FINITY T700 reduces the environmental burden in terms of both resource and energy conservation. The

components of the 1FINITY T700 are smaller, fewer in number, consolidated, and modular, improving resource efficiency with respect to performance by 40.0% compared to previous models. Moreover, the use of industry-leading reduced power consumption technology has reduced power consumption with respect to transport performance by 45% compared to previous models.

The 1FINITY T700 features state-of-the-art optical transport technology and improved resource efficiency. Through this system, we will help to create an affluent society.

https://www.fujitsu.com/global/about/environment/resource-efficiency/



**1FINITY T700** 

## **Summary of Green Product**



### Acquisition of Environmental Labels (EPEAT)

- ✓ Server: Bronze (The first in Japan)
- ✓ PC: Silver & Gold
- ✓ Scanner: Silver & Gold
- Join the Expert Ad-Hoc Groups to discuss new requirements

### Use of renewable energy at plants

- Shimane Fujitsu Co., Ltd., a notebook computer manufacturing plant
- ✓ Work to use renewable energy at our own plant

#### Reduction of CO2 emissions through light weight and long battery life

- Reviewing materials and factories on a zero basis, achieving weight reduction, and enabling long battery life through energy-saving design
- Providing products that are light in weight and can be driven for long periods of time to save resources, reduce CO2 emissions during transportation, and save energy to customers

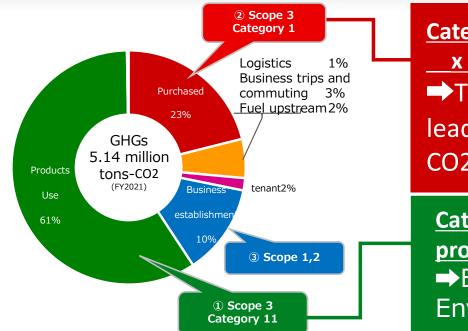


(\* 1) UH-X/E3 is the world's lightest notebook PC with 13.3 inch wide LCD. Our company research as of February 1, 202 (\* 2) Each product may differ due to the average value.





## Current actions' issues and Next steps for reducing Scope3: Strengthening Engagement with Suppliers



Categoy1 = [The procurement volume]
x [Emissions per unit of purchase]
The results of supplier's efforts do not
lead to the calculation of Scope 3 category 1
CO2 emissions from parts and materials.

Category11 = [Electricity consumption during product use] x [Emissions per unit electricity] →Energy Efficiency in Design for Environment

https://www.fujitsu.com/global/about/environment/method/

## **Current Request suppliers to reduce CO2 emissions**

[Issues] Grasp of CO2 emissions by each supplier for category 1 reduction

(1) Utilizinging CDP supply chain program

2 Joining the JEITA Green × Digital Consortium and considering the establishment of a cross-industry mechanism

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Fujitsu's CSR

Procurement Guidelines.

FUITSU

富士通グループ グリーン調達基準

2021年4月1日(第73章) 富士通株式会社



# How can CO2 emissions per component be transferred in the supply chain?

## What kind of social system is needed?



Utilizing digital technology and solutions to achieve carbon neutrality across society

Green × Digital Consortium

https://www.gxdc.jp/

23

## Overview of the Green x Digital Consortium

#### Green is the key to

- tackling climate change
- corporate strategies to enhance competitiveness

### Digitalization is the key to

- sustainable economic growth
- achieving the Sustainable Development Goals and carbon neutrality

### **Green x Digital**

- provides digital technologies to achieve carbon neutrality
- creates new solutions to achieve green social transformation

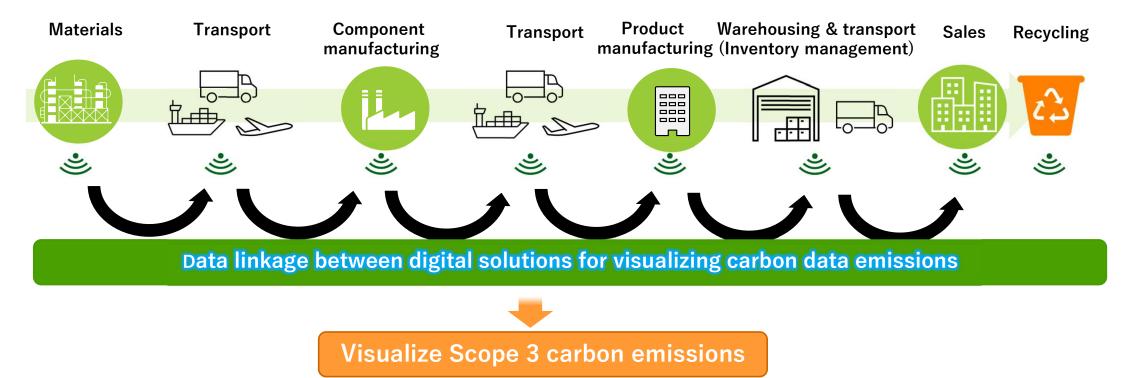
## **Green x Digital Consortium**

•	Activity : 3 pillars	• Membership :	around <mark>120</mark> co	mpanies ac	cross sectors	;
Ι.	Carbon data visualization project	Digital platforma	Data contara		Energy	
	Visualize CO <sub>2</sub> emissions throughout supply chains	Digital platforms	Data centers	Logistics	Energy	
Π.	Value Creation project	Cloud services	Hardware	Mobility	Raw	
	Build a mechanism for digital certification of green value	Cioud Services	пацинате	WODIIty	materials	
Ш.	Global Communication	Digital	Construction	Real	Finance	
	Harmonize systems at global level   24	solutions	construction	estate	Tindrice	

		117 compar			<b>Green</b> × <b>Digital</b> Consortium
	eader : NEC ■ Sub	b-leader : Mizuho Res	search & Technologie	s, Fujitsu	as of Jan. 31, 2023
ABeam Consulting Ltd.	Achilles Corporation	Aioi Nissay Dowa Insurance Co.,Ltd.	AISIN CORPORATION	ALPS ALPINE CO., LTD	Amazon Web Services Japan G.K.
Anaplan Japan K.K.	Apple Japan Inc.	Asahi Kasei Corp.	Asuene Inc.	Azbil Corporation	Azusa Sekkei Co., Ltd.
BIPROGY Inc.	booost technologies,Inc.	BROTHER INDUSTRIES ,LTD.	Canon Inc.	chaintope Inc.	CHIYODA Corporation
Chubu Electric Power Miraiz Co., Inc.	Claudio Inc.	Dai Nippon Printing Co., Ltd.	DAIKIN INDUSTRIES, LTD	Deloitte Tohmatsu Consulting LLC	· · · · · · · · · · · · · · · · · · ·
DENSO CORPORATION	Diamond Electric Holdings Co., Ltd.	digglue inc.	Digital Grid Corpoartion	e-dash Co., Ltd.	FORVAL CORPORATION
Fuji Electric Co., Ltd	FUJIFILM Business Innovation Cotp.	FUJIFILM Corporation	FUJITSU Limited	Future Corporation	Google
Gorlem Inc.	Hitachi Solutions, Ltd.	Hitachi, Ltd.	Honda Motor CO.,Ltd	IBM Japan, Ltd.	IHI Corporation
INTEC Inc.	ITOCHU ENEX CO.,LTD.	ITOCHU Techno-Solutions Corporation	Japan Radio Co.,Itd.	JSOL Corporation	KACOMS Co., Ltd.
KAJIMA CORPORATION	Kawasaki Heavy Industries, Ltd.	Marubeni-Itochu Steel Inc	Microsoft Japan	MITSUBISHI ELECTRIC CORPORATION	Mitsubishi Logistics Corporation
MITSUI & CO., LTD.	Mitsui Chemicals, Inc.	MITSUI-SOKO HOLDINGS Co., Ltd.	Mizuho Research & Technologies, Ltd.	Murata Manufacturing Co., Ltd	NAGASE & CO.,LTD.
NEC Corporation	Net One Systems Co., Ltd.	NGK INSULATORS,LTD.	NIHON DEMPA KOGYO CO.,LTD.	Nippon Antenna Co.,Ltd	NIPPON EXPRESS HOLDINGS, INC.
Nippon Information and Communication Corporation	Nitto Denko Corporation	Nomura Research Institute,Ltd.	NTT DATA Corporation	Nuvoton Technology Corporation Japan	Oki Electric Industry Co., Ltd.
OMRON Corporation	Oracle Corporation Japan	Panasonic Holdings Corporation	Persefoni Japan GD	PERSOL PROCESS & TECHNOLOGY CO., LTD.	PID Inc.
Pioneer Corporation	PwC Advisory LLC	PwC Consulting LLC	Ricoh Company, Ltd.	Ridgelinez Limited	ROHM Co., Ltd.
Ryoden corporation	Salesforce Japan	SBI R3 Japan Co., Ltd	SCSK Corporation	SEIKO EPSON CORPORATION	Shimizu Corporation
Sojitz Corporation	Sony Group Corporation	Sumitomo Electric Industries, Ltd.	SUMITOMO MITSUI BANKING CORPORATION	Sustech Inc.	Suzuyo Shoji CO.,LTD
TAIKISHA LTD.	TANAKA HOLDINGS Co., Ltd.	TBM Co., Ltd	The Kansai Electric Power Co., Inc.	TIS Inc.	Tokio Marine & Nichido Fire Insurance Co., Ltd.
TOKIUM, Inc.	Tokuyama Corporation	Tokyo Electric Power Company Holdings, Inc	TOKYO OHKA KOGYO CO., LTD.	Tokyu Corporation,	TOSHIBA CORPORATION
ТОҮОВО СО.,LTD.	TOYOTA SYSTEMS CORPORATION	Toyota Tsusho Corporation	Unicharm Corporation	WingArc1st Inc.	YAMATO TRANSPORT CO., LTD.
Yokogawa Electric Corporation	Zeroboard. Inc	ZEROPLUS Co., Ltd 25			

## **Carbon data visualization project**

- ✓ Utilize digital solutions to visualize carbon emissions across supply chains to accurately gauge Scope 3 emissions of GHG protocol\*
- ✓ Facilitate engagement between companies to reduce carbon emissions





### **Current Status of Scope 3 Category 1 Calculation Methods**

Category1 (Purchased products and services)

All products purchased or acquired by the Company (raw materials and parts, purchased products and sales Materials, etc.) and emissions from the resource extraction stage to the manufacturing stage of services

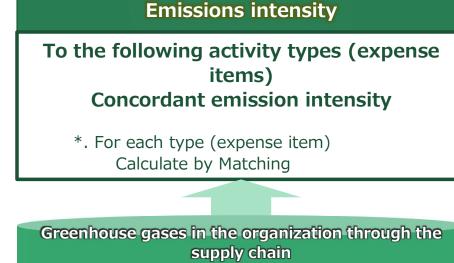
#### amount of activity

For the purchased products and services Annual cost for each type (expense item)

\*. For the granularity of types (expense items) Degree to which continuous calculation is possible



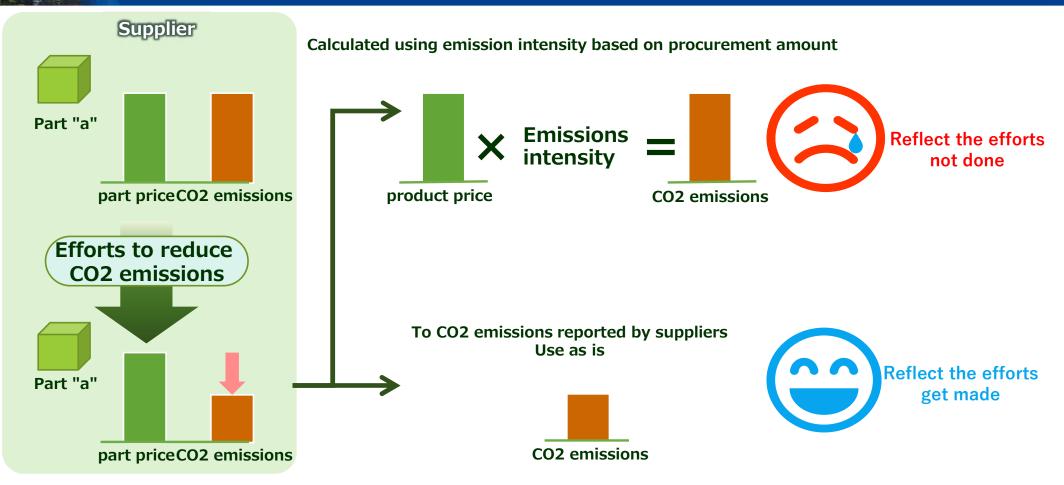
Material procurement system



Database of emission intensity for calculation of emissions, etc.

#### This calculation method does not reduce emissions unless procurement is reduced

### **Problems with Scope 3 Category 1 Calculation Methods**

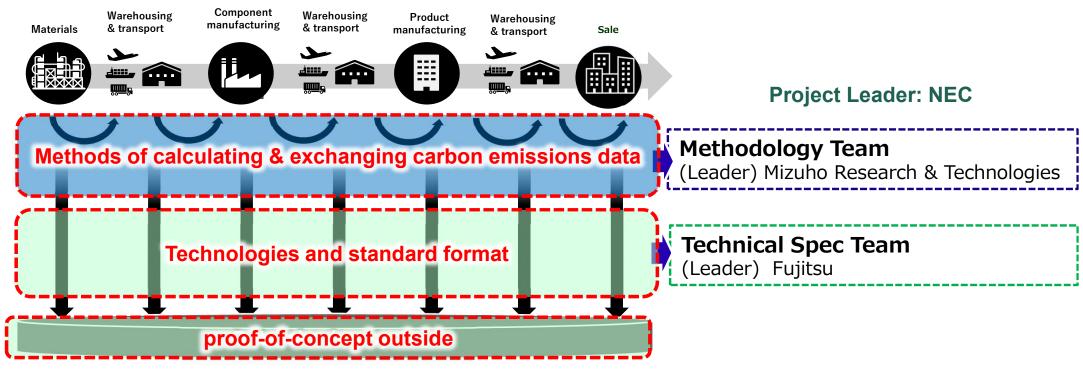


Suppliers' efforts to reduce CO2 emissions are not reflected

## **Our activities : Carbon data visualization project**

We will undertake the following activities to accurately gauge and pursue reduction of supply chain emissions with a particular focus on Scope 3:

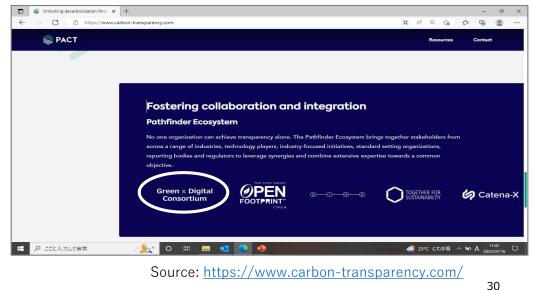
- ① Create methods (guidelines) for collecting, calculating and sharing carbon emissions data
- ② Consider technologies and a standard format for data
- ③ Conduct a PoC experiment on data linkage between carbon data emissions visualization solutions



## Our collaboration with WBCSD Partnership for Carbon Transparency (PACT)

#### **Ecosystem of WBCSD Pathfinder Framework**

- Catena-X
- CDP
- Climate Works Foundation
- Green x Digital Consortium
- Open Footprint Forum
- SINE foundation
- Together for Sustainability



#### Pathfinder Network Collaborator



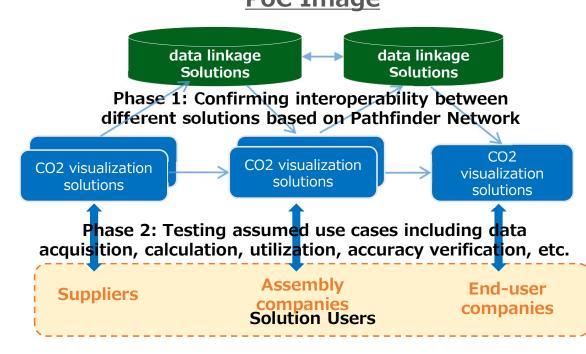
Source: <u>https://www.carbon-transparency.com/media/luhii1or/pathfinder-network-vision-paper.pdf</u>

## **Initiatives for Cooperation with PACT**

#### WBCSD World Business Council for Sustainable Development Carbon data visualization project World Business Council for Sustainable Development (one of the sponsors of the **GHG Protocol**) Membership companies: Approximately 200 data reliability, $\checkmark$ Japanese companies: Bridgestone, Canon, Dentsu, Eneos, Fujitsu, Hitachi, Honda, Komatsu, Mitsubishi Chemical, Mitsubishi Corporation, Mitsubishi Heavy Industries, Nomura Research Institute, Sompo Japan Insurance, Sumitomo Chemical, Sumitomo Forestry, Sumitomo Rubber Examination of the utilization Yokogawa Electric Corp. and Yokohama Rubber Co., Ltd. method Partnership for Carbon Transparency (PACT) 2021.06 ~ Examination of data operation $\checkmark$ https://www.carbon-transparency.com/ management system ✓ In order to ensure the transparency of Scope3, the primary data of GHG emissions consideration of participation $\checkmark$ across industries incentives; methodologically started as an initiative to make exchange possible, Alianment/Alianment **Rule-making Study Scope 3 Calculation and Reduction Issues** WG Study of CO2 calculation and Lack of methodologies to allocate GHG emissions to $\checkmark$ $\checkmark$ collection methods product levels Lack of accurate and validated primary data Pathfinder $\checkmark$ Consider how to share data $\checkmark$ Framework Limited exchange of GHG emissions data $\checkmark$ As a data exchange method data format Alignment/Alignment Collaboration PACT PACT 0-0-0-0 Study SWG Consider the following to enable primary data exchange of emissions across the supply chain Ise Case 001: PCE Da Consider common data formats ① Methodology for emission data calculation and exchange Consideration of global data 2 Based on interoperability of technology solutions, linkage Pathfinder Open network for the confidential and secure exchange of emissions data 31 Network

## 2 steps PoC on SCOPE3 emission data exchange

- A PoC is planned from the end of this year to next year in two phases.
- In Phase 1, the Pathfinder Network's data items and API specifications will be used to confirm the interoperability of multiple CO2 visualization and data exchange solutions.
- In the Phase 2, the use cases will be set in accordance with users' requirements and data exchange will be tested based on those assumed use cases.
   PoC Image



Phase 1: Testing interoperability between different solutions

Using Pathfinder Network-based data items and API specifications

Phase 2: Testing assumed use cases including data acquisition, calculation, utilization, accuracy verification, etc.

- Testing with Solutions Users
- ✓ Items unique to the consortium will also be added



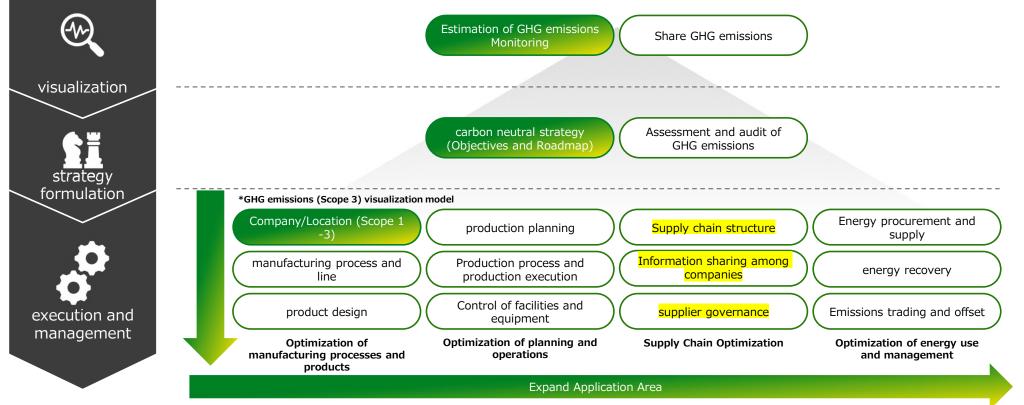
Utilizing digital technology and solutions to achieve carbon neutrality across society

Green × Digital Consortium

https://www.gxdc.jp/

## Sustainable Manufacturing: Carbon Neutrality

- Developing a carbon-neutral strategy based on the visualization of GHG emissions
- Helping to reduce GHG emissions through more efficient production, logistics, utilities, and energy procurement

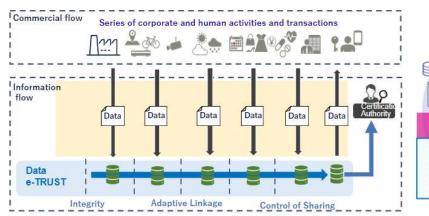


## Future: Distribution of Environmental Value by Blockchain FUJITSU

#### Distribution of environmental information across the entire supply chain

- Grasp GHG emissions in the supply chain by taking over CFP from each company's primary data to the downstream side. Realization of CFP distribution by primary data
- Joined JEITA Green × Digital Conso. **Carbon data visualization project** Data Distribution SWG

### To manage trails of various transactions and activities related to supply chains and value chains of inter-company transactions as unfalsifiable evidence



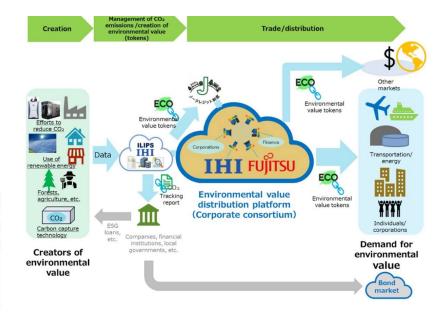


https://www.fujitsu.com/global/about/resources/news/press-releases/2022/1017-01.html?\_gl=1\*oxbrgq\*\_ga\*MTI1MTAxNTA1MS4xNjc1MzE3MTc1\*\_ga\_3XKLQLRH61\*MTY3NTMyMzE3My4xLjEuMTY3NTMyNDc4NS42MC4wLjA.

https://www.fujitsu.com/global/services/caas/data-e-trust/

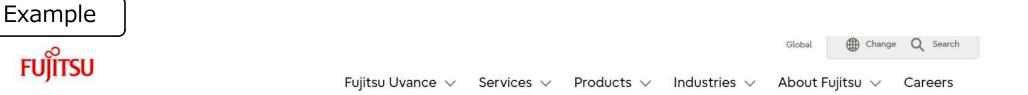
#### New environmental value distribution platform

- At the end of March 2022, IHI conducted and completed a demonstration experiment to distribute tokens to the environmental value trading market in collaboration with "ILIPS" and "Connection Chain.".
- Based on these results, we launched this project in earnest as a joint project.

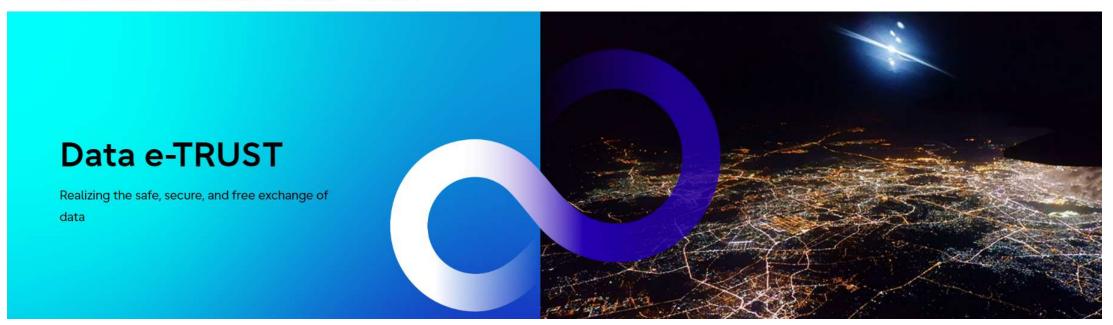


https://www.fujitsu.com/global/about/resources/news/press-releases/2022/0412-01.html?\_gl=1\*1ntrnoz\*\_ga\*MTI1MTAxNTA1MS4xNjc1MzE3MTc1\*\_ga\_3XKLQLRH61\*MTY3NTMyMzE3My4xLjAu MTY3NTMyMzE3My42MC4wLjA.

## **Challenge: Distribution of Environmental Value**



Home > Services > Fujitsu Computing as a Service (CaaS) > Data e-TRUST



https://www.fujitsu.com/global/services/caas/data-e-trust/

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