

# FY 2017 ESG Presentation Fujitsu's Environmental Initiatives

March 20, 2018

Hideyuki Kanemitsu

VP, Head of the Corporate Environmental  
and CSR strategy Unit

Fujitsu Limited

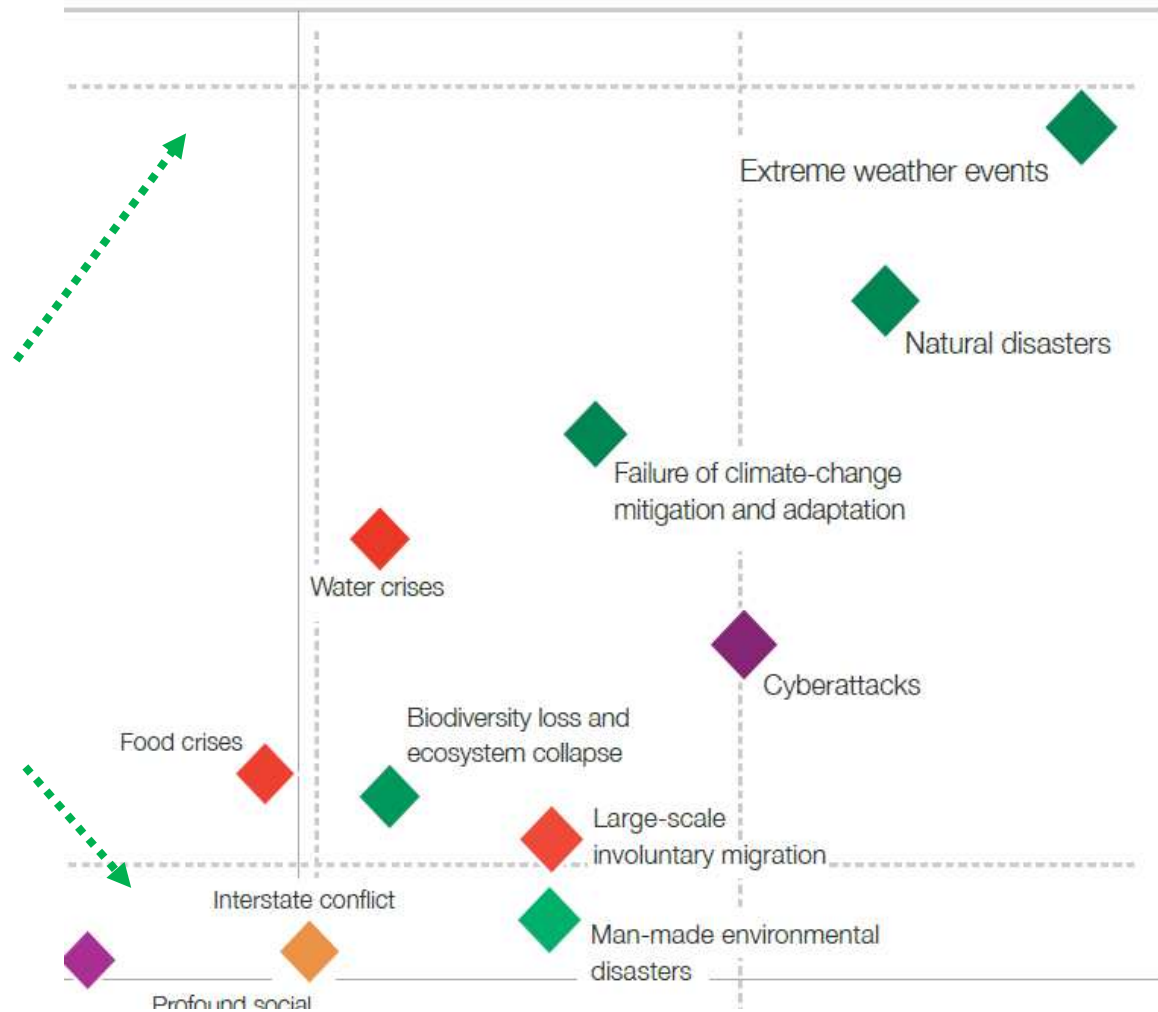
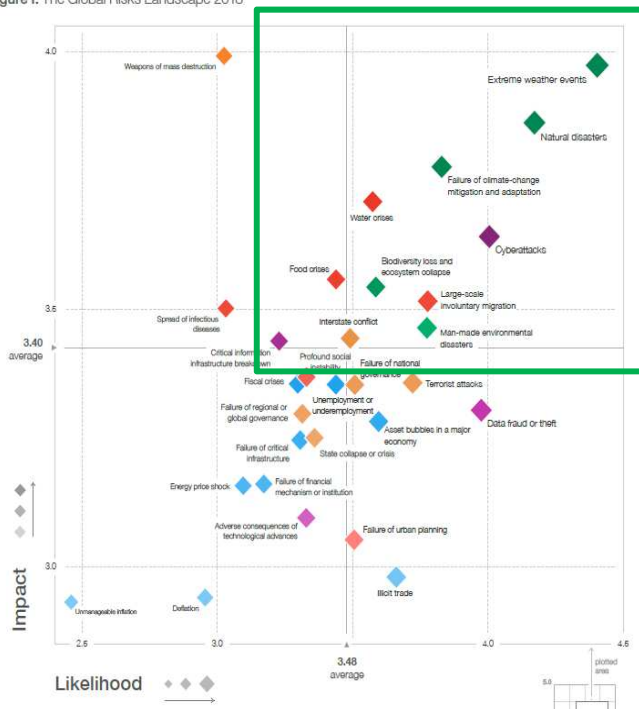
- Global trends relating to climate change
- Fujitsu's Vision (Vision2050)
- Business-based environmental initiatives
- Expanding use of renewable energy
- Resolving social issues
- Future-focused technology R&D
- Outside evaluations of Fujitsu environmental and CSR activities

# 1 Recognizing Risks at a Global Level

## ■ The Global Risks Landscape 2018



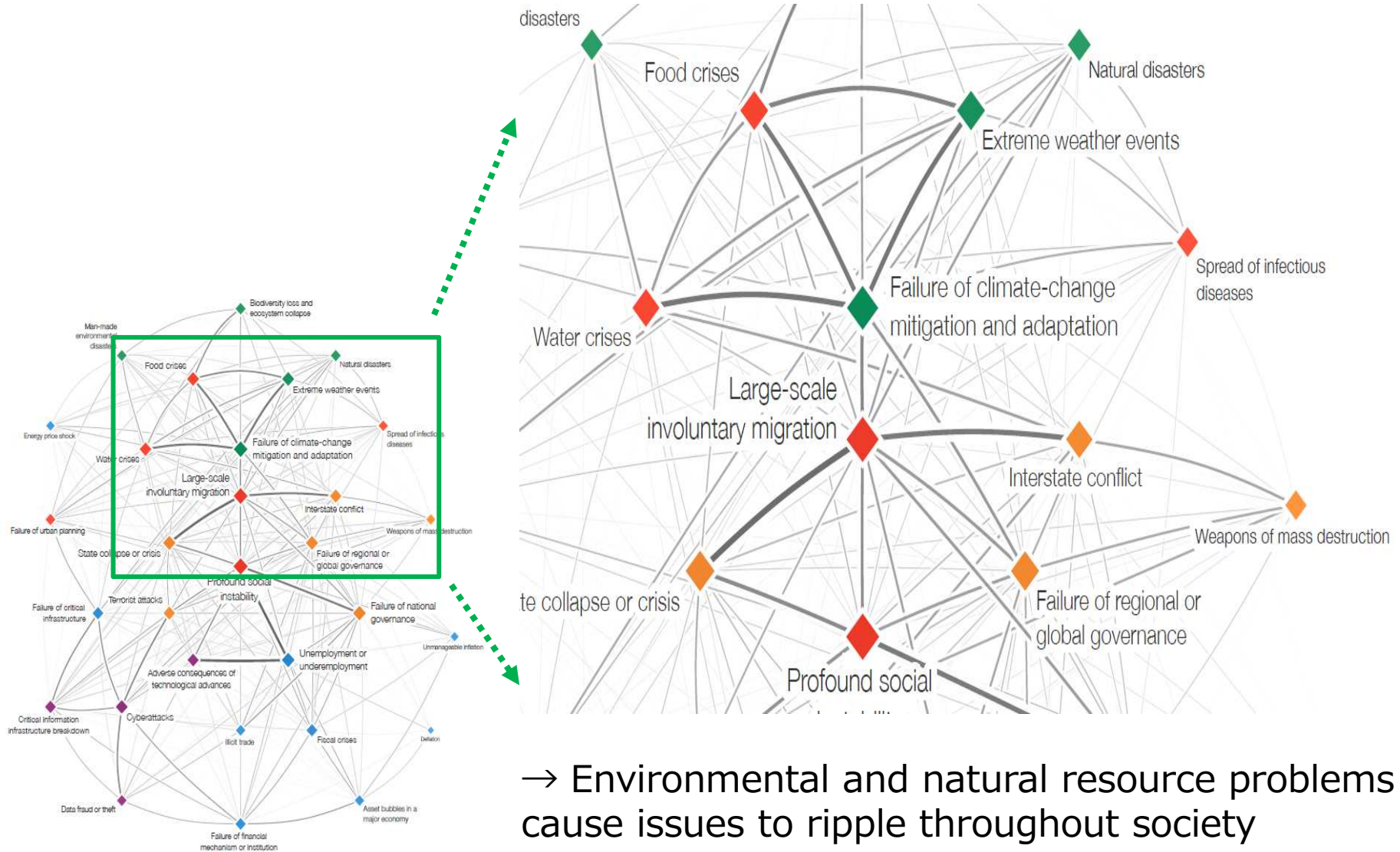
Figure I: The Global Risks Landscape 2018



<https://www.weforum.org/reports/the-global-risks-report-2018>

# 1.2 Mapping the Interconnections of These Risks

## ■ The Global Risks Interconnections Map 2018



→ Environmental and natural resource problems cause issues to ripple throughout society

## 2 The UN Sustainable Development Goals (SDGs)

- **Sustainable Development Goals** \*Adopted in September 2015
  - A set of common goals for international society through 2030
  - The UN set of 17 goals focused on the important issues of sustainability and the elimination of poverty



# 2.2 SDGs Progress by Goal



## 2.3 Paris Agreement Global Warming Countermeasures Take Effect



Nations Unies  
sur les Changements Climatique

COP21/CMP11

Paris, France

Paris Agreement = International rules



### 3 Fujitsu's Vision (Global Warming Countermeasures)

#### ■ “Climate & Energy Vision 2050” (Published May 2017)



CO<sub>2</sub> “ZERO” by 2050

Fujitsu accepts the challenge of this great transformation by innovating from within itself





# 3.2 Three Pillars of the Fujitsu "C&E Vision 2050"



「CO<sub>2</sub> 0」

「Mitigation」

「Adaptation」



7 AFFORDABLE AND CLEAN ENERGY



13 CLIMATE ACTION



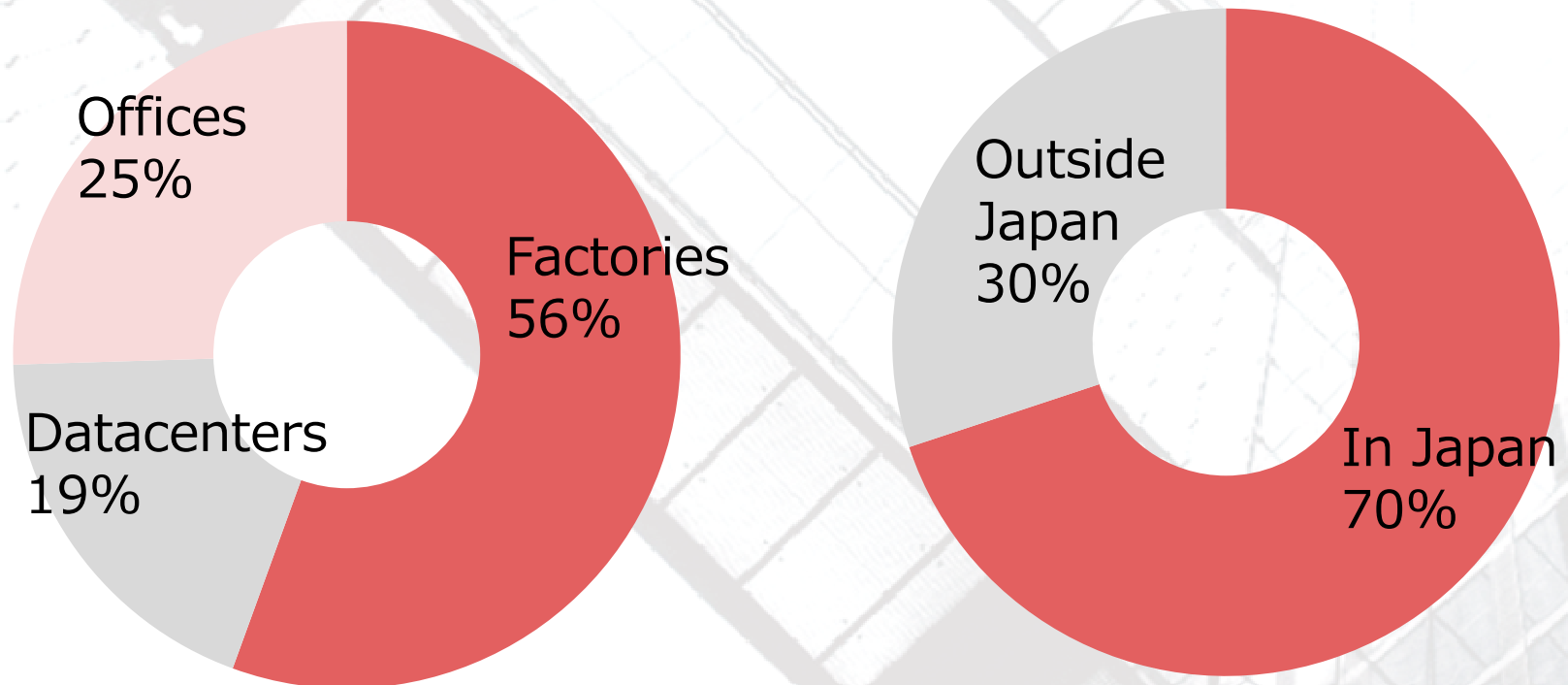
Photo source:  
[www.city.hiroshima.lg.jp/shobou/bousai/260820](http://www.city.hiroshima.lg.jp/shobou/bousai/260820)

### 3.3 Fujitsu's Gross CO<sub>2</sub> Emission Volume (by category) **FUJITSU**

- Accelerating changes in business structure

Manufacturing → services, connected business development → emissions from datacenters and outside Japan grow proportionally

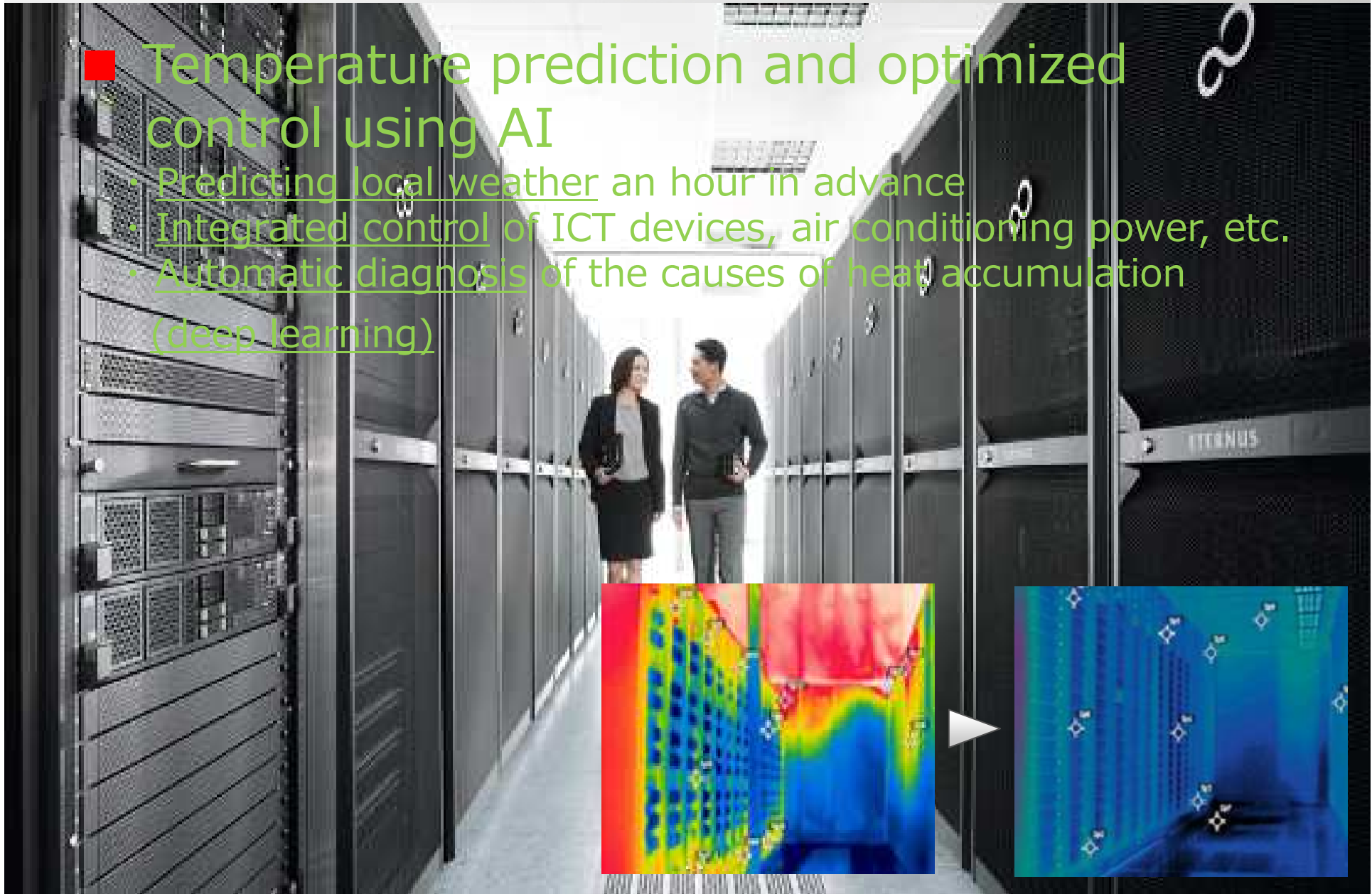
- Renewable energy usage: 7.5% (currently)



Total for FY 2016: **1.345 million tons**

### ■ Temperature prediction and optimized control using AI

- Predicting local weather an hour in advance
- Integrated control of ICT devices, air conditioning power, etc.
- Automatic diagnosis of the causes of heat accumulation (deep learning)

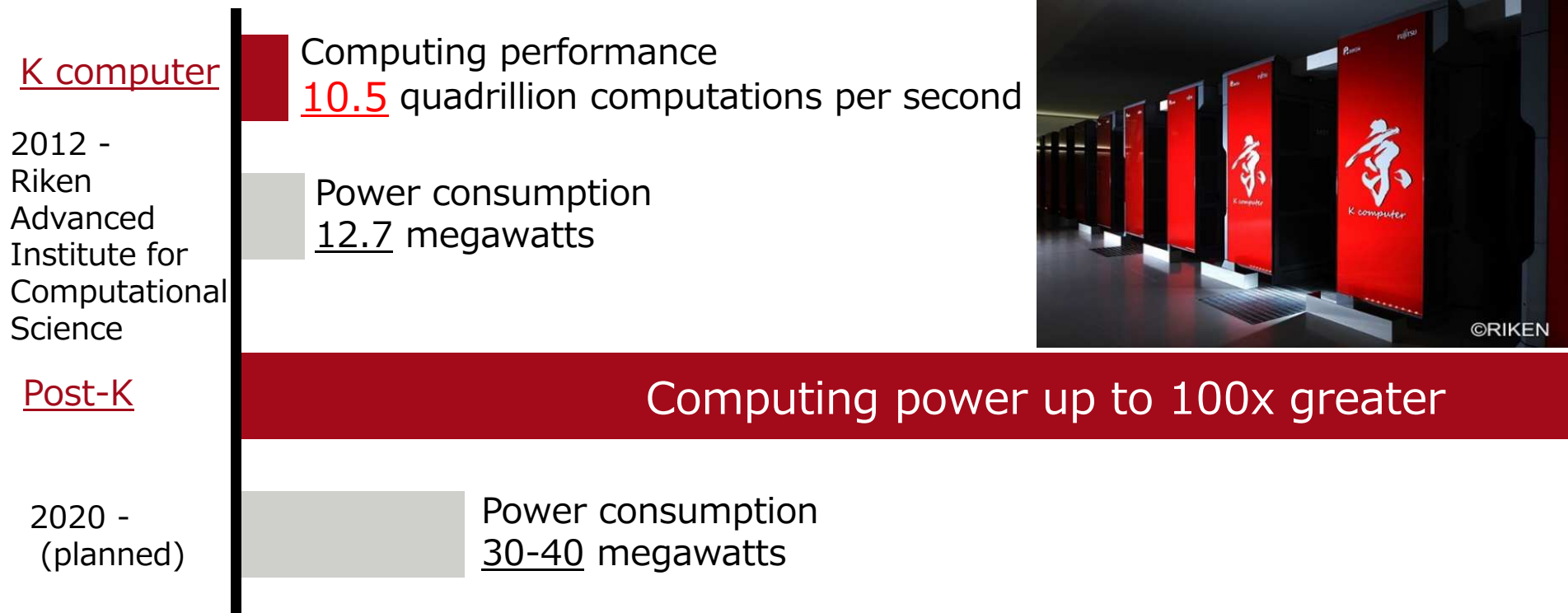


## 3.5 Developing Next-Generation Supercomputers

### Supercomputers are also shifting focus from computing performance to energy-saving performance

We aim to make Post-K 30-40 times better performing than the K computer

- Comparison of the computing performance and energy consumption of the fastest supercomputers in Japan



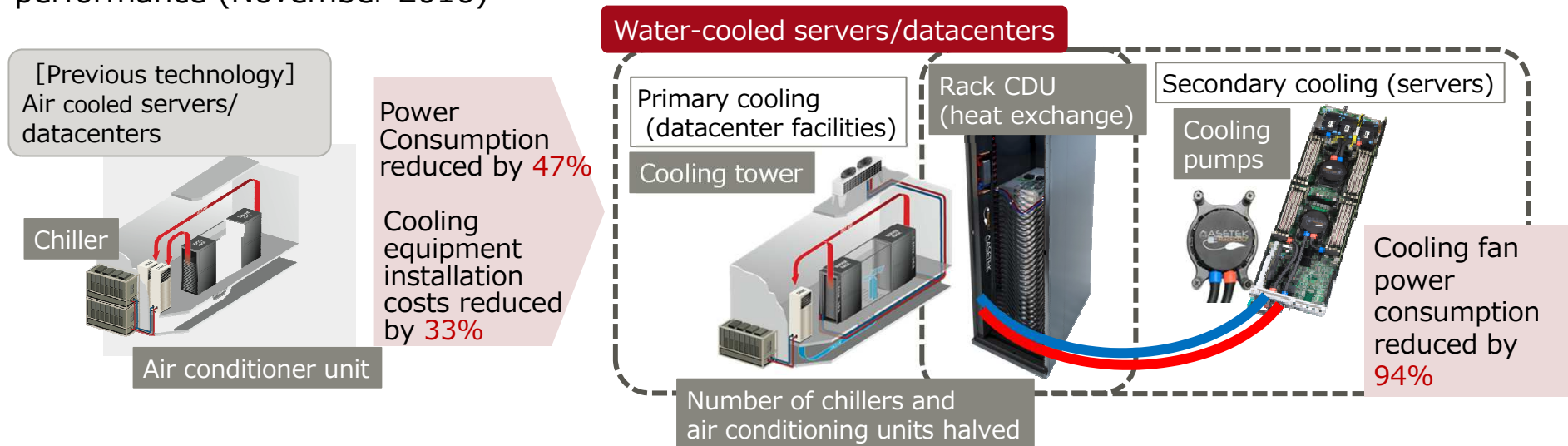
# 3.6 Energy-Saving Server Development



## Fujitsu receives Environment Minister Award (November 2017)

### PRIMERGY CX600 - Reducing CO<sub>2</sub> emissions using a water cooling system -

- By adopting a water cooling model using outside air for cooling, power consumption is reduced by 47%, contributing to reduced CO<sub>2</sub> emissions
- The Oakforest-PACS supercomputer (jointly operated by the University of Tokyo and the University of Tsukuba), which uses this model, earned 6th place in the Green500 rankings of energy-saving performance (November 2016)



Senior Vice-Minister of the Environment Naomi Tokashiki presenting the award



## 3.7 Enhancing Supply Chain Initiatives

### ■ Goals

- Reduce supply chain environmental burden, manage business risks
- Operate in a unified global format, increasing the efficiency of survey, analysis and management

### ■ Participation in the CDP [supply chain program]

#### Program summary



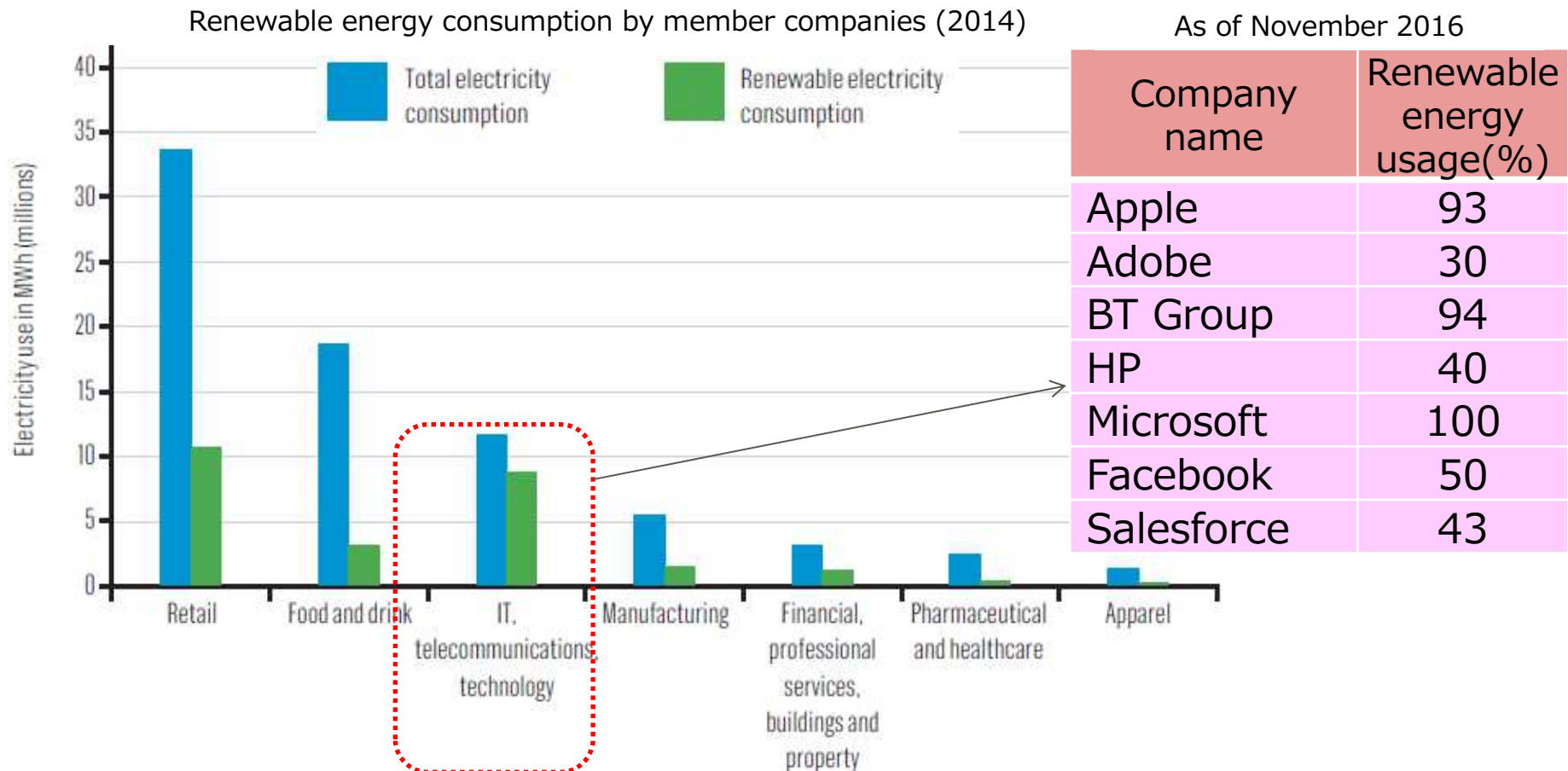
### ■ Review subjects

- FY 2018: 70% by procurement volume, particularly for components and SI services (About 50 companies)
- FY 2019: At least the top 80% by procurement volume

# 4 Promoting Adoption of Renewable Energy

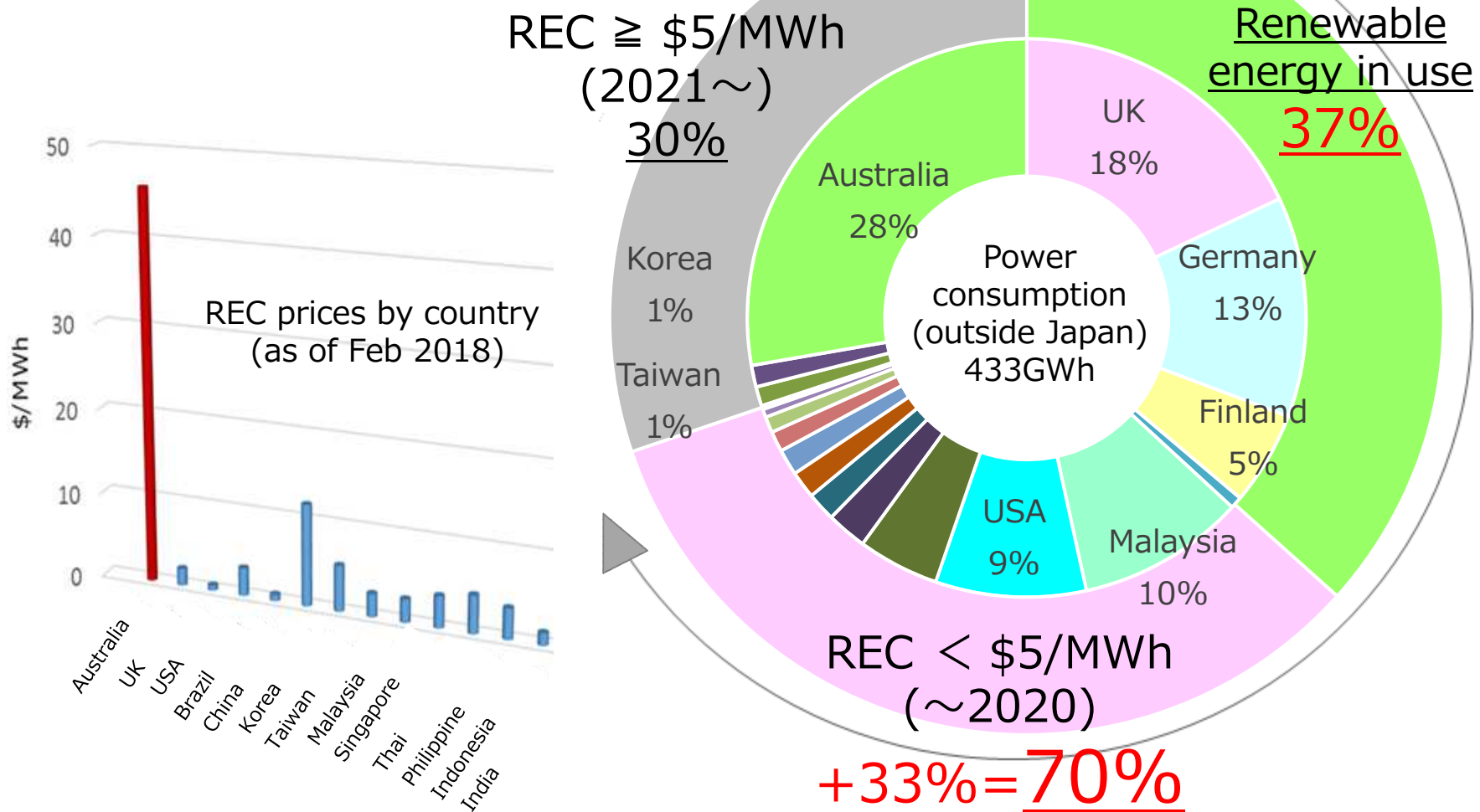
- Fujitsu’s renewable energy usage status: 7.5% (forecast for FY 2017)
- 123 companies have committed to the RE100 initiative (as of January 2018)

Major ICT companies in the US and Europe have taken the lead over other companies, and are transitioning to renewable energy



## 4.2 Renewable Energy Deployment Plan (Locations outside Japan)

- Purchase renewable energy certificates (RECs) in regions where the cost is low
- Purchasing plan: **70%** (by 2020)



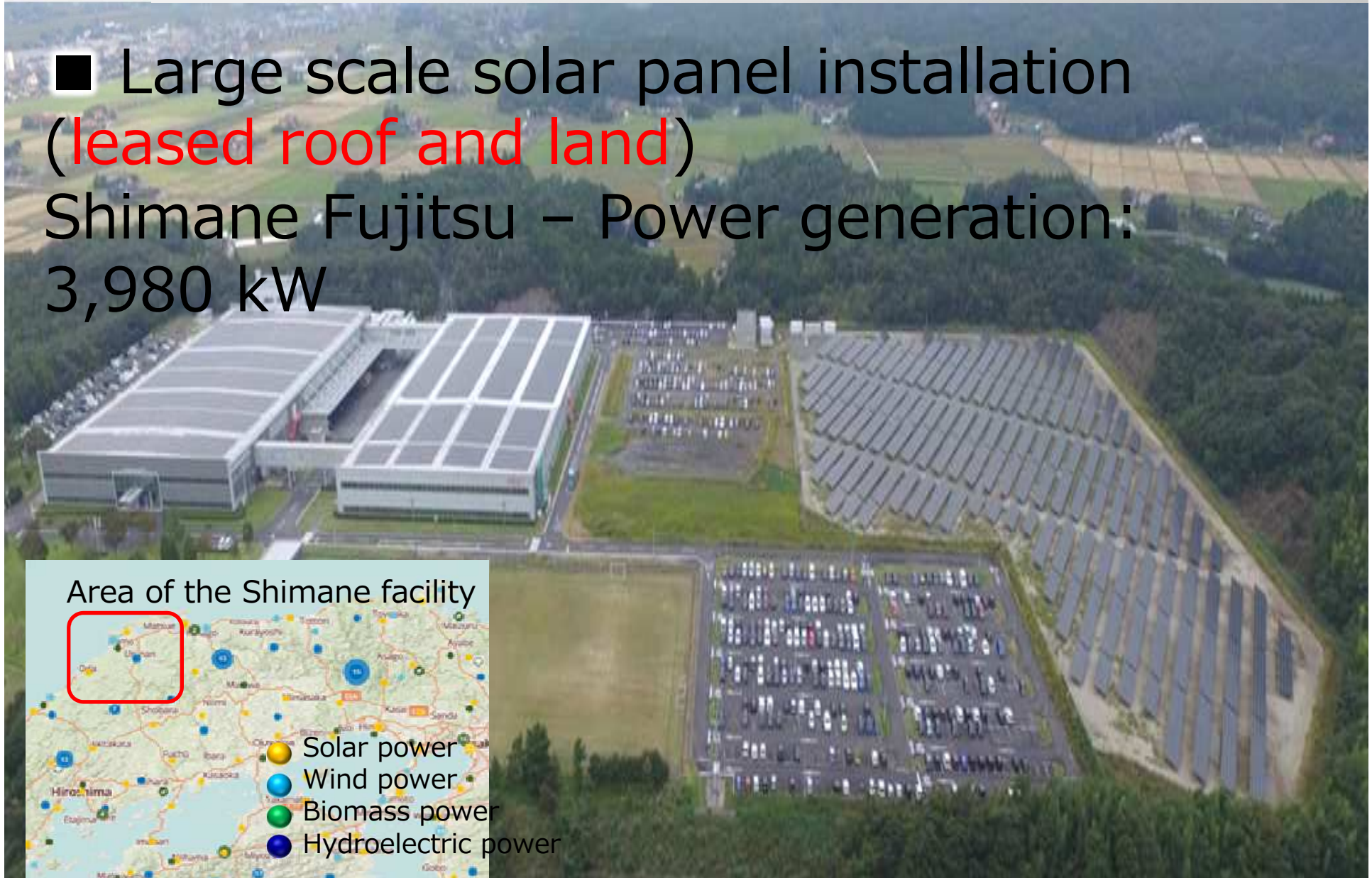


## 4.3 Renewable Energy Deployment (On-Site Power Generation)



■ Large scale solar panel installation  
(leased roof and land)

Shimane Fujitsu – Power generation:  
3,980 kW



Area of the Shimane facility

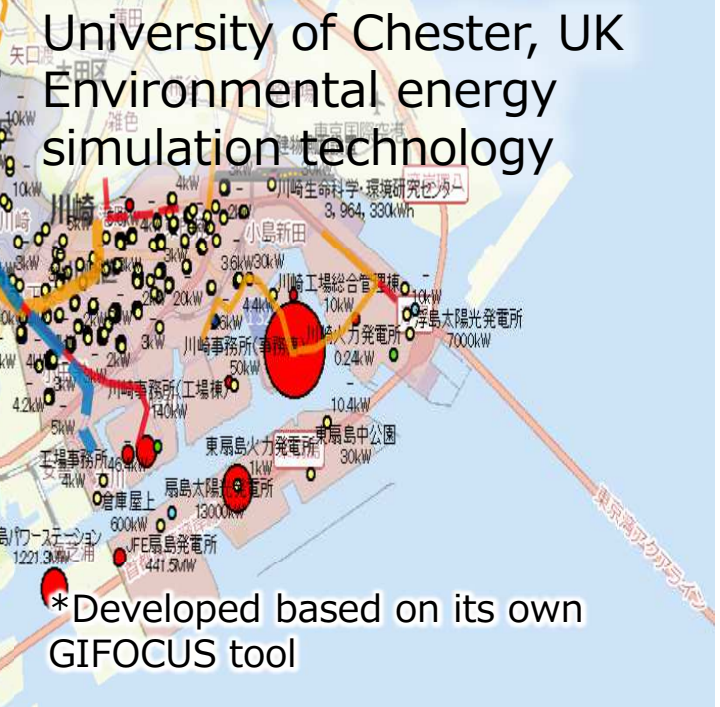
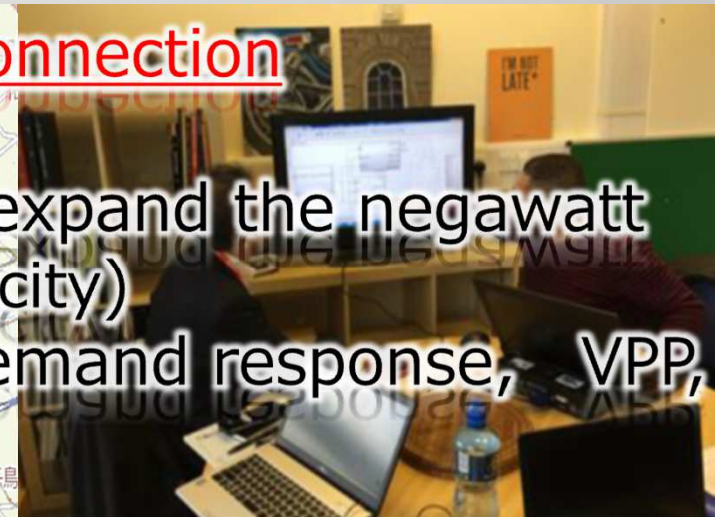


- Solar power
- Wind power
- Biomass power
- Hydroelectric power

## 4.4 Expanding the Deployment of Renewable Energy (Locations in Japan)

■ Joint research on regional energy connection (Kawasaki City, 2017-present)

■ Building up technology in order to expand the negawatt market (cost incentive for saved electricity) (METI's field trial for preparation of demand response, VPP, 2015-present)



University of Chester, UK  
Environmental energy  
simulation technology

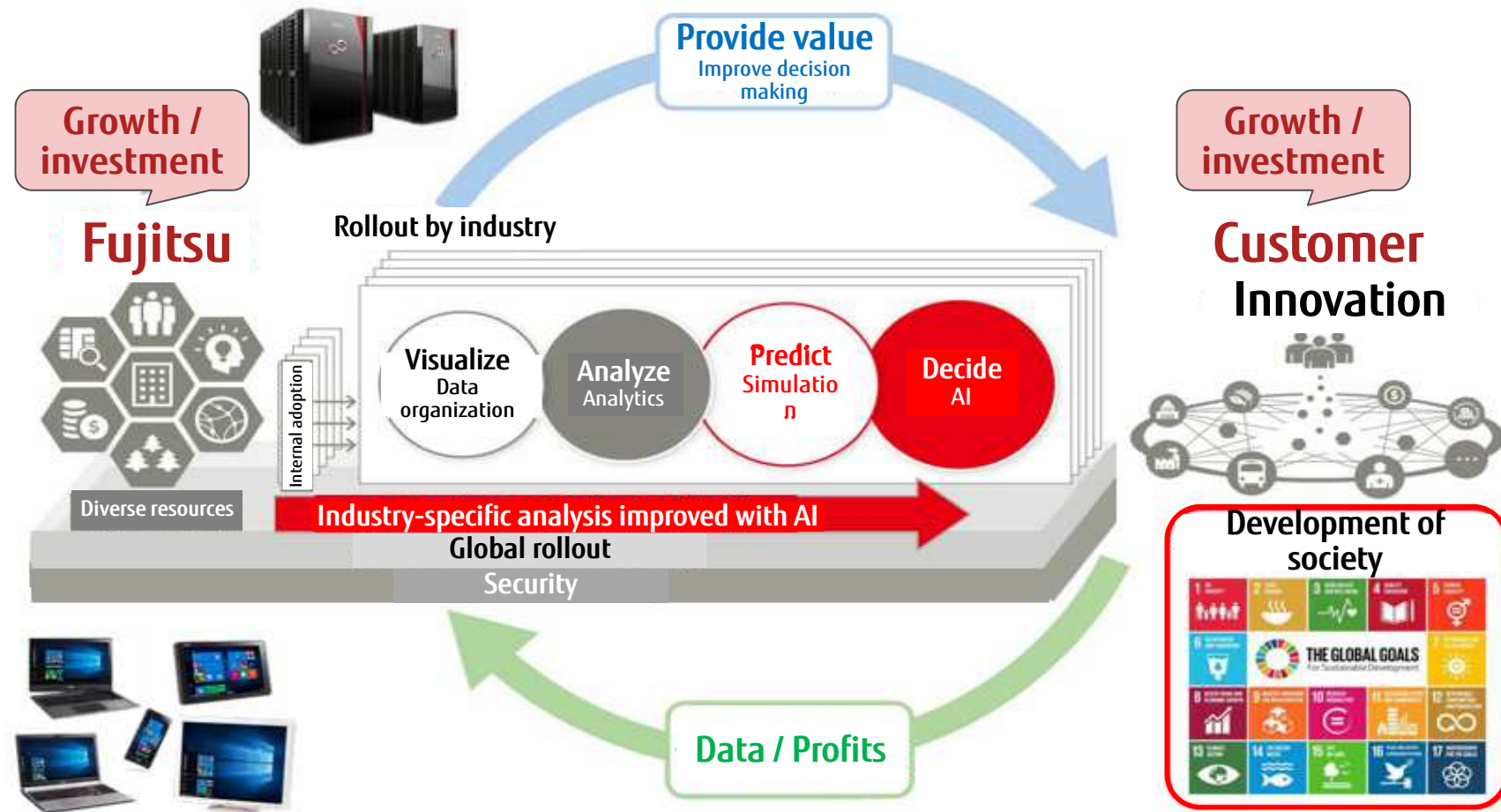


MediaCityUK, Salford,  
Manchester, UK

\* Developed based on its own  
GIFOCUS tool

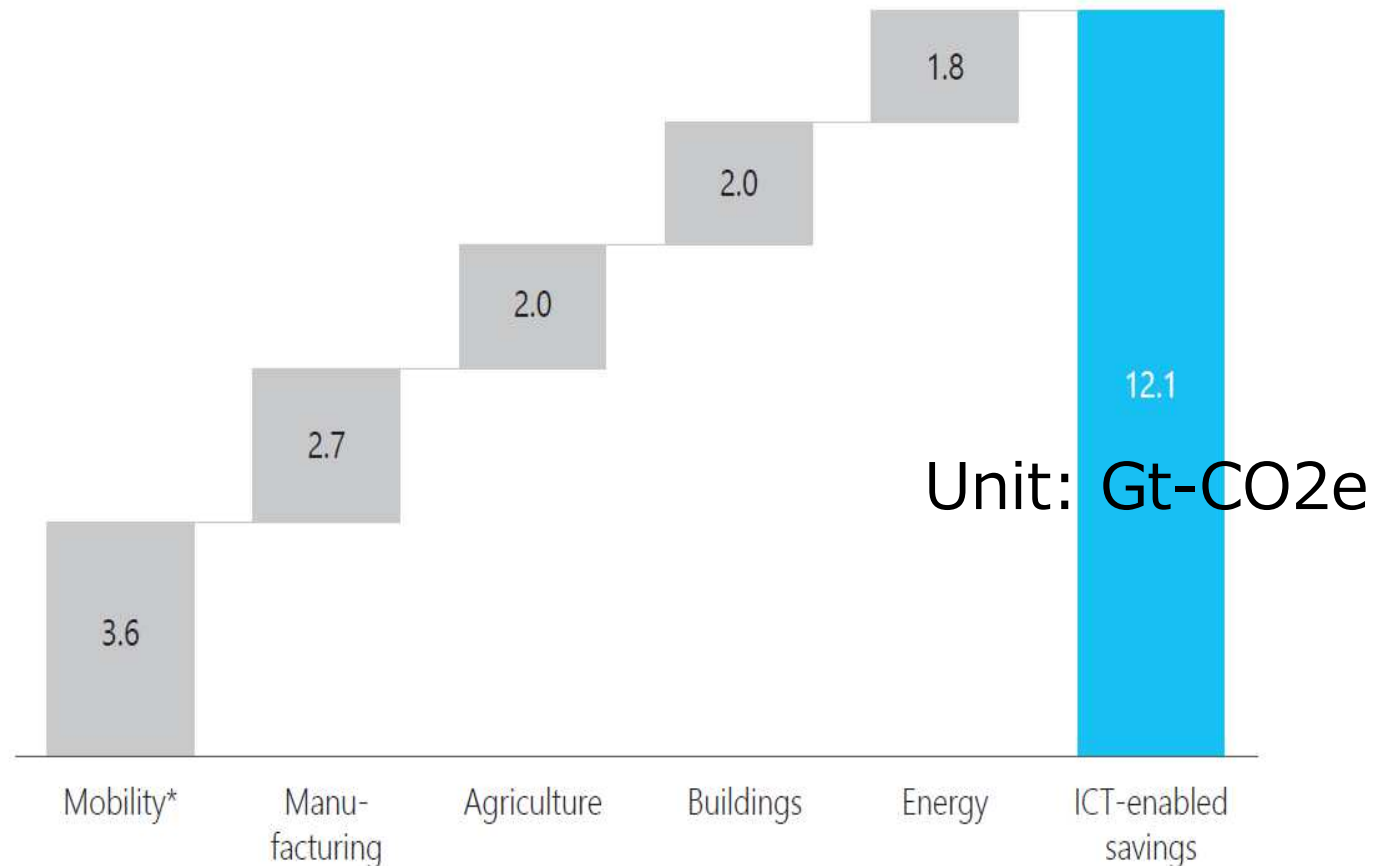
# 5 Creating Value through Digital Innovation

- By focusing efforts on the shift to services in ICT, we strengthen innovation through co-creation with customers



## 5.2 Potential CO<sub>2</sub> Reduction

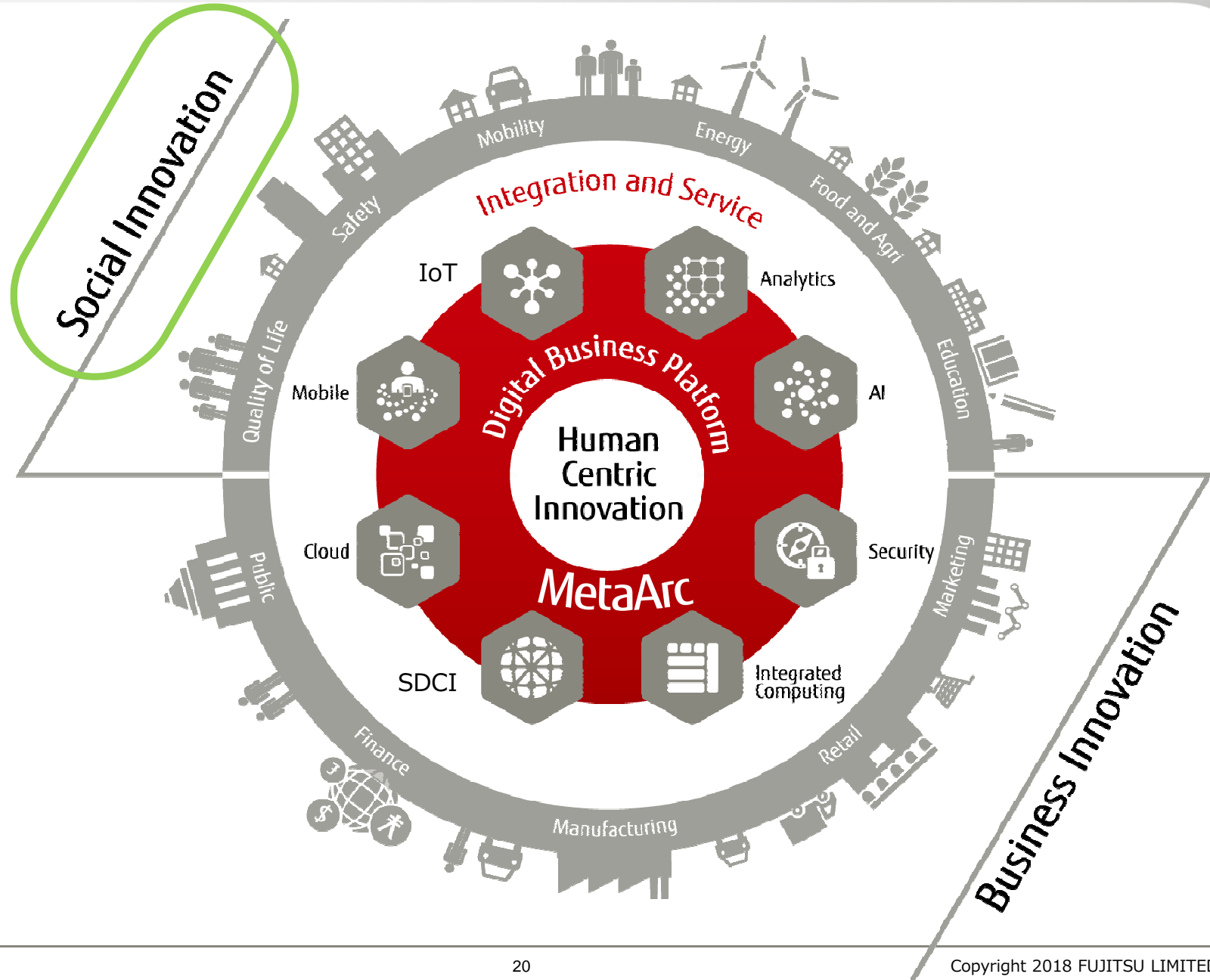
- It is possible to reduce projected total global CO<sub>2</sub> emissions for 2030 by about 20% through full utilization of ICT



\* Mobility solutions consider ICT-enabled improvements to private and commercial mobility and additionally consider the reduced need to travel from various sectors, including health, learning, commerce, etc.

Ref. Smarter 2030 GeSI

# 5.3 Fujitsu's Approach to Issues in Society



## 5.4 Fujitsu's AI Strategy



# Example 1: Smart Factory

- Production efficiency improved by 25% due to a real-time grasp of factory data
- Customer issues: Integrated management of a variety of KPIs, including production, quality, efficiency, cost, and energy consumption, aimed at creating a smart factory
- Intelligent Dashboard – processing and analysis of **hundreds of thousands** of data points in **real time**, visualization of productivity for **the factory as a whole**

Selected as one of the model factories for the 2016 Smart Manufacturing Project



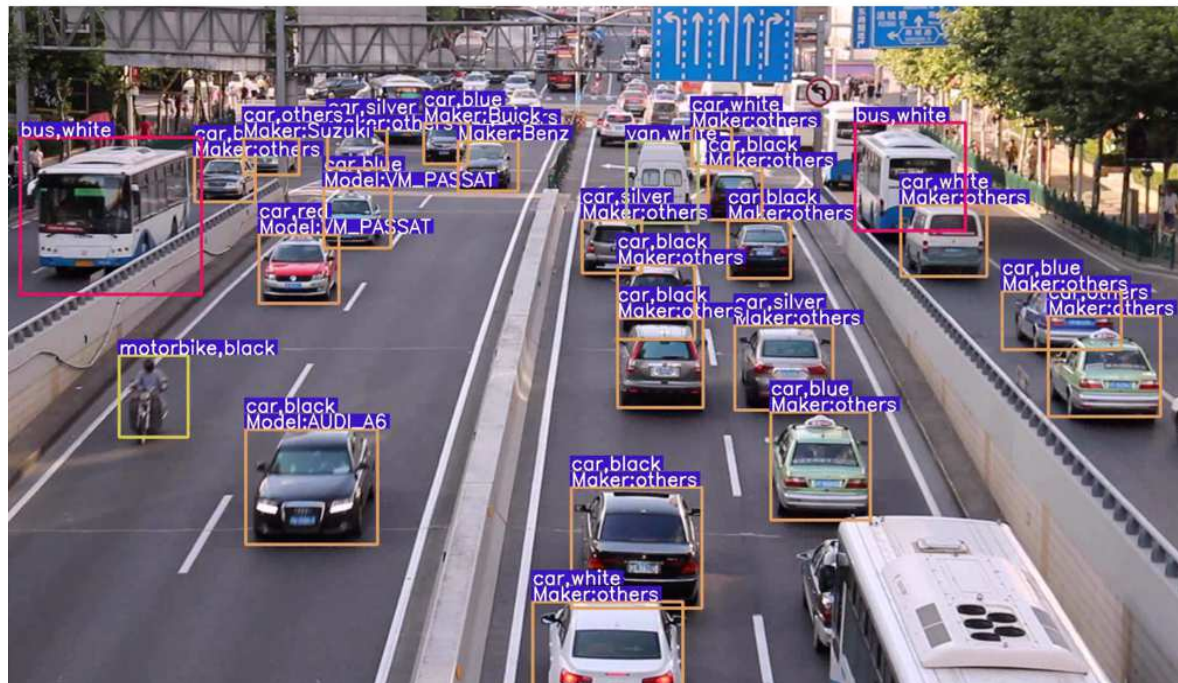
## Example 2: Smart Mobility and City Monitoring



- Fujitsu can not only provide **monitoring of traffic congestion**, but also **prevent crimes in advance** through detection of people and vehicles using deep learning
- Customer issues: **Traffic congestion** in developing countries due to the advance of urbanization leads to **air pollution** and **global warming**
- Real time, **highly accurate detection of things like traffic and accidents** using **AI**-based image recognition technology (accurately estimating the position of vehicles even at night, through air pollution, or in fog)

- Anomaly detection based on characteristics and changes in vehicle movement
- Characteristics are recognized, detecting the appropriate vehicle

Human Centric AI  
ジンライ  
**Zinrai**





## Example 3: Smart Mobility (Ships)

- Fuel consumption improved by about 5% through accurate prediction of operating data
- Customer issues: Designing safe and economical ships, selecting an optimal course based on climate and weather factors at sea
  - CO<sub>2</sub> emissions due to oceanic shipping: 900 million tons (about 3% of global emissions)
  - Annual fuel costs: On the order of several hundred billion yen
- Accurately estimating factors such as ship performance, fuel consumption, and travel time using AI

Human Centric AI  
ジンライ  
**Zinrai**



## Example 4: Global Weather Forecasting

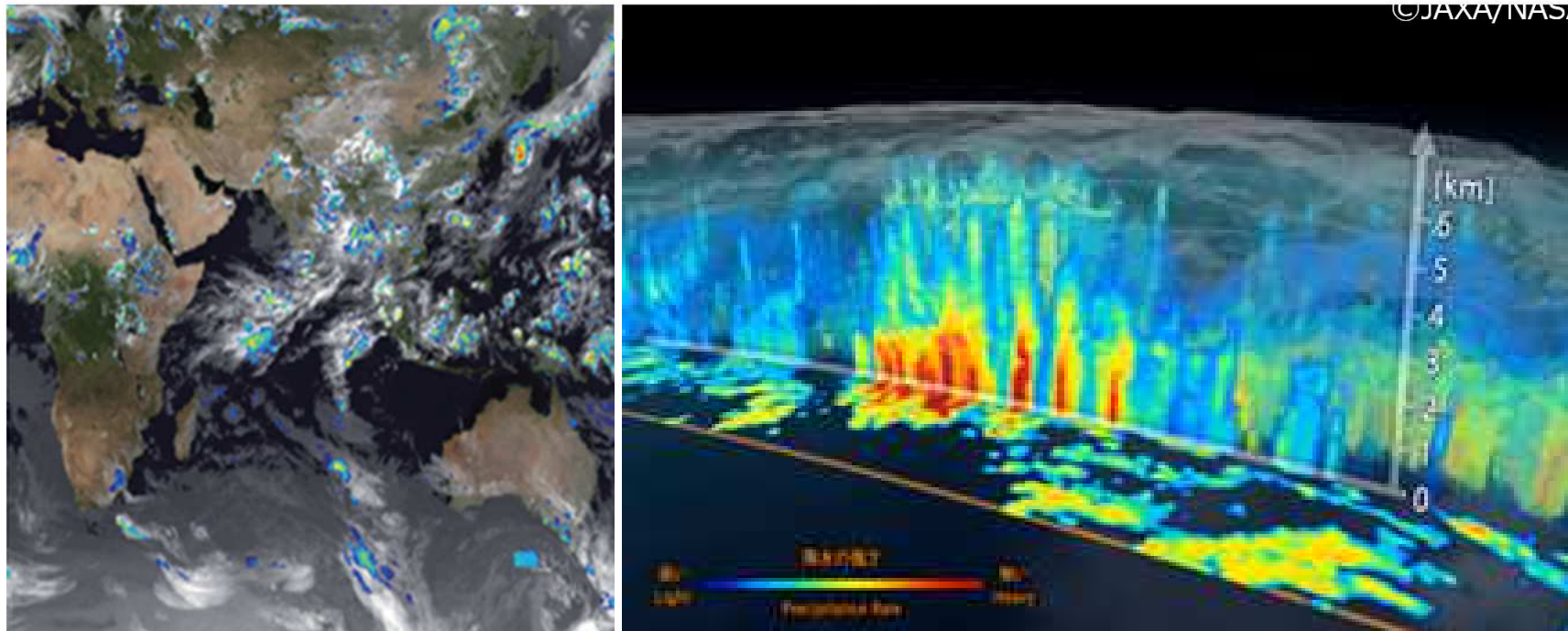
### ■ Monitoring and simulation using HPC

- Customer issue: High-speed, highly precise real-time rainfall monitoring

→ Reduce damage and economic losses from extreme downpours

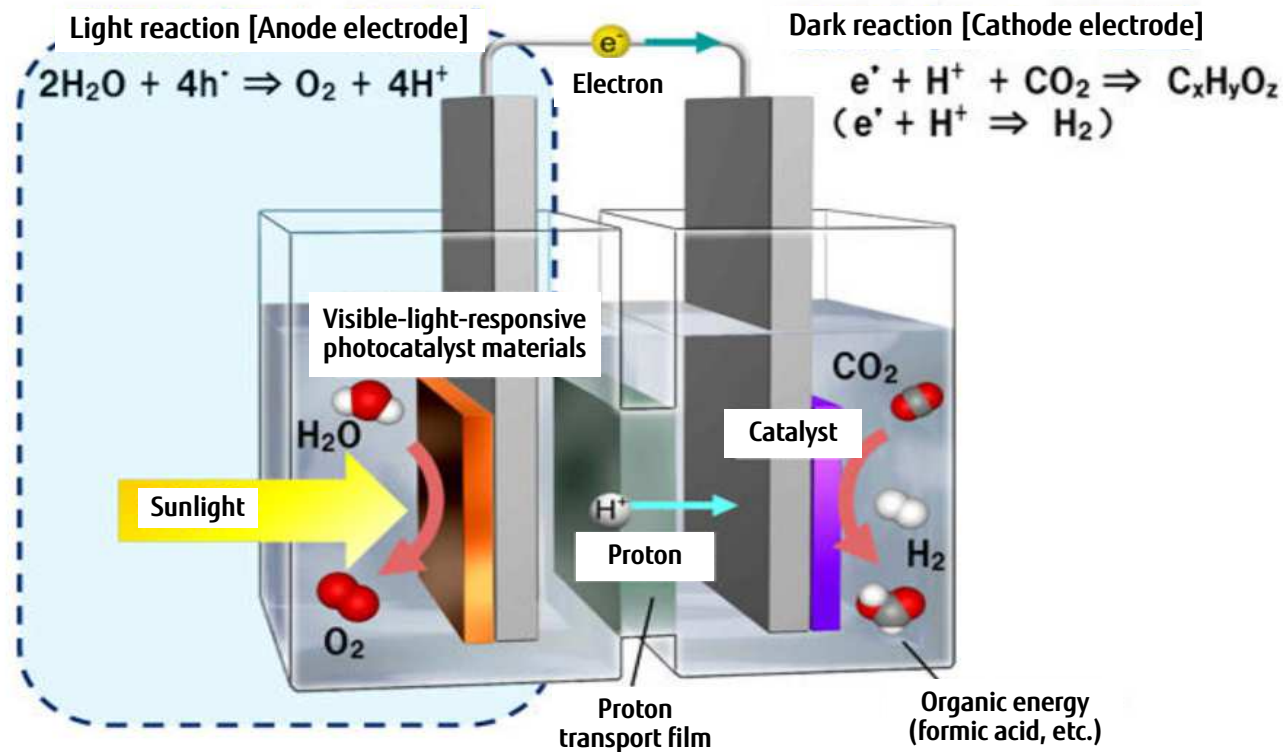
→ Manage important fresh water resources

- Combined with observational data from multiple satellites, create hourly rainfall maps for the entire globe



## 6 Future Technology: Artificial Photosynthesis

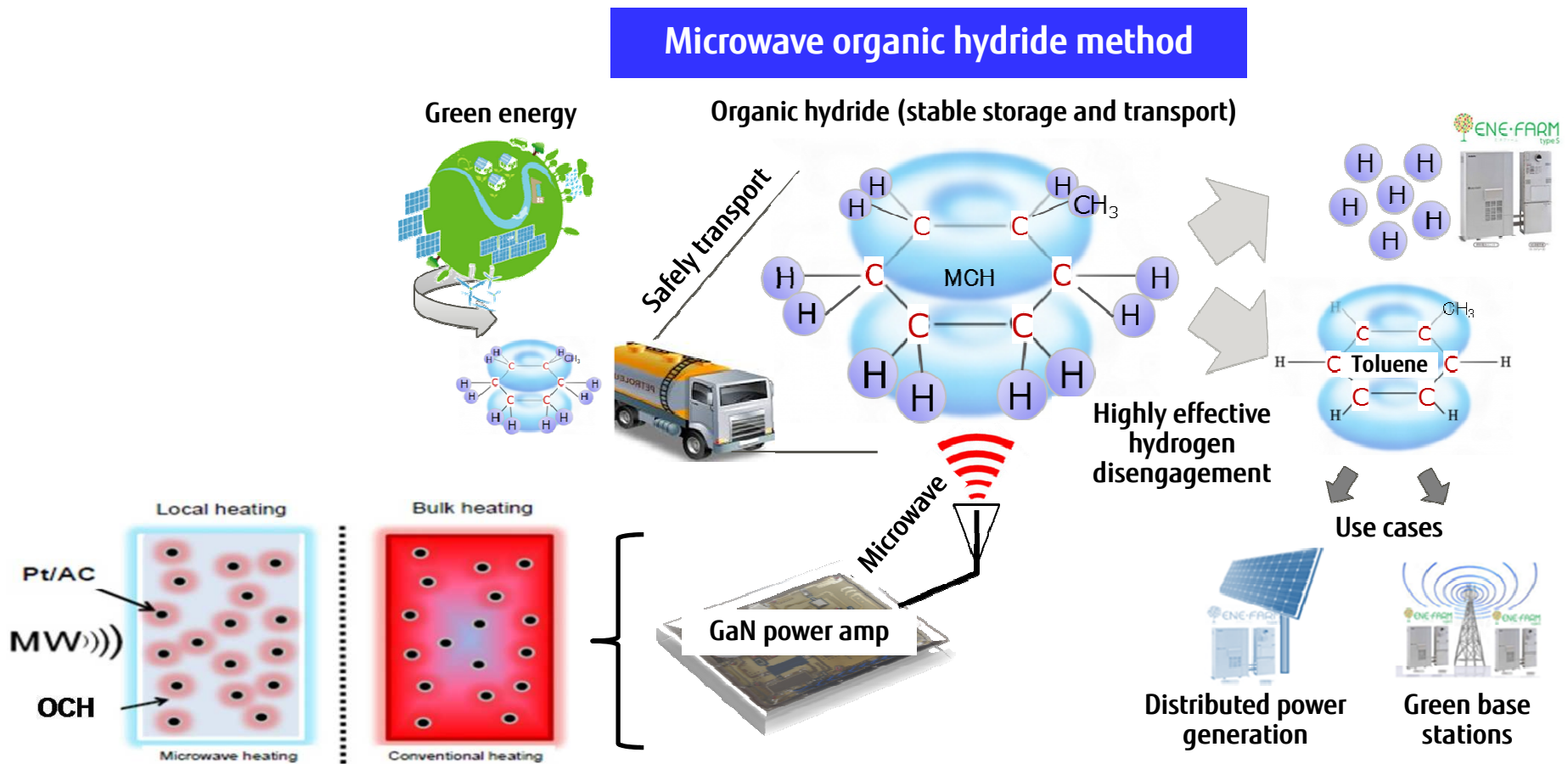
- Synthetically produce oxygen and energy from sunlight, water, and CO<sub>2</sub>
  - Decarbonization technology that uses CO<sub>2</sub> as the raw material for making energy, plastics
- Increases oxygen-producing efficiency by more than 100-fold (November 7, 2016 press release from Fujitsu Laboratories)



Artificial photosynthesis technology

# 6.2 Hydrogen Society: Stable Storage and Transport Technology

- Technology for efficiently liquefying hydrogen energy (for storage and transport) to enable it to be easily accessed for use
- Apply to **hydrogen stations**, **fuel cell vehicles**, **hydrogen generators**



## 7 Environmental and CSR Activities: Results of External Evaluations

- DJSI: Top score in the industry in the environmental area for three consecutive years
- FTSE: Blossom Japan Index newly established;  
4Good Fujitsu has second-highest overall score in Japan
- CDP: Received A list designation in two categories this fiscal year (only 6 companies in Japan)
- Nikkei: Ranked 12th (No. 1 rank in electronics area)

|                       | Fujitsu  | Hitachi | Toshiba | NEC  | Mitsubishi Electric | Panasonic | Sony |
|-----------------------|----------|---------|---------|------|---------------------|-----------|------|
| DJSI                  | ○        | ○       | -       | -    | -                   | ○         | -    |
| FTSE<br>Blossom Japan | 4.4      | -       | -       | 3.8  | 3.2                 | 3.6       | 3.9  |
| CDP<br>Climate change | <u>A</u> | B       | A       | A-   | A                   | A-        | A    |
| CDP<br>Water          | <u>A</u> | B       | B       | B    | A                   | B         | A    |
| Nikkei                | 12th     | 20th    | 54th    | 46th | 37th                | 15th      | 16th |

## 7.2 Received 11 External Awards (since April 2016)



### Won Grand Prize in the 26th Global Environment Award

#### ■ Overview of the Award

- Sponsored by Fujisankei Group, with support from five ministries, it is Japan's largest environmental award



#### ■ Award Description

##### Overall Environmental Activities

- Environmental management direction and implementation organization, environmental initiatives
- Achievements of Fujitsu Group Environmental Action Plan (Stage VII)

##### Special Item

- Development of world's most efficient AC adapter using GaN-HEMT



## 7.3 Received Two Japanese Environment Minister's Awards in FY2017



- Global Warming Prevention Activity
- Grand Award of Global Warming Countermeasures Report

### FUJITSU Server PRIMERGY CX600 M1

Your platform for highly parallel computing

- 2.5x performance improvement
- Water-cooled model employing latest "hot water cooling" technology added to line of coolers

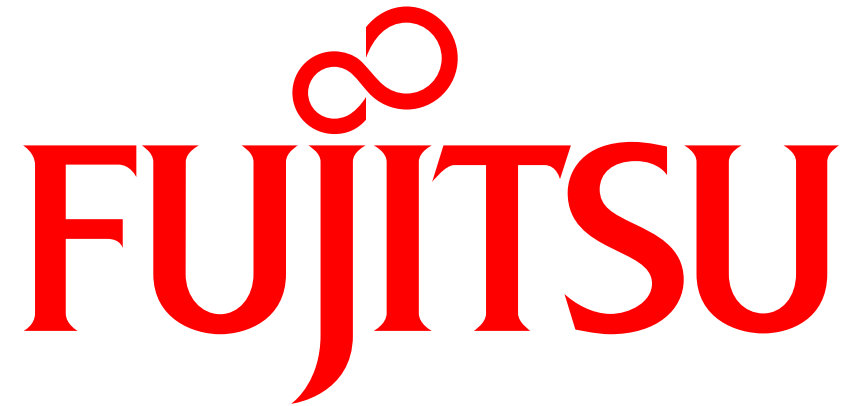




*Shaping  
Tomorrow  
with You*

Pressmaster / Shutterstock.com





shaping tomorrow with you

# Cautionary Statement

These presentation materials and other information provided at the meeting may contain forward-looking statements that are based on management's current views and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in such statements. Actual results may differ materially from those projected or implied in the forward-looking statements due to, but not limited to, the following factors:

- Macro-economic environments and market trends in the principle geographic markets for Fujitsu's services and products, which are Japan, EMEIA, the Americas, Asia, Oceania and elsewhere, particularly such conditions that may effect customers' IT spending;
- Rapid technological change, fluctuations in customer demand and intensifying price competition in IT, telecommunications, and electronic device markets in which Fujitsu competes;
- Fujitsu's ability to dispose of non-core businesses and related assets through strategic alliances and sales on commercially reasonable terms, and the impact of losses which may result from such transactions;
- Uncertainties as to Fujitsu's access to, or protection for, certain intellectual property rights;
- Uncertainty as to the performance of Fujitsu's strategic business partners;
- Declines in the market prices of Japanese and foreign equity securities held by Fujitsu which could cause Fujitsu to recognize significant losses in the value of its holdings and require Fujitsu to make significant additional contributions to its pension funds in order to make up shortfalls in minimum reserve requirements resulting from such declines;
- Poor operating results, inability to obtain financing on commercially reasonable terms, insolvency or bankruptcy of Fujitsu's customers, or any such factor that could adversely impact or preclude these customers' ability to timely pay accounts receivables owed to Fujitsu; and
- Fluctuations in rates of exchange for the yen and other currencies in which Fujitsu makes significant sales and profits or in which Fujitsu's assets and liabilities are denominated, particularly between the yen and Euro, British pound and U.S. dollar.