

# Toward the Future







The energy industry is currently being largely revolutionized by the 5-D's: Depopulation, Decarbonization, Decentralization, Deregulation, and Digitalization. The electrification of society that Thomas Edison instigated supported a second industrial revolution in the 20th century and led to the establishment of public utility works that we can refer to as Utility 1.0. With the liberalization that occurred thereafter, the grid networking was unbundled and there arose a demand for efficiency from public utilities. This era can be called Utility 2.0. Therefore, the evolution of public utility works that coincides with the fusion of various industries can be referred to as Utility 3.0. We will examine the outlook for the TEPCO Group's future path as we look down the road to the year 2030 and 2050 and the future that the 5-D's shall bring forth.



# TCFD\*

With the formation of the Paris Agreement the global climate effort has been reinvigorated, and we believe the "5-D" megatrends, which include decarbonization, will have a major impact on the TEPCO Group's business. To achieve sustainable growth amidst these megatrends, the TEPCO Group must analyze "climate-related risks and opportunities" based on Climate-Related Scenarios and continually optimize our business portfolio.

Therefore, in April 2019, Tokyo Electric Power Company Holdings, Inc. became the first Japanese utility company to express support for the Task Force on Climate-related Financial Disclosures (TCFD) recommendations and perform scenario analysis.

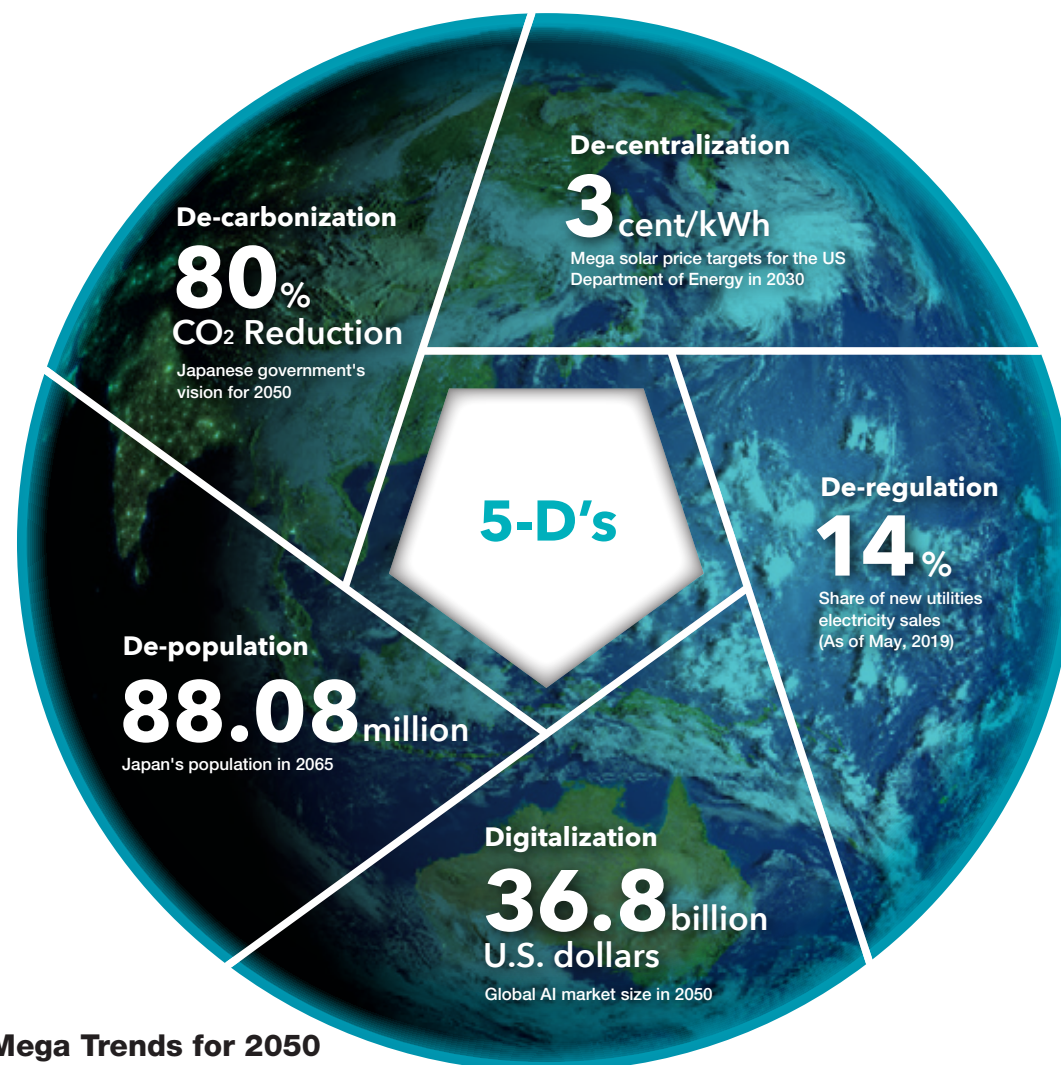
## TCFD Governance

The Board of Directors regards ESG issues, including countermeasures for climate change, as material issues and it has appointed the Executive Vice President (CFO) as the ESG Managing Executive Officer responsible for ESG issues. The progress of business plans is reported to the Board of Directors quarterly thereby enabling the Board of Directors to supervise execution. (➡ P17,18)



We disclose information on our measures to address climate change to the CDP.  
[www7.tepco.co.jp/about/esg/cdp-e.html](http://www7.tepco.co.jp/about/esg/cdp-e.html)

\* TCFD stands for the "Task Force on Climate-related Financial Disclosures" an industry-led task force that encourages companies to disclose climate-related financial information necessary for investors to make appropriate investment decisions. In recommendations from the TCFD published in June 2017, the core elements of recommended climate-related financial disclosures are as follows. 1. Governance: The organization's governance related to climate-related risks and opportunities, 2. Strategy: The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategies, and financial planning, 3. Risk management: The processes used by the organization to identify, assess, and manage climate-related risks, 4. Metrics and Targets: The metrics and targets used to assess and manage relevant climate-related risks and opportunities.



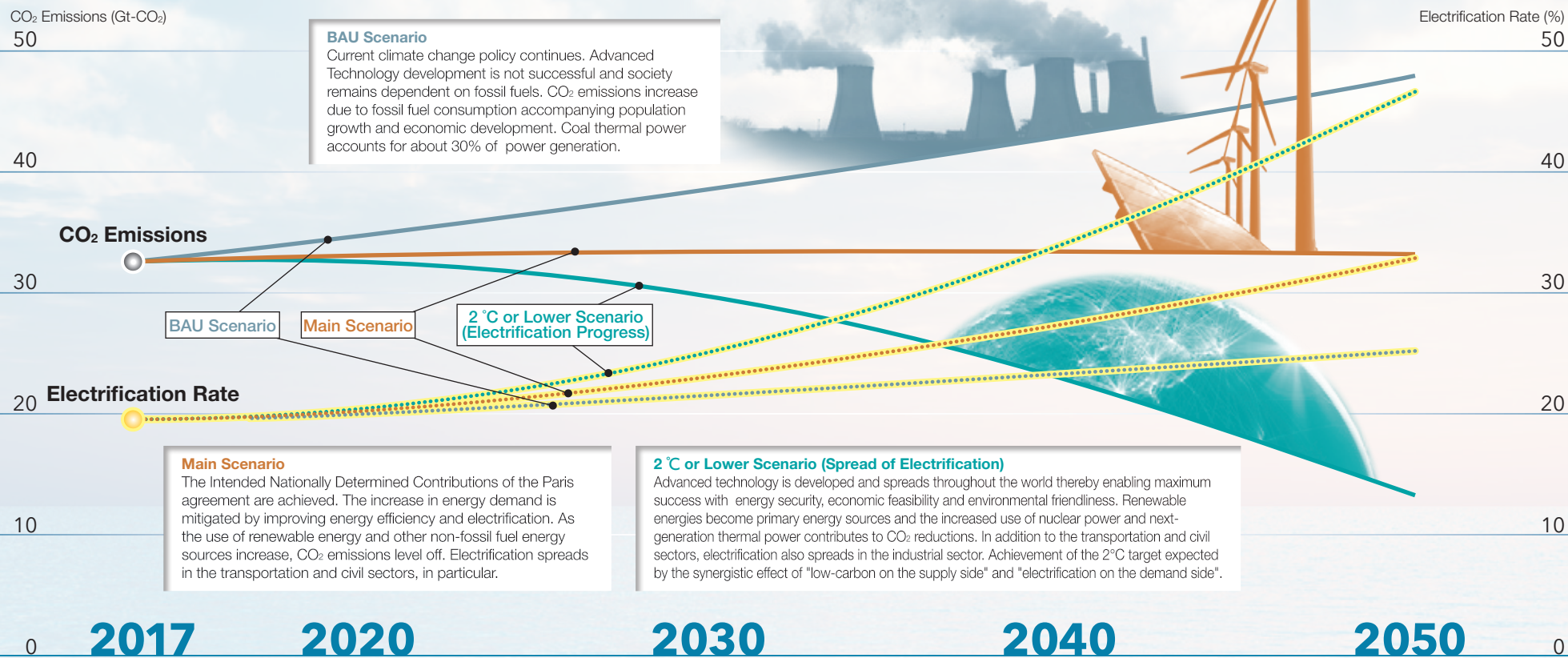
5 Mega Trends for 2050

# Scenarios Analysis

## TCFD Strategy

Scenario analysis results show that electrification rate increases in all scenarios. The TEPCO group will take a leading role in the expansion of electrification and will leverage this business opportunity without fail.

### Global CO<sub>2</sub> Emissions and Electrification Rate







Note) This scenario analysis refers to the IEA "World Energy Outlook 2018". "2 °C or lower scenario (spread of electrification)" is a scenario created on the assumption that society achieves the goal of the Paris Agreement (well below 2 °C). These scenarios were designed with the intent to consider what is possible only in the distant future and are not intended to predict likely future events or outcomes.

# Risks & Opportunities

## TCFD Risk Management

A large risk is the strengthening of environmental regulations related to climate change, which could have an impact on performance and our financial standing. And, pouring large amounts of electricity from renewable energy into grids, which can experience large output fluctuations, can have an effect on frequency and voltage adjustment thereby potentially hindering the stable supply of power. On the other hand, we expect to see a large increase in the demand for power throughout the entire world, and especially in developing nations. The TEPCO Group shall strive to increase revenues by leveraging climate-related business opportunities through the supply of energy while taking into consideration energy security, economy, and environmental conservation in accordance with the conditions in each country, including Japan.

### The Risks and Opportunities of our Main Scenario

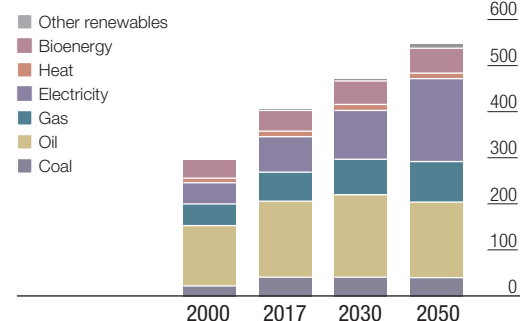
	Risks		Opportunities	
	Mid-term (~2030)	Long Term (~2050)	Mid-term (~2030)	Long Term (~2050)
 Policy and legal	Policy changes (include implementing mechanisms to reduce CO <sub>2</sub> emissions)			
 Technology	Quality degradation of electric power due to large-scale introduction of renewable energies	Superiority decline of bulk energy resources due to expanding use of distributed energy resources	Further improving the efficiency of thermal power	Promotion of nuclear power Promotion of clean coal technology
 Market and Service	Changes in investment from fossil fuels to non-fossil fuel energy sources		ROI in renewable energy sources	
 Reputation	Impression that the company is reluctant to countermeasure climate change	Declining social acceptance of nuclear power	Increased customer need for renewable energy Acceleration of electrification using non-fossil fuel energies in transportation sector, etc.	
			Impression that the company is resilient to climate change issue	

Degree of risk is assessed by the Risk Management Committee

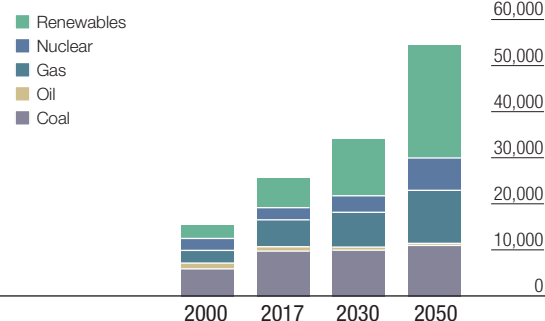
■ Risk: High ■ Risk: Low ■ Opportunity: High ■ Opportunity: Low

### Main Scenario

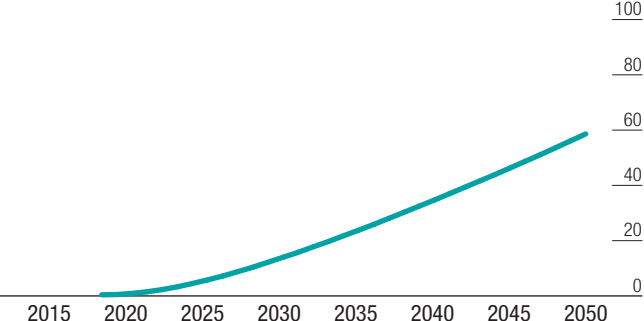
#### Total Final Energy Consumption (world)



#### Electricity Generation (world)



#### EV Penetration Rate (world)





# Business Expansion

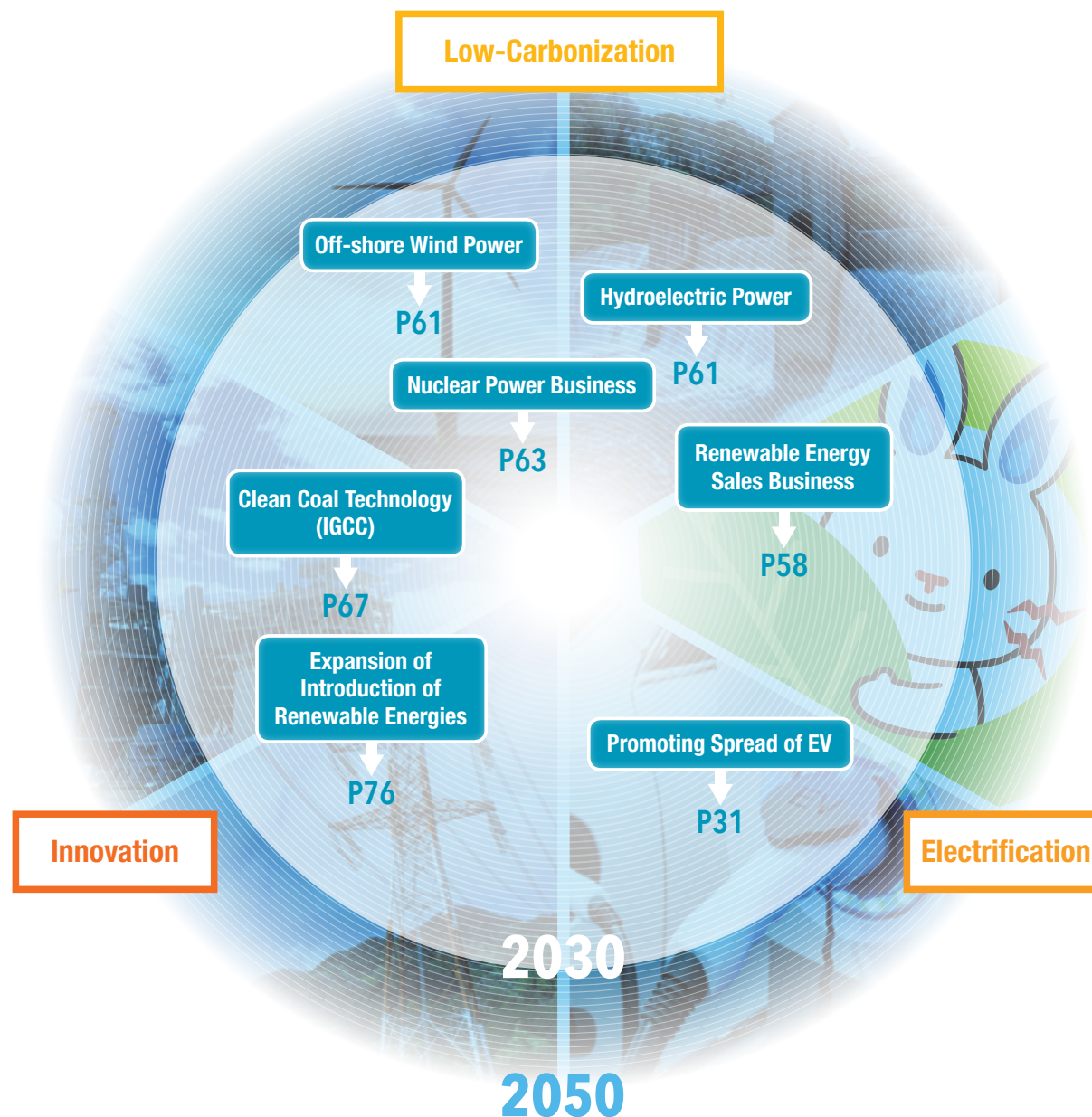
## TCFD Strategy/Metrics and Targets

In light of the 5-D's megatrend, the TEPCO Group is seeking to expand its scope of business by entering new fields and engaging in projects overseas, utilizing our core energy businesses.

This direction that we are taking has been chosen in anticipation of 2 °C or lower scenario (spread of electrification) and will be revised as necessary so that our business portfolio adapts to social changes. For example, we plan to develop a total of 6~7 GW in Japan and overseas with the aim of turning renewable energy sources into primary energy sources, and have set a profit goal of ¥100 billion for FY2030.

The TEPCO Group will leverage the perseverance that we have cultivated by responding to the needs of people in the Tokyo Metropolitan area and throughout the Kanto Region to address climate change issues.

As a leading company in the energy industry, the TEPCO Group will pursue businesses that only we can engage in and improve our resilience to climate-related issues while also promoting low-carbonization and electrification thereby contributing to CO<sub>2</sub> reductions throughout society and enabling continual growth of both our company and society.



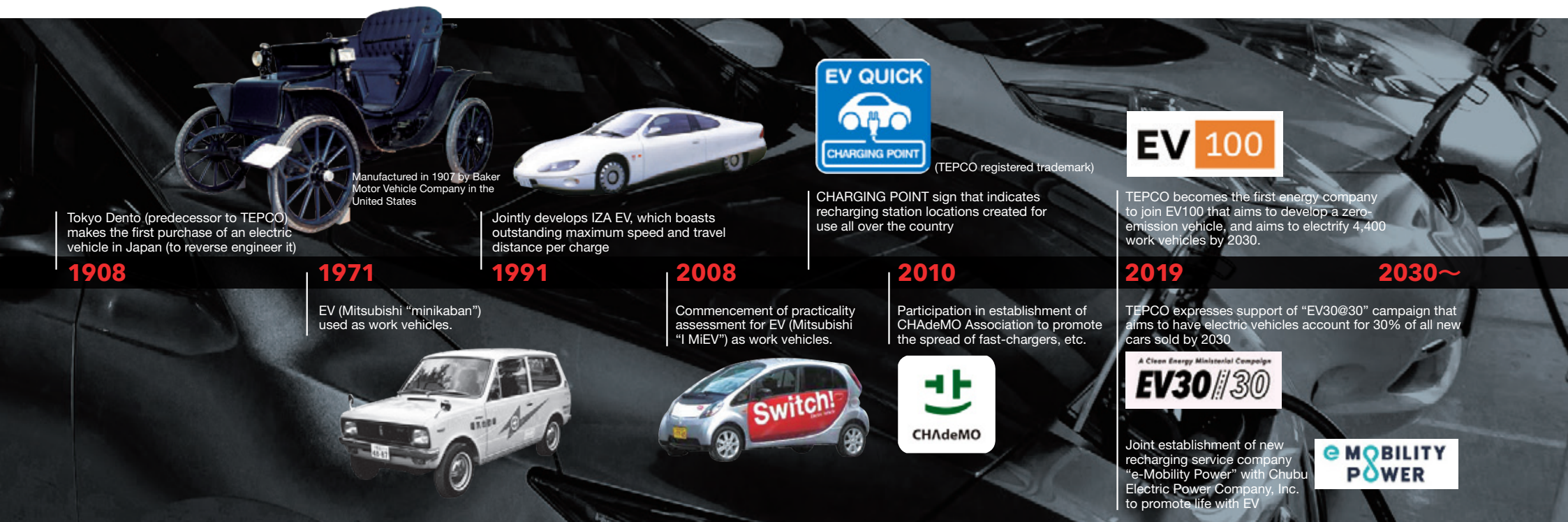
# EV

Increasing the use of electric vehicles (EV/PHV, etc.) is an effective solution for global warming countermeasures in the transportation sector, which accounts for approximately 18% of CO<sub>2</sub> emissions in Japan. And, the fact that electric vehicles are in a sense “mobile batteries” can be leveraged for power grid management and also as emergency power sources during disasters.

As an electric utility and a pioneer in the use of EV, the TEPCO Group has declared that it will use electric vehicles for 100% of its work vehicles by FY2030 and promote the development and spread of electric vehicles by building recharging infrastructure, which is indispensable to increase the use of electric vehicles in society.

## TEPCO and EV

The TEPCO Group has a long history with electric vehicles that began with the first purchase of an electric vehicle in Japan by Tokyo Dento, the predecessor to TEPCO. In October 2019, an EV Promotion Office was established within TEPCO Holdings, and we will strive to further promote the use of electric vehicles into the future.





### Use as “Mobile Batteries” During Disasters

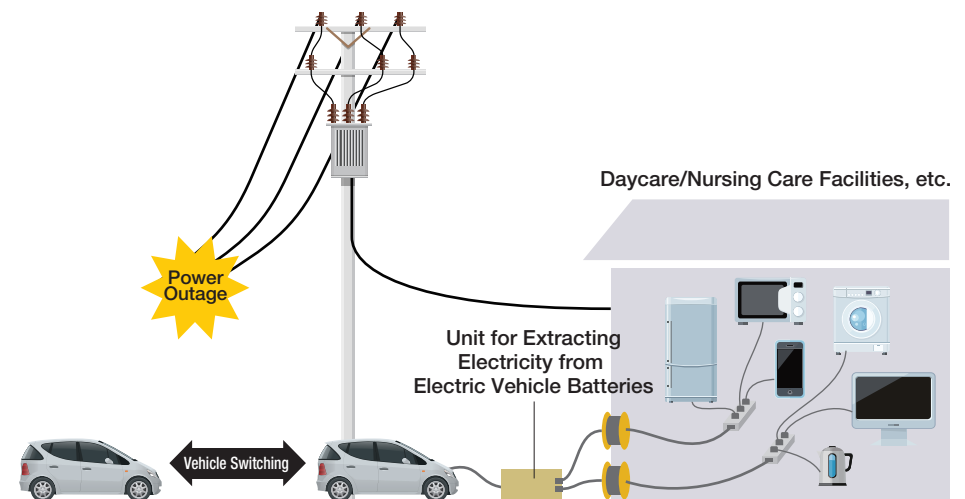
Electric vehicles can be used as “mobile batteries” in regional communities to provide emergency power in the event of a disaster.

By leveraging this attribute, we shall work together with convenience stores and commercial/public facilities, which serve as focal points of preparedness in the region, as we contribute to creating communities that are resilient to disasters.

### 2019 Responding to Power Outages Caused by Typhoon Faxai

On September 9, 2019, Typhoon Faxai (#15) made landfall in the Kanto Region and caused considerable damage in primarily Chiba Prefecture. The typhoon toppled transmission towers and utility poles, and damaged power facilities thereby causing power outages that required much time to repair and caused a great inconvenience on all those affected. With help from other electric power companies and contractors in the region, and cooperation from the government and the Japan Self-Defense Force, the TEPCO Group drew on all its resources to make repairs and restore power, which is a lifeline. In regions where power outages continued for long periods of time, portable generators, mobile phone chargers and LED lanterns were provided, and 67 electric vehicles (EV, PHV, FCV) were brought in to take advantage of their power supply functions. Additionally, 45 power supply units used to turn electric vehicles into electric power generators were sent to the disaster region. Much assistance was received from Toyota, Nissan, Honda, Mitsubishi, and Nichicon when deploying these vehicles and power supply units. These electric vehicles were used to supply power to public facilities, daycare facilities, and temporary bathing facilities set up by the Japan Self-Defense Force in regions within Chiba Prefecture where power had not been restored.

### Power Being Supplied from an EV



EV, PHV, FCV on their way to areas that lost power as a result of Typhoon Faxai



Supplying power in areas where power had been lost



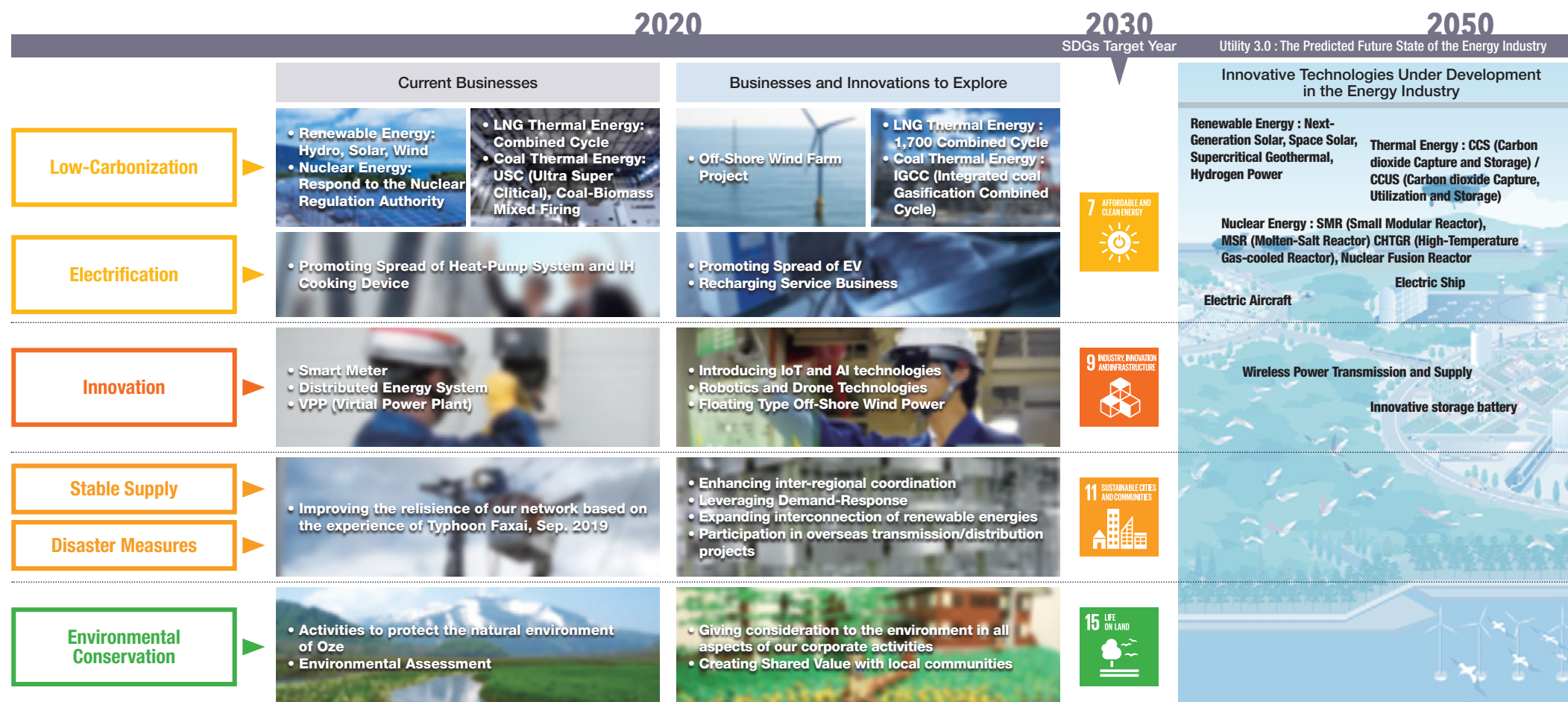
# SDGs

The TEPCO Group is contributing to achieving sustainable development goals (SDGs) through its corporate activities in order to make the world sustainable as we approach 2030. As a company we believe it's important to strive to achieve SDGs because contributing to the expansion of society as a whole by “earning, creating added value, and returning that value back to society” will ultimately lead to SDG 1. End poverty in all its forms everywhere. The TEPCO Group will work as one to achieving SDGs 7, 9, 11, and 15, which are closely linked to the energy industry.



The 17 SDGs are linked to the 169 targets that we aim to achieve by 2020 and 2030. The TEPCO Group will contribute to achieving goals and targets with which we are deeply involved through our technical know-how and mid-term business activities. Furthermore, whereas there is uncertainty concerning changes in social conditions and the advancement of technological development after the year 2030, we will continue to

make changes as necessary to ensure that our actions fit the times and ensure that the TEPCO Group remains a company that is needed by society in the world of Utility 3.0, which is the predicted future in 2050, while also considering the status of development of “innovative technologies” currently being examined in the energy industry.





# TEPCO Overview

In addition to fulfilling our responsibilities to Fukushima, the TEPCO Group shall engage in optimization that leverages its entire value chain from fuel procurement to power generation, transmission/distribution, and retail, as we also maximize corporate value while carrying out our mission to provide a stable supply of energy.

**TEPCO**

**TEPCO**  
TEPCO Fuel & Power

**Jera**

**TEPCO**  
TEPCO Renewable Power

**TEPCO**

Tokyo Electric Power Company Holdings



TEPCO Power Grid

**TEPCO**

TEPCO Energy Partner

**Fukushima**

**P65**

**Fuel Procurement,  
Thermal Power**

**P37**

**Renewable Power**

**P59**

**Nuclear Power**

**P63**

**Transmission and  
Distribution**

**P47**

**Power Retail**

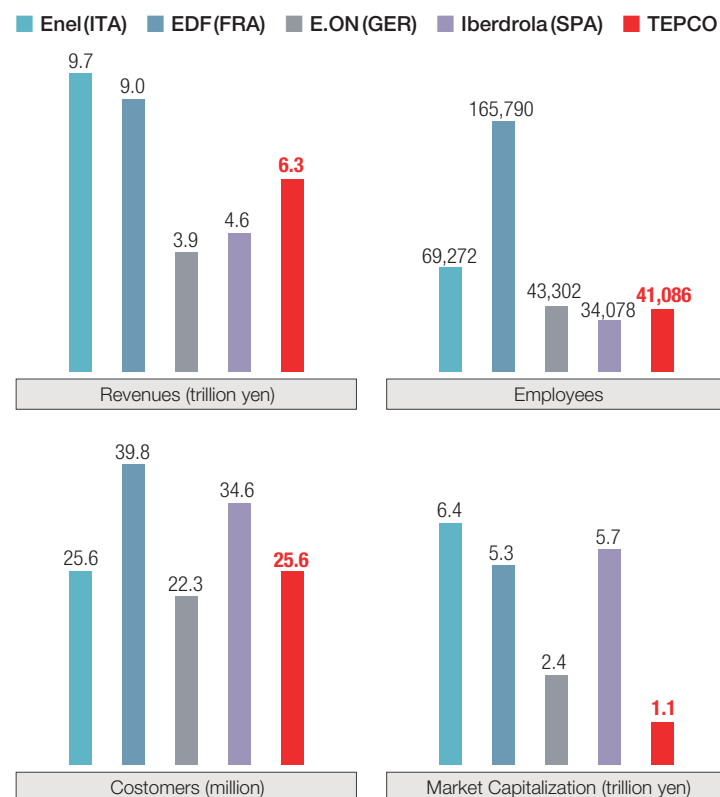
**P53**



## Where TEPCO Stands in the World

Since its establishment in 1951, the TEPCO Group has remained Japan's largest electric utility company providing electricity to the entire Kanto Region, including Tokyo and the metropolitan area, for almost 70 years.

### Comparison with Major Utility Companies around the World\*



\*Based on consolidated data published by each company

\*The exchange rate: 2018 average rate


\*Market capitalization is calculated using the closing price and exchange rate at the end of the financial year


## Developing Global Enterprises


In addition to overseas power generation projects and consulting in which the TEPCO Group has engaged to date, we shall leverage the management resources, expertise and technical skill that we have accumulated domestically to proactively enter overseas markets for power transmission/distribution, energy services and renewable energies, thereby developing our global business.


See P45 for details on JERA's overseas businesses

**TEPCO Power Grid**

  
Singapore  
**Greenway Grid Global Pte. Ltd.**  
Investment / Incubation / Human Resource Development Business

  
United Kingdom  
**Investment in Zenobe Energy Limited**  
Participation in the storage battery business

  
Bangladesh  
**Underground substation project**  
Consulting on construction of the country's first underground substation

  
Vietnam  
**Investment in Deep C Green Energy (Hong Kong) Limited**  
Investment in the first overseas power distribution business

**TEPCO**  
TEPCO Energy Partner

  
Thailand  
**TEPCO Energy Partner International(Thailand)Co., Ltd.**  
First overseas subsidiary established  
Developing energy service business overseas

**TEPCO**  
TEPCO Renewable Power

  
Vietnam  
**Coc San hydro power plant**  
First overseas hydropower project to be invested in.  
Utilizing know-how to enable stable operation

### Group Companies

 **Tokyo Electric Power Services Co., Ltd.**

**Over 885 projects in 90 countries**  
(As of September 2019)  
[www.tepsco.co.jp/english/](http://www.tepsco.co.jp/english/)

**TEPCO Ventures, Inc.**

**11 investment projects in 3 countries around the world**  
(As of September 2019)  
[www.tepcoventures.co.jp/en/](http://www.tepcoventures.co.jp/en/)



# TEPCO Fuel & Power, Inc.



TEPCO Fuel & Power  
[www7.tepcoco.jp/fp/](http://www7.tepcoco.jp/fp/)

## Business Overview

On April 1, 2019, TEPCO Fuel and Power, Inc. formed JERA Co., Inc. in accordance with a comprehensive alliance with Chubu Electric Power Company thereby establishing a value chain that includes everything from upstream fuel and procurement to power generation and electricity/gas wholesale. Through involvement in the creation of business plans and the monitoring of these plans, we shall provide suitable governance while respecting the independence of JERA and its quick decision-making in order to fulfill our important obligation to provide our customers with a stable supply of energy at competitive prices.

## TEPCO

TEPCO Fuel & Power

### Main Assets to Be Integrated

- Existing Thermal Power Plants: 15 (41,000,000 kW)
  - LNG Terminals: 2 Own Terminals  
2 Joint Terminals
  - Number of Employee: 2,449\* (As of March, 2019)
- \* Number of Employees in charge of thermal power generation division

# Jera

CHUBU  
Electric Power

### Main Assets to Be Integrated

- Existing Thermal Power Plants: 10 (24,000,000 kW)
  - LNG Terminals: 3 Own Terminals  
1 Joint Terminals
  - Number of Employee: 1,577\* (As of March, 2019)
- \* Number of Employees in charge of thermal power generation division



April, 2015

JERA Co., Inc. established.

October, 2015

Fuel transport/fuel trading, division mergers

July, 2016

Fuel upstream/procurement, overseas power generation/energy infrastructure division mergers

June, 2017

Execution of absorption-type split agreement on the merger of existing thermal power generation divisions

May, 2018

Execution of joint venture agreement

April, 2019

Existing thermal power generation division mergers





# JERA Co., Inc.

Main business operation

Electricity Business, Gas Business, Heat Supply Business, Development, mining, processing, trading and transportation of energy resources, etc.

Head office

Nihonbashi Takashimaya Mitsui Building 25th Floor, 5-1 Nihonbashi, 2-chome, Chuo-ku, Tokyo, 103-6125, JAPAN

Representative

Satoshi Onoda, President

Established

April 30, 2015

Capital

JPY 5 billion

Shareholding ratio

TEPCO Fuel & Power, Inc. 50% Chubu Electric Power Co., Inc. 50%

Number of Employees

Approximately 4,500 (As of April, 2019)

Group companies

113 companies (As of August, 2019)



JERA

[www.jera.co.jp/english/](http://www.jera.co.jp/english/)

Kawagoe Thermal Power Station (Kawagoe-cho, Mie County, Mie Prefecture)



# Strengthen Internal Organizational and Governance Structures to Become a More “Borderless” Company

The operating environment around the energy industry environment has been changing dramatically with the expansion of renewable energy, the acceleration of efforts to reduce CO2 emissions, and the structural reform of the industry in Japan and elsewhere. Against this backdrop, we marked a milestone on 1 April, 2019 with the integration of our existing thermal generation businesses in Japan and the unification of the entire value chain from upstream investment to fuel procurement, power generation, and sales of electricity and gas. Since our founding, we have followed our corporate principles of building a global energy company, creating a new energy business model, and strengthening the overall value chain, and we are confident that this integration creates conditions favorable to advancing these principles. We have enhanced our internal organizational structure to ensure that we continue to drive our business forward as a company with one of the largest physical fuel transaction volumes in the world. We have also strengthened our governance structure as we aim for a “borderless” organization unconstrained by preconceived notions. While proactively incorporating change, we remain committed to sustaining the energy supply in Japan, maintaining our mindset at the time of our founding. With the recent business integration, we aim to continue to grow as a global company and to supply Japan with a stable, economical energy supply. We will continually strive to meet the expectations of all our stakeholders.



Chairman  
**Toshihiro Sano**

# To Create the Clean Energy Economy of the Future

Our mission is to provide cutting-edge solutions to the world's energy issues. Specifically, while monitoring global trends such as the development of LNG infrastructure, growth of fuel trading, expansion of renewable energy, and improvements in LNG thermal power generation, we will expand our business both in Japan and overseas. While continuing to deliver a stable supply of safe, economical electricity and gas to support people's lives and the commercial industry, we aim to become a global leader in LNG and renewables, sparking the transition to a clean energy economy by 2025. Making the most of the thermal power generation technologies we have developed, we will build highly flexible power generation systems. These systems incorporate LNG thermal power generation that absorbs the fluctuations of renewable energy and the flexible fuel purchasing to support such operation. Moreover, these systems support the further introduction of off-shore wind power, storage batteries, and other technologies. In addition to the physical assets we have assembled, we have also drawn talented people. By successfully enhancing this talent, we aim to become a global company that complies with the law and contributes to society.



President  
**Satoshi Onoda**

# Mission and Vision

## Mission

To provide cutting edge solutions to the world's energy issues

Through our global operations we bring the world's leading energy solutions to Japan, helping to solve the energy issues facing the country. We seek to establish new energy supply models for Japan while also offering energy supply models established in Japan to other countries that face similar energy issues, helping to solve the world's energy issues.

## Vision

Global leader in LNG and renewables, sparking the transition to a clean energy economy

As we look toward 2025, the energy solutions we offer will focus mainly on two businesses: the LNG value chain business and the large-scale renewable energy business. These businesses are complementary; renewable energy with variable power generation output is complemented by flexible, clean LNG thermal power generation. With demand expected to grow globally, particularly in Asia, we aim to become a leader in these two businesses.

## Value Chain

**5** Upstream Investment Projects

Upstream Development  
Fuel Procurement

LNG Procurement from **17** Countries<sup>\*2</sup>



\* Sourced from Chevron Australia

Optimization and Trading



Fuel Transportation

**18** LNG Fleet Carriers



LNG Tank Capacity in Japan  
**7.74** million kL

Equivalent to approx. 40% of LNG tank capacity in Japan

LNG Receiving and Storage Terminals

**8** LNG Receiving Terminals in Japan<sup>\*4</sup>



**26** Thermal Power Stations<sup>\*5</sup>

Power Generation Capacity

Approx. **67** GW<sup>\*5</sup>

Among the largest in Japan



Power Generation Output

Approx. **292.5** TWh<sup>\*1</sup>

Equivalent to approx. 33% of power generation in Japan

Domestic Power Generation

Overseas Power Generation

Approx. **25** Projects  
In more than **10** Countries

Power Generation Capacity

Approx. **9** GW<sup>\*5</sup>  
(Development Output)

Renewables Development Capacity

Approx. **0.7** GW  
(Includes Power Generation Capacity)



Sales

Approx. JPY **3.6** trillion<sup>\*3</sup>



As of April 2019

\*1 As of the fiscal term ending in March 2018

\*2 As of the fiscal term ending in March 2019

\*3 Estimated Value (As of the end of FY2019)

\*4 Includes jointly operated terminals

\*5 Includes capacity under construction

Total Assets

Approx. JPY **3.8** trillion<sup>\*3</sup>

LNG Transaction Volume

Approx. **35** MTPA  
Among the largest in the world



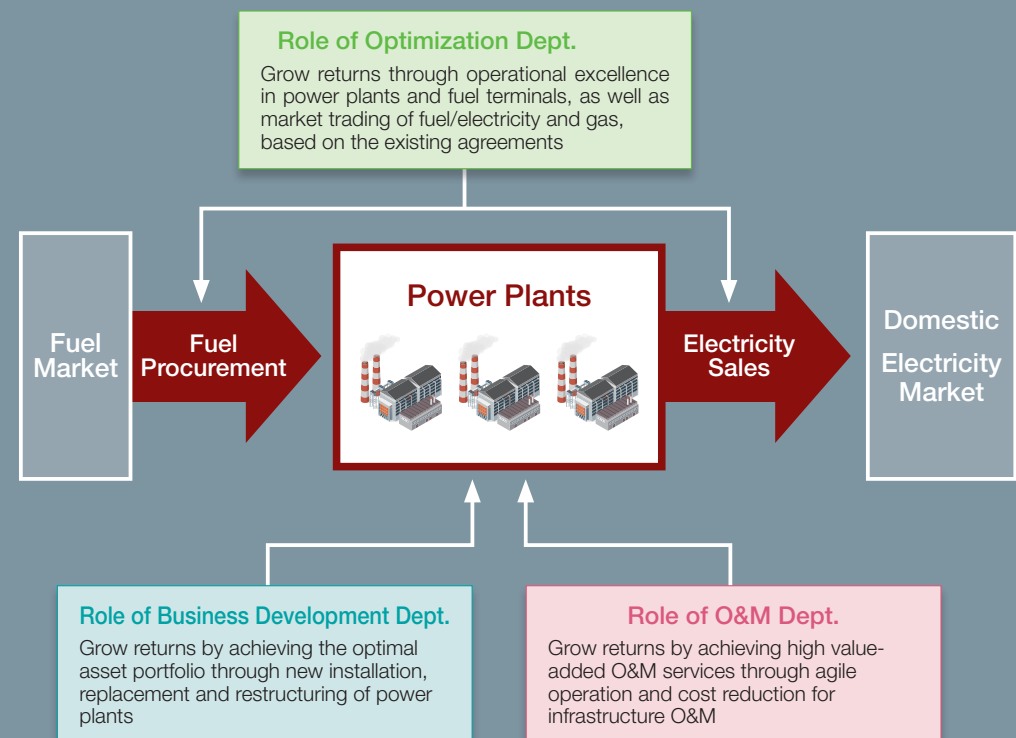
# Risks & Opportunities

In parallel with the change of supply structure due to global shift to renewable energy and gas, demand for electricity in Japan decreases. Management of spread between fuel and electricity markets is predicted to become a new source of profits due to marketization progress. With the change of power plant O&M methodology thanks to progress in digital technologies including AI, IoT etc, advanced O&M services are required to support the connection of distributed power sources and batteries to the grid.



# Business Model

JERA has reorganized into Business Development, Optimization and O&M, with each department aiming to be a profit center, respectively from investment, market trading and O&M services. By leveraging these three functions, JERA aims to perceive changes to business opportunities and make profits.



# Goals in FY 2025

**Consolidated Net Profit ¥200 billion**  
**Credit Rating of A-grade or higher**

Business Development	Optimization	O&M
LNG value chain and large-scale renewable energy development excellence	Resource & electricity trading and market creation	World's top-class agility and operational efficiency
<ul style="list-style-type: none"> <li>Develop domestic replacement: <b>7~9GW (5 to 7 sites)</b></li> <li>Win Gas to Power project</li> </ul>	<ul style="list-style-type: none"> <li>LNG transaction volume: <b>Around 35 MTPA</b></li> <li>Optimization taking advantage of LNG vessels</li> </ul>	<ul style="list-style-type: none"> <li>Operation/maintenance of power plants: <b>Equivalent to 80GW globally</b></li> </ul>
<ul style="list-style-type: none"> <li>LNG fleet: <b>Around 25 vessels</b></li> <li>Equity output of renewable energy: <b>5GW</b></li> </ul>	<ul style="list-style-type: none"> <li>Profit through trading</li> </ul>	<ul style="list-style-type: none"> <li>Reduce O&amp;M cost by <b>20%</b> (vs. current TEPCO/Chubu)</li> <li>Shorten the time needed for regular inspection: <b>-50%</b></li> </ul>

← Organization and Management to Realize One Global JERA →

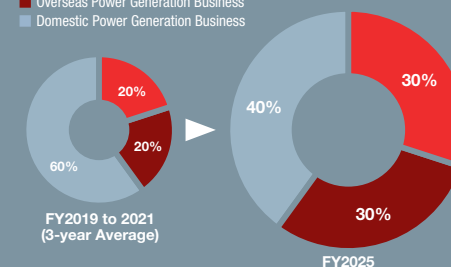
For LNG, JERA will maintain and expand JERA's fuel procurement scale through replacement of domestic power plants with more efficient facilities and expansion of global power generation. JERA will also leverage that scale for trading expansion and upstream project participation and improve profitability of the entire value chain

For renewable energy, leverage our large-scale project development competence that we gained from the existing projects, promote the development focusing on off-shore wind power in particular, and grow it as one of the main pillars of business in our future portfolio.

## Image of Profit Composition by Business

Proportion of Domestic Power Generation Falls from 60% to 40%

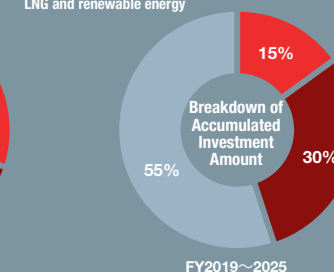
■ Fuel Business  
■ Overseas Power Generation Business  
■ Domestic Power Generation Business



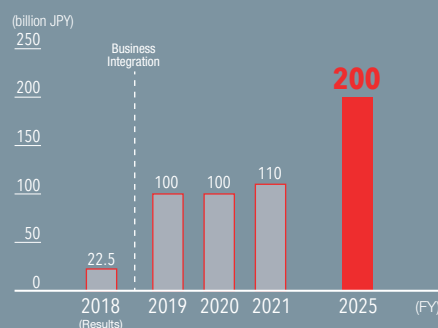
## Image of Investment Composition by Business

Revenues are assured thanks to long-term contract etc. for more than 90% of the invested amount

Around 70% of the invested amount is related to LNG and renewable energy

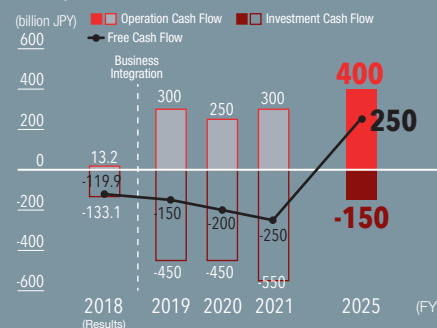


## Consolidated Net Profit Amount <sup>\*2</sup>

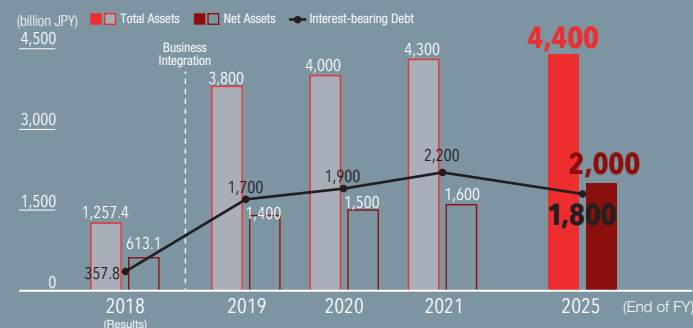


(Note 1) Timing-shift impact of the fuel cost adjustment system is excluded.  
(Note 2) Assumptions of our calculation:  
• Foreign exchange rate: 110JPY/USD for each year  
• Crude oil price (nominal figure): Average 65USD/bbl for 2019~2021, 100USD/bbl for 2025

## Prospects of Consolidated Cash Flow <sup>\*2</sup>



## Total Assets / Net Assets / Interest-bearing Debt <sup>\*2</sup>



\*1 Sited from "Business Plan That Reflects Integration of the Existing Thermal Power Generation Businesses" (As of April 2, 2019)

\*2 2018 results is sited from "FY2018 Consolidated Financial Results" (As of April 26, 2019)



# Environment/Social Factor

## Environmental Policy

Energy is a foundation of society and economy, and the composition of power generation requires multifaceted considerations, including environment, security of supply, and cost. Given the current circumstances of global energy demand and supply, coal-fired thermal technology plays an indispensable role to underpin the economic growth and lives of billions around the world as a stable and economical source of energy. At the same time, JERA acknowledges that more choices are becoming available for power generation, as innovation in renewables advances.

JERA, as a responsible leader of the Japanese power industry, will take on the challenge of reducing CO<sub>2</sub> emissions in order to realize sustainable environment, society and economy, including through the proactive development of renewable energy. This approach is in accord with energy and environmental policies of the Japanese government, notably the '5th Strategic Energy Plan'.



## Environmental Goals

<b>Benchmarks</b>	Achieve the Benchmarks stipulated in the Act on the Rational Use of Energy at the earliest possible time by replacing aging plants with state-of-the-art thermal power.
<b>Inefficient Coal-fired Power Plants</b>	Further deepen our deliberations on phase-out of inefficient coal-fired power plants (SC and below) stipulated in the '5th Strategic Energy Plan'.
<b>Renewable Energy</b>	Develop and hold renewable energy both at home and abroad. Furthermore, support its integration into the energy system by accelerating our efforts to enhance operational agility of the gas-fired plants, and introducing new technologies such as battery storage.
<b>CO<sub>2</sub> Emissions and Carbon Intensity</b>	Reduce total CO <sub>2</sub> emissions and carbon intensity from domestic and overseas power business by 2030 (relative to FY2017).

## Social Factor

As a global company, JERA is creating a work environment filled with diverse human resources while keeping safety its top priority, and it engages in various activities as a member of the regional community.

### Human Resources

JERA will build a personnel/recruitment system unique to JERA that allows diverse human resources to perform well in their work by recruiting local staff to work at our overseas locations, empower female employees, promoting employment of people with disabilities etc.

### Security and Disaster Prevention

Based on our belief that safety should be prioritized before anything else, JERA aims to eradicate all industrial accidents. JERA has also unified the emergency response teams of the east and west areas in an effort to improve the company's ability to respond to disasters.



### Projects by Group Companies

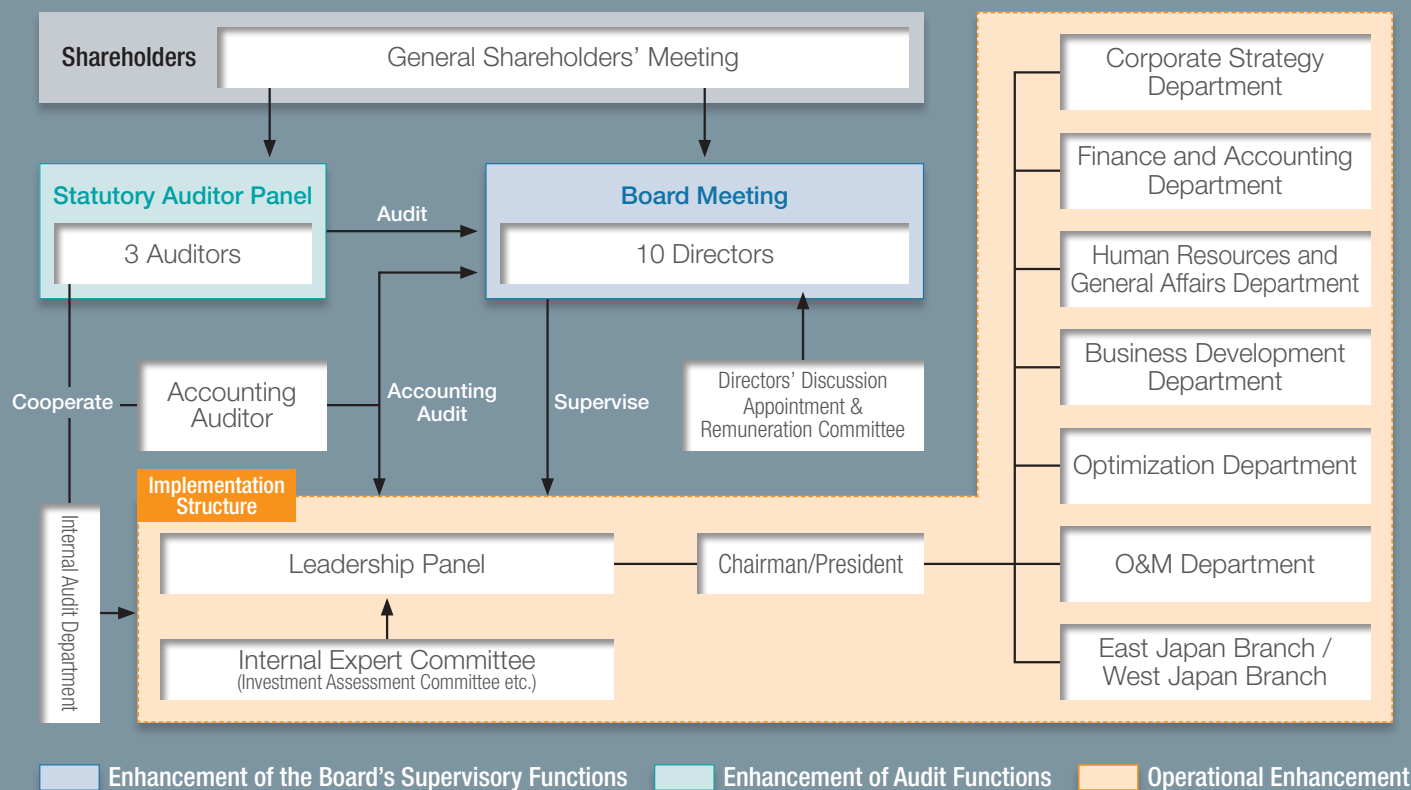
TeaM Energy, JERA's group company, is taking part in a local project to electrify those districts in the Philippines that don't yet have access to electricity.



# Corporate Governance

## Corporate Governance Structure

The functions of supervision, audit and execution are segregated to build a structure that enables autonomous business operations. External persons with expertise in global power generation, trading, M&A etc. are appointed as Director.



## Directors (As of April 1, 2019)

Chairman	Toshihiro Sano
President	Satoshi Onoda
Senior Corporate Vice President, Director	Hendrik Gordenker (Chief Global Strategist)
Corporate Vice President, Director	Yukio Kani (Chief Operating Officer, Business Development Department)
Corporate Vice President, Director	Shunichiro Ide (Chief Operating Officer, O&M Department)
Managing Executive Officer, Director	Kazuo Sakairi (Chief Financial Officer, Finance and Accounting Department)
Director	David Macfarlane*
Director	Mike Winkel*
Director	Akihisa Mizuno*
Director	Seiji Moriya*

\* Non-executive Director

## Auditor

Corporate Auditor	Shigeyoshi Araki
Corporate Auditor	Hideo Oishi
Corporate Auditor	Minako Fujie



# Major Overseas Business



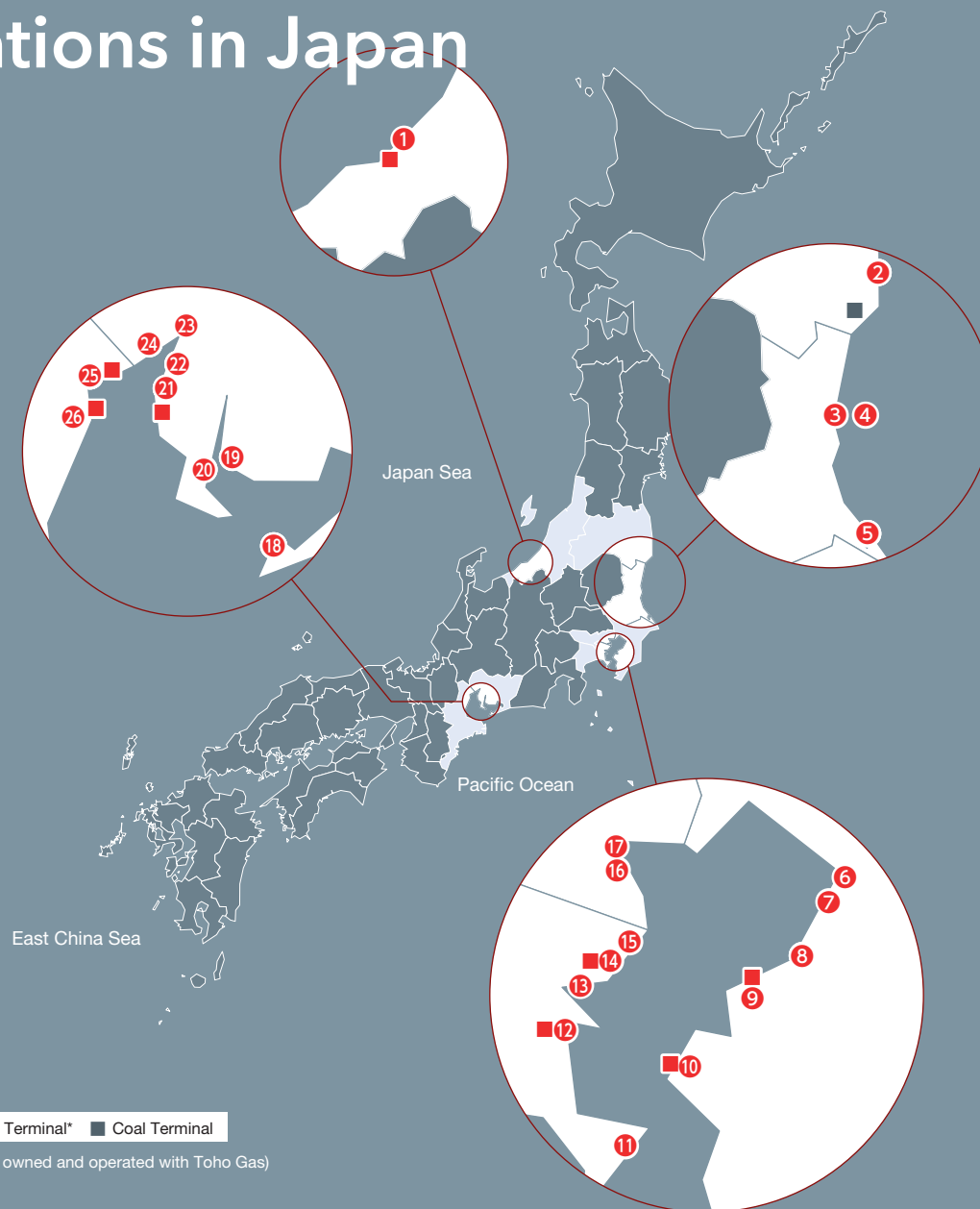
# Thermal Power Stations in Japan

[ Total output, Fuel type for each thermal power station ]

① Joetsu	2.38GW	◆
② Hirono	4.4GW	◆◆◆
③ Hitachinaka	2GW	◆
④ Hitachinaka Generation*	650MW	◆
(*Scheduled to start operation in FY2020)		
⑤ Kashima	5.66GW	◆◆◆◆
⑥ Chiba	4.38GW	◆
⑦ Goi	Replacement is being planned	
⑧ Anesaki*	3.6GW	◆◆
(*Replacement is being planned)		
⑨ Sodegaura	3.6GW	◆
⑩ Futtsu	5.16GW	◆
⑪ Yokosuka	Replacement is being planned	
⑫ Minami-Yokohama	1.15GW	◆
⑬ Yokohama	3.541GW	◆◆◆
⑭ Higashi-Ohgishima	2GW	◆
⑮ Kawasaki	3.42GW	◆
⑯ Oi	1.05GW	◆
⑰ Shinagawa	1.14GW	◆
⑱ Atsumi	1.4GW	◆◆
⑲ Hekinan	4.1GW	◆
⑳ Taketoyo*	1.07GW	◆
(*Scheduled to start operation in FY2021)		
㉑ Chita	3.966GW	◆
㉒ Chiga Daini	1.708GW	◆
㉓ Shin-Nagoya	3.058GW	◆
㉔ Nishi-Nagoya	2.376GW	◆
㉕ Kawagoe	4.802GW	◆
㉖ Yokkaichi	585MW	◆

◆ LNG ◆ Coal ◆ Heavy Oil ◆ Crude Oil ◆ LPG ◆ Utility Gas ◆ LNG Terminal\* ◆ Coal Terminal

\*Sodegaura and Negishi (Jointly owned and operated with Tokyo Gas), Chita (Jointly owned and operated with Toho Gas)





# TEPCO Power Grid, Inc.



TEPCO Power Grid  
[www7.tepco.co.jp/pg/](http://www7.tepco.co.jp/pg/)

## Power Transmission and Distribution Network that Achieves the World's Best Quality and Low Costs

On September 9, 2019, Typhoon Faxai, one of the strongest typhoons to ever hit Japan, made landfall in the Kanto Region and caused long-term power outages over a wide area. I would like to deeply apologize for the great inconvenience suffered by all those affected. We shall analyze the impacts that the typhoon had in order to implement equipment/repair countermeasures and work with other utilities and related organizations to steadily strengthen our power system resilience.

The environment surrounding power transmission and distribution companies is changing greatly in conjunction with the decreasing population and aging society of Japan, the increased spread of renewable energies, changes to power source/demand structures caused by technical innovations, and the rapid development of information technology.

We view these changes to our business environment as opportunities and aim to continue to grow as a “power transmission and distribution company that is active on the world stage” by taking on three challenges: strengthening transmission/distribution infrastructure, improving convenience by upgrading transmission/distribution networks,

and expanding our scope of business.

In regards to stable supply, which is the core of our business, we shall automate and save labor associated with equipment maintenance by leveraging digital technology in addition to skills honed through kaizen and efficient work management methods, reform procurement by collaborating with manufacturers, and optimize our value chain, which includes Group companies, thereby balancing the world's highest levels of safety and quality with reductions to transmission and distribution cost price.

In 2020, the Tokyo Olympics, which is a global event, will be held. It has been 56 years since the Olympics were held in Tokyo in 1964, and there have been a great many changes to the city structure of Tokyo and the way in which energy is used. By leveraging the skills that we have cultivated and honed over time, we shall fulfill our mission to provide a highly secure and stable supply of power.

By leveraging our honed “strengths” and the know-how cultivated during the close to 70 years that we have been responsible for transmitting and distributing power to mainly the metropolitan region, we shall engage in efficient and sustainable business management,

expand the scope of our businesses, which include overseas ventures, and strengthen our financial base thereby enabling us to improve corporate value.

Furthermore, we shall contribute to achieving SDGs for 2030, flexibly respond to changes in the environment in preparation for the Utility 3.0 society predicted to manifest in 2050, expand our interconnection with renewable energies and develop platforms, and proactively coordinate with Group companies and other various operators thereby improving the convenience to regions and customers and contributing to the creation of a sustainable society as we grow into a company that is needed by society. We shall fulfill our responsibilities to Fukushima by displaying our “true value” that is needed to meet the expectations of our customers and society by continuing to implement non-consolidated business structure reforms that transcend current frameworks.

President  
TEPCO Power Grid, Inc.

*Yoshimori Kaneko*



# Directors

(As of October, 2019)

*Shinichi Imai*

Managing Director

In charge of overseas operations and the environment. As General Manager of TEPCO PG's Power System Operation Department, Mr. Imai is intimately familiar with power grids and has a plethora of international experience. Assumed position as Managing Director in 2018.

*Tatsuhiko Murakami*

Auditor

As General Manager of Corporate Management Office in the TEPCO HD's Corporate Management & Planning Unit, Mr. Murakami has knowledge about the power industry in general and group company management. Assumed position as Auditor in 2017.

*Yohji Nasu*

Managing Director

In charge of accounting, corporate bonds and safety. As General Manager of TEPCO HD's Corporate Affairs & Legal Office, Mr. Nasu has a plethora of knowledge regarding legal affairs and administration. Assumed position as Managing Officer in 2019.

*Tadashi Shintaku*

Managing Director

Conduct regulations management officer. As General Manager of TEPCO's Pricing & Power Contracts Department, Mr. Shintaku has a plethora of knowledge about primarily great systems and consignments. Assumed position as Managing Director in 2016.

*Yoko Abe*

Auditor

As Deputy General Manager of TEPCO HD's Internal Audit Office, Ms. Abe has a plethora of experience and knowledge about the power industry as a whole and auditing. Assumed position as Auditor in 2019.

*Haruki Mino*

Vice President

Chief Information Officer and IoT Manager. As General Manager of TEPCO PG's Electronic Telecommunications Department, Mr. Mino has a plethora of knowledge about general systems. Assumed position as Vice President in 2017.

*Yoshinori Kaneko*

President

Involved in the Management of TEPCO PG and of the TEPCO Group, Mr. Kaneko has a plethora of knowledge and experience about primarily power transmission and distribution. Assumed position as President in 2017.

*Hiroshi Okamoto*

Vice President

In charge of management reforms and corporate ethics. As Head Director of the TEPCO Research Institute (TRI), Mr. Okamoto has a plethora of knowledge about energy policy. Assumed position as Vice President in 2017.



# Business Overview

## TEPCO Power Grid, Inc.

Major business operation General power transmission and distribution, real estate rental, and power generation on remote islands

Established April 1, 2015

Capital ¥80 billion

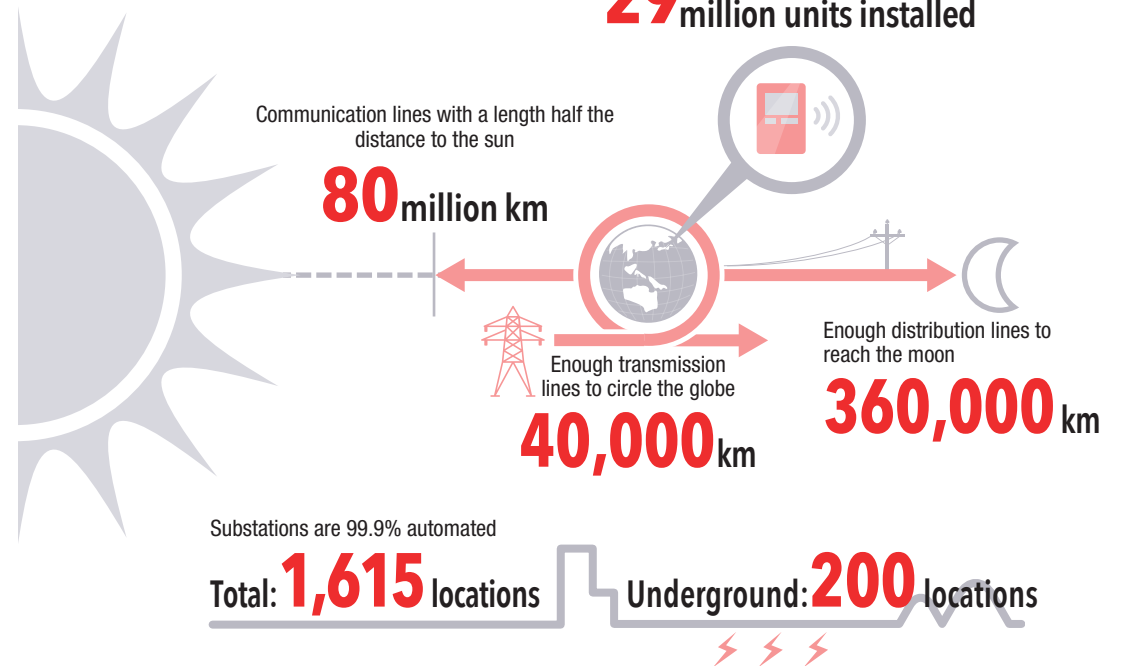
Number of employees 17,760 (Number of consolidated employees 20,514)\*

Group companies 18 companies\*

\* As of March 31, 2019



## Facility Scale



**1951**

▼ Establishment of Tokyo Electric Power Company, Inc. Service center (1953)



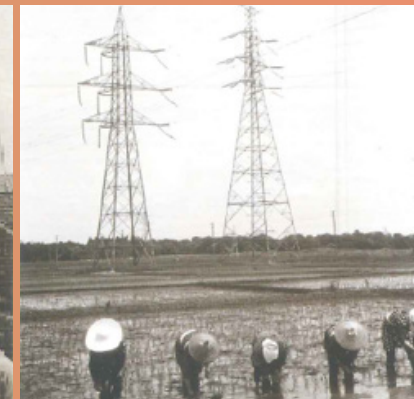
**1964**

▼ The 1964 Tokyo Olympics rehearsal



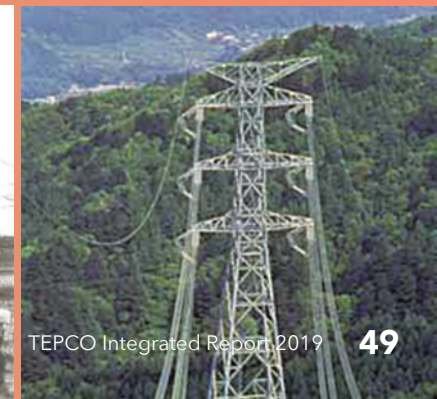
**1973**

▼ Japan's first 500,000 volt transmission line



**1992**

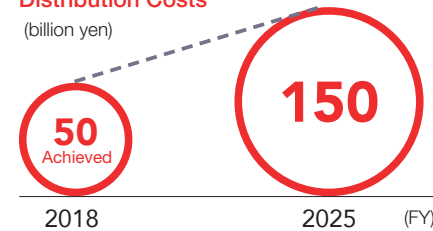
▼ Japan's first 1 million volt design transmission line



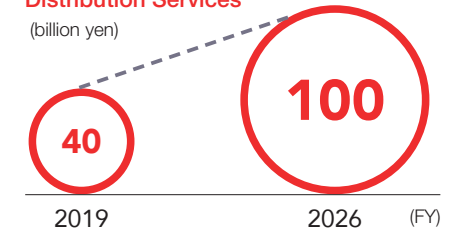
# Risks & Opportunities

TEPCO Power Grid perceives changes to our business environment as opportunities and engaging in three major challenges: “To culminate” “To create” “To expand”. And we continue to grow as a “power transmission and distribution company that is active on the world stage” by supporting the stable supply of electricity with the Fukushima reconstruction as the starting point.

Reduction in Transmission and Distribution Costs  
(billion yen)



Sales from Other than transmission and Distribution Services  
(billion yen)



\* Including sales of subsidiaries, affiliated companies and partially owned companies that are calculated by proportional division based on investment ratio, etc.

## External environment

- De-centralization
- Digitalization
- De-population
- De-carbonization

Spread of renewable energy and distributed power sources

Innovation in information technology

Labor shortage, Aging

To culminate

**Strengthen the base for power transmission and distribution business (Achievement of reduction of transmission and distribution costs and of stable supply)**

- Company-wide adoption of Toyota-style Kaizen
- Organizational integration
- Digitalization
- Effective improvement of facilities, etc.

To create

**Improve convenience through the sophistication of the power transmission and distribution network**

- Integrated operation of, planning of and investment in wide-area power transmission networks
- Expansion of interconnection of renewable energies
- Smart meter system, etc.

To expand

**Expand business areas (Sales from businesses other than transmission and distribution services and global expansion of power transmission and distribution business)**

- Development of a platform business that generates new value
- Participation in overseas power transmission and distribution business projects

\* Active alliances with other companies to further expand our business

2000

▼ The world's first 500,000-volt long-distance underground transmission line

2011.3.11

Great East Japan Earthquake and Tsunami

2016

▼ TEPCO Power Grid inherits the general power transmission and distribution department through company split-up

2020

▼ Promotion of non-utility pole

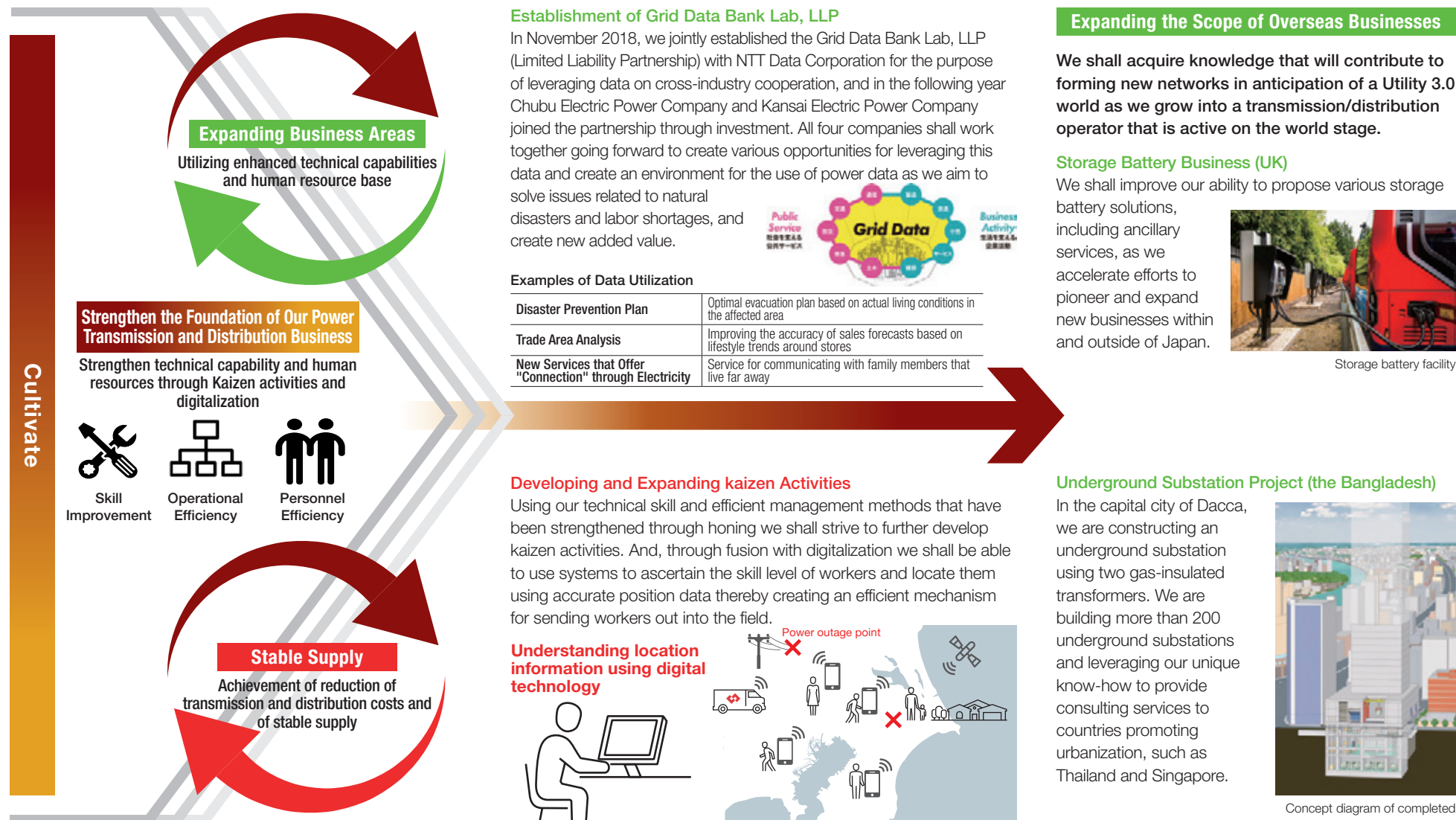
2030

▼ Expansion of introduction of renewable energy





# Business Strategies



Concept diagram of completed



Storage battery facility



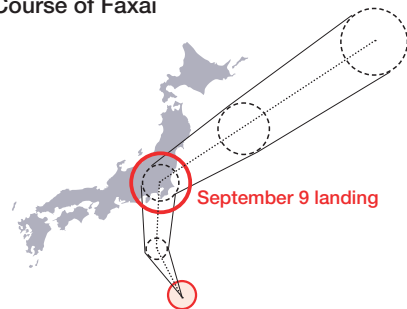
Concept diagram of completed

# Typhoon Faxai in September, 2019

On September 9, 2019, Typhoon Faxai (#15), one of the strongest typhoons to ever make landfall in the Kanto Region, caused power outages that required much time to repair. We would like to offer our deepest apologies to all those affected for the great inconvenience that the long-term power loss caused.

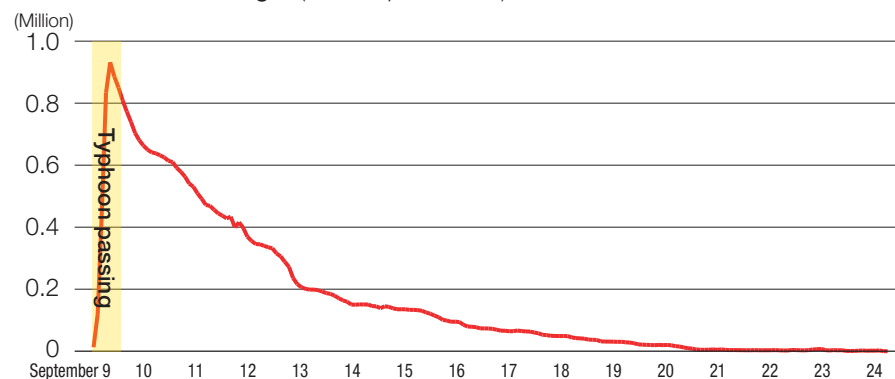
This typhoon caused power outages over a large-scale in primarily Shizuoka, Kanagawa, Chiba, and Ibaraki Prefectures. Chiba Prefecture was hit particularly hard with Typhoon Faxai crossing through the entire prefecture without losing much intensity and causing gale force winds in regions on the east side of the path of the typhoon. These winds toppled 66,000V transmission towers and downed trees, etc., that came in contact with and damaged distribution equipment. Downed trees and cut off roads also hindered repair efforts over a large area.

Course of Faxai



Recovery work

Number of Power Outages (As of September 27)



\* Based on power outages information on TEPCO website.

## Efforts to Restore Power and Repair Facility

TEPCO drew on all its resources to repair transmission and distribution facilities, enhanced assistance for residents in regions where power outages persisted for long periods of time, and cooperated with the relief efforts of local governments. Approximately 9,000 workers (including workers from contractors) and 174 high voltage generator trucks (as of September 19) from all the other electric utilities came to assist TEPCO with our repair efforts, and we received much support and assistance from contractors, local governments, and the Japan Self-Defense Force. We would like to once again offer my gratitude for all the assistance that we received.

\* See P32 for details about the dispatch of electric vehicles to areas that lost power



Support from other electric power companies



Recovery work by the Japan Self-Defense Force

## Ascertaining Causes and Recurrence Prevention (As of September 19)

The damage caused by natural disasters has intensified over recent years and we are seeing more instances where typhoons have grown larger and maintained that intensity as they neared the Kanto Region. Based on the lessons learned from making repairs in the wake of Typhoon Faxai we have implemented equipment countermeasures and made changes to our repair system an effort to further improve our resilience to such disasters by quickly ascertaining the extent of damage in the event of a power outage and disseminating accurate information.

We have also established a task force within the company to ascertain the cause of the damage to transmission towers and utility poles, and examine recurrence prevention measures based on the results.