

Tokyo Gas Group Management Vision

# Compass2030

Providing energy and solutions to the future of our life, society and the earth



November 27, 2019

Tokyo Gas Co., Ltd.

# **1 Providing energy and solutions to the future of our life, society and the earth**

## **Tokyo Gas has led the way to the age of city gas.**

In 1969, Tokyo Gas became the first company to introduce LNG in Japan. We constructed LNG receiving terminals, a main circular and a subsea trunk pipelines. Over the course of 17 years, we also visited and achieved the calorific value change to supply city gas with a high calorific value for 5.5 million customers.

In the half-century since, we have led Japan and the rest of the world in promoting more widespread use of this new source of energy, through a stable supply and new products and solutions that include manufacturing using clean natural gas, urban development through smart energy networks, and lifestyle design using new technologies such as fuel cells. In this way, Tokyo Gas has led the way to the age of natural gas. Creating innovative change through energy and achieving a sustainable society is very much in the Tokyo Gas Group's DNA and is in line with both the spirit of the United Nations Sustainable Development Goals (SDGs) and the strongly held desire of the founder of Tokyo Gas, Eiichi Shibusawa, who valued common good.

## **We are on the cusp of a new age of innovation in the lead-up to 2030.**

In the new digital age that is causing profound changes in work and lifestyles, values are also continuing to evolve, and people are less concerned with "what one has" while placing more importance on "what one experiences" and "what one feels." In addition, progress in the decentralization and deregulation of energy has resulted in a fierce competition in terms of various models for providing added value.

At the same time, climate change and other problems affecting society have also become increasingly severe, and decarbonization has become a major trend. Moreover, as exemplified by the SDGs, people have come to naturally view such issues that affect societies and the world as issues that affect them personally.

Amidst these major changes, we feel that the ten-year period leading up to 2030 is one in which we must question the proper roles for both energy and energy suppliers.

## **The Tokyo Gas Group is ready to tackle new challenges.**

In preparation for the next half-century, the Tokyo Gas Group has formulated its "Compass 2030" management vision outlining the course that should be pursued in this age of uncertainty. As the management decided 50 years ago, Compass 2030 states the Group's determination to take on this new challenge.

Natural gas, one of the pillars of the Tokyo Gas Group's business, is expected to play an even larger role due to its stability, environment-friendly nature, and economic viability, as well as its affinity for use in combination with inherently unstable renewable energy sources. We will continue to provide such of natural gas to our customers.

At the same time, however, as a leading company dealing in natural gas (a fossil fuel), we feel it is our responsibility to deal forthrightly with the issue of climate change. The Tokyo Gas Group will combine natural gas with renewable energies and other new technologies to provide solutions for our life, society and the earth.

In this way, the value that will be created by the Tokyo Gas Group will be working with customers, business partners and society as a whole to identify and resolve problems and to quickly and flexibly provide energy and solutions.

We will strive to become a corporate group that uses the various strengths of each partner to tackle new challenges and create greater value through encounters with diversity. The result will be the achievement of personal growth, corporate growth and sustainable growth for society.

**By "Providing energy and solutions to the future of our life, society and the earth," together with the society as a whole, the Tokyo Gas Group will explore to the future.**

## 2 Environmental awareness and our future goals

- The Tokyo Gas Group, while maintaining S+3E\* as the bedrock of its business activities, **recognizes changes in the market environment as a major opportunity for growth** in the lead-up to 2030.

Our goal will be a **business group which continues to create value together with our customers, business partners and society as a whole while becoming a leader in the future energy systems.**

### Noteworthy changes in the market environment

#### (1) Decarbonization

- Increased desire for decarbonization on the part of the general public worldwide
- Increase in the number of companies participating in the RE100 initiative, etc.

#### (2) Digitalization (rapid technical innovation)

- Changes in how people purchase and communicate in their daily lives
- Changes in the efficiency of work processes and work styles in business

#### (3) Diversification of customer

- Change from “things” to “experiences” and “value” in consumption behavior
- Increase in the number of “prosumers”\*\*\* due to increased decentralization

#### (4) Deregulation in Energy Market

- Increased competition between energy providers
- Changes in industry structure that transcend industrial sectors (market entry by companies in different industries such as telecommunications, railways, IT and so on)

### S+3E: The “Golden Rules” for Energy

Certain achievement of the energy mix\*\*\* leading up to 2030  
Natural gas — with its outstanding stability, environment-friendliness and economic viability — will become even more important in the global energy market.

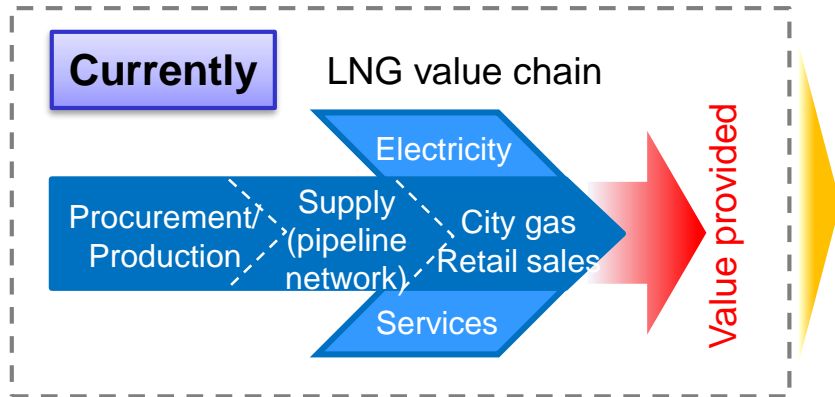
\* S+3E: Safety + Energy security, Economic efficiency and Environment

\*\* Prosumer: Consumers who engage in production activities (for example, consumers who own power generation equipment and sell the power they generate)

\*\*\* Energy mix: Policy objectives for energy supply and demand in FY 2030 as indicated in the Strategic Energy Plan of Japan

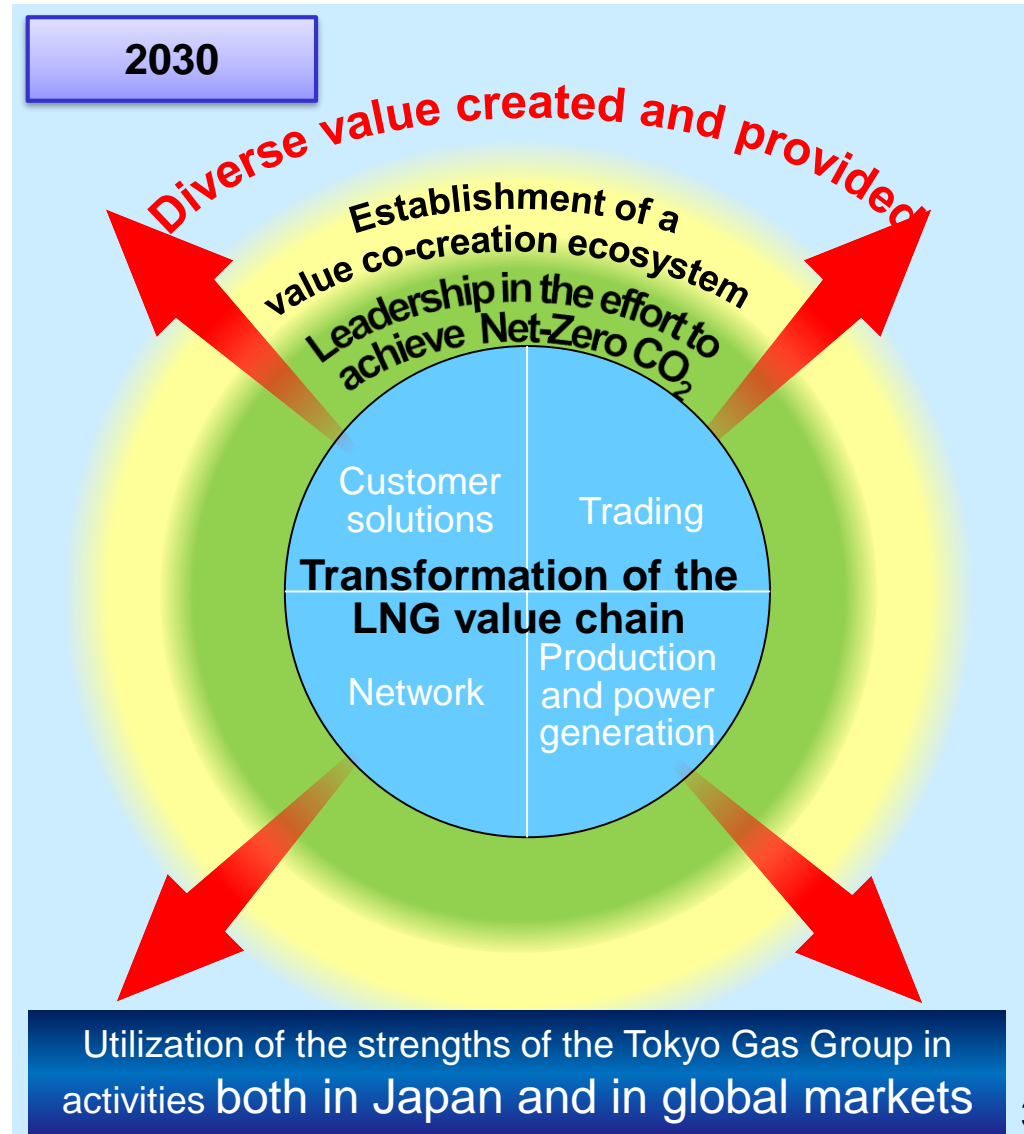
### 3 Three challenges

- In addition to providing value in retail sales of city gas, the Tokyo Gas Group, working with its customers, business partners and society as a whole, will **create and provide various types of value** in each function of the **LNG value chain**.



## Three Challenges

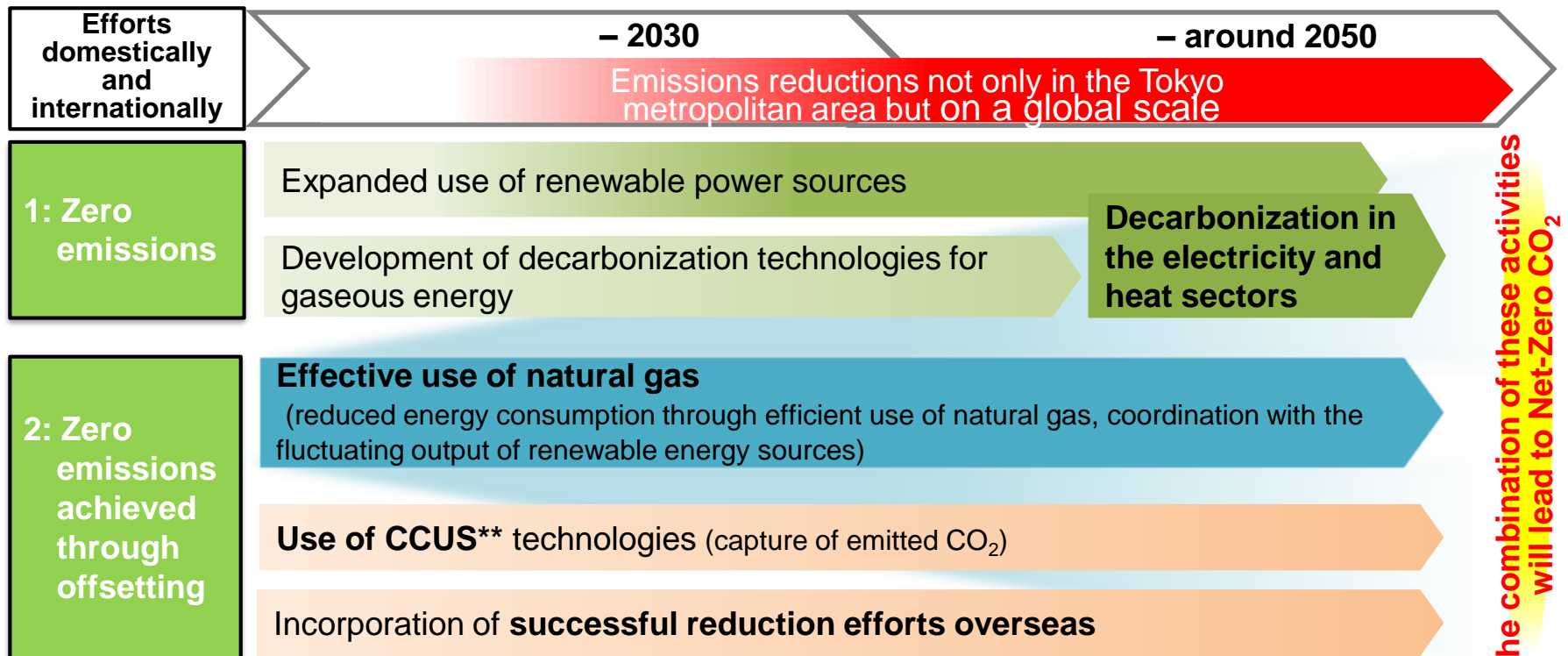
- 1: Leadership in the effort to achieve **Net-Zero CO<sub>2</sub>**
- 2: Establishment of a **value co-creation ecosystem**
- 3: Transformation of the **LNG value chain**



# 4 Challenge 1: Leadership in the effort to achieve Net-Zero CO<sub>2</sub>

- In its overall business activities, the Tokyo Gas Group will **work to achieve Net-Zero CO<sub>2</sub> emissions** including customer emissions and **lead the transition to a decarbonized society**.
- We will use **technologies and expertise for the effective use of natural gas** to promote decarbonization in the electricity and heat sectors as well as for CO<sub>2</sub> capture technologies.
- We will **contribute to reduce carbon emissions on the scale of 10 million tons** by 2030 (which exceeds Japan's target ratio\*) and lead the way to reducing CO<sub>2</sub> emissions on a global scale.

## <Efforts to achieve Net-Zero CO<sub>2</sub> in the Tokyo Gas Group's style>

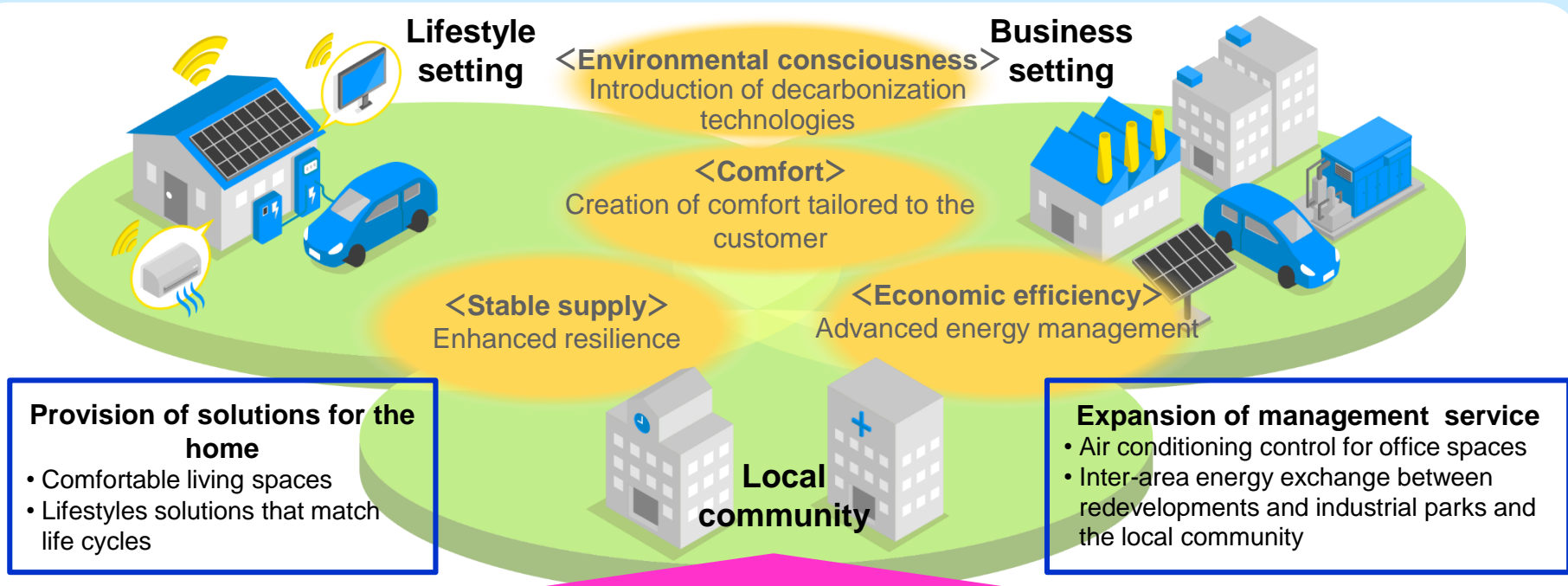


\* Japan's reduction target ratio: The greenhouse gas reduction target in the Intended Nationally Determined Contribution submitted to the United Nations (26% reduction in FY 2030 as compared to FY 2013).

\*\* CCUS: Carbon Capture, Utilization, and Storage

# 4 Challenge 2: Establishment of a value co-creation ecosystem

- We will establish a **value co-creation ecosystem\*** that creates value together with customers, the local community, local governments, and business partners that include companies in different industries and venture firms.
- We will **flexibly combine the diverse products, technologies and services** in the ecosystem to provide **a variety of solutions that resolve various issues** in areas ranging from individual lifestyles to the local community.



**Provision of solutions for the home**

- Comfortable living spaces
- Lifestyles solutions that match life cycles

**Expansion of management service**

- Air conditioning control for office spaces
- Inter-area energy exchange between redevelopments and industrial parks and the local community

**Customer participation**

- Volume of energy use and equipment operation
- Data on spaces and living environments
- Excess energy from prosumers
- Life cycle and lifestyle preferences

**Strengths of the Tokyo Gas Group**

- Data and connections with customers (primarily through Tokyo Gas Lifeval)
- Provision of gas, electricity and solutions
- Equipment/appliances, construction and maintenance

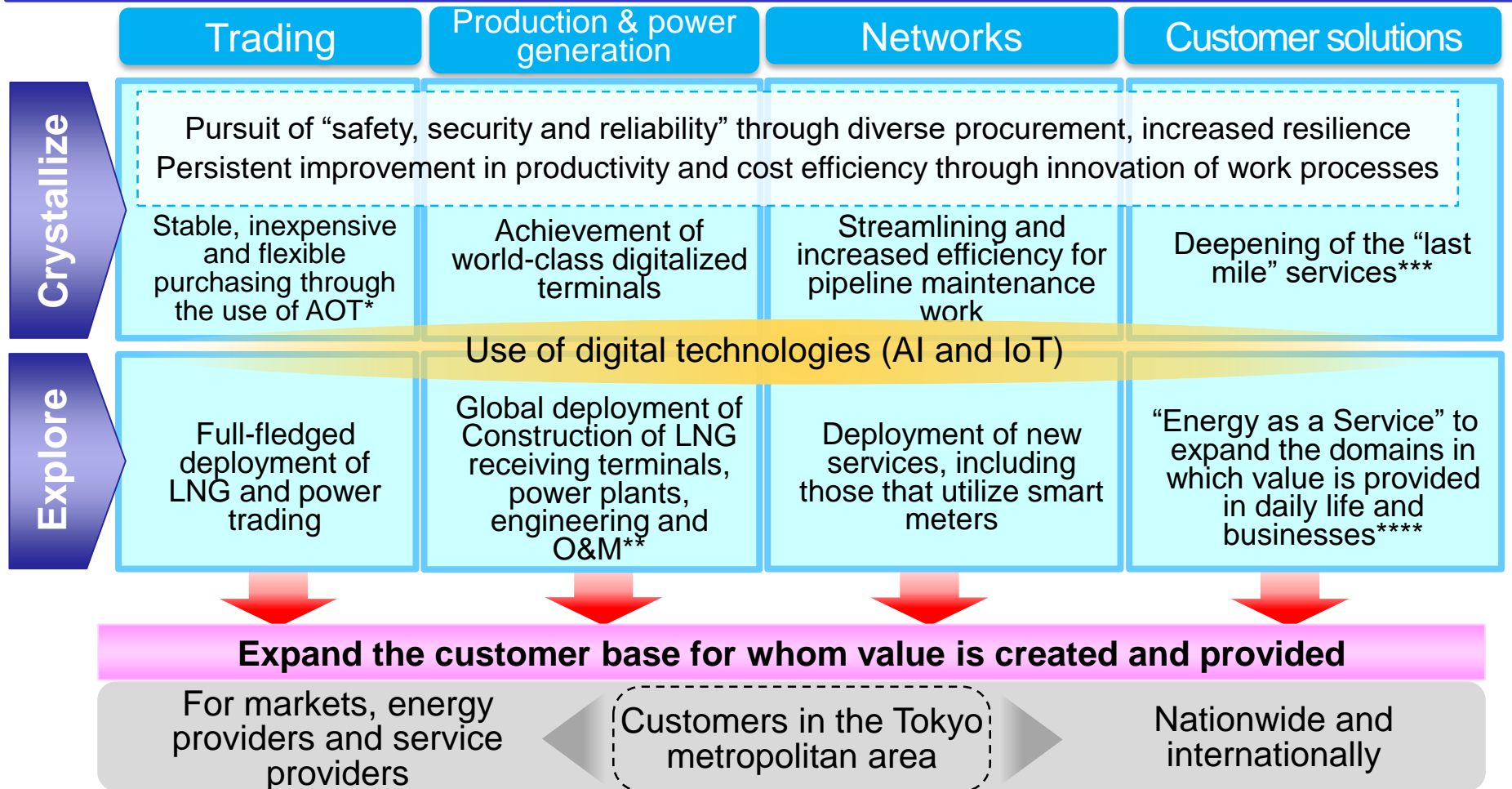
**Business partner participation**

- Energy technologies (IoT equipment, storage batteries)
- Digital technologies (blockchain)
- Data analysis (AI)
- Connections with individual company customers

\* Ecosystem: Business environment in which many companies combine their technologies, expertise and knowledge in their specific areas of strength in order to create new value.

# 4 Challenge 3: Transformation of the LNG value chain

- We will create and provide the various types of value from trading, production and power generation, networks, and customer solutions.
- We will **Crystallize** the business expertise accumulated up to now and **Explore** new domains in order to expand the customers base for whom value is created and provided, and maximize each of the functions of the LNG value chain.



\* AOT: Asset Optimization & Trading (use of digital technology for optimal linkage of LNG transactions, LNG vessels and receiving terminals)  
 \*\* O&M: Operation & maintenance  
 \*\*\* Last mile: Site operations that require human intermediation in the final process of the value chain.  
 \*\*\*\* Energy as a Service: Sale not of energy alone but of a menu of services combining energy, equipment, control technologies and maintenance, etc.

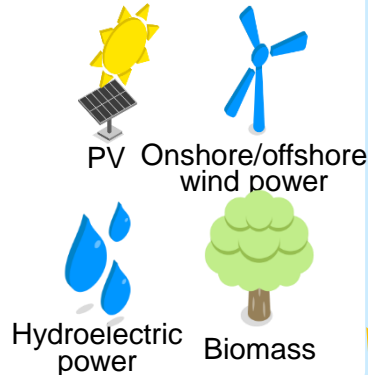
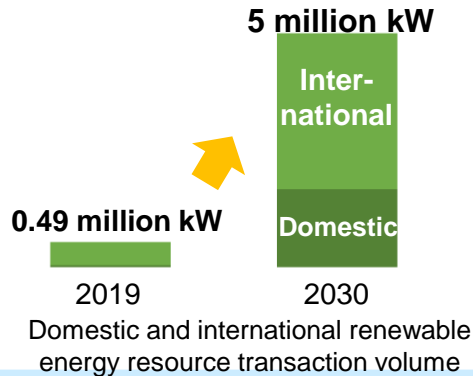


# 5 Action 1: Coordination of renewable energies and natural gas

- We will accelerate the efforts to acquire renewable power sources both in Japan and global markets, and actively use of decentralized resources such as PV\*, storage batteries and EV\*\* to develop businesses that **combine large-scale power sources and decentralized power sources**.
- We will **combine renewable energies with clean natural gas that offers excellent control** to achieve a stable and inexpensive supply of energy.

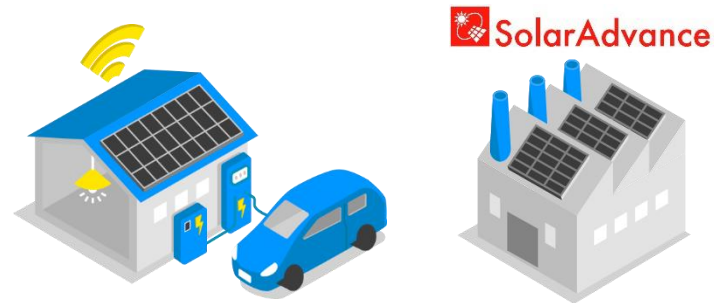
## Acquisition of renewable power sources

- Expand renewable power source transaction volumes both at home and abroad



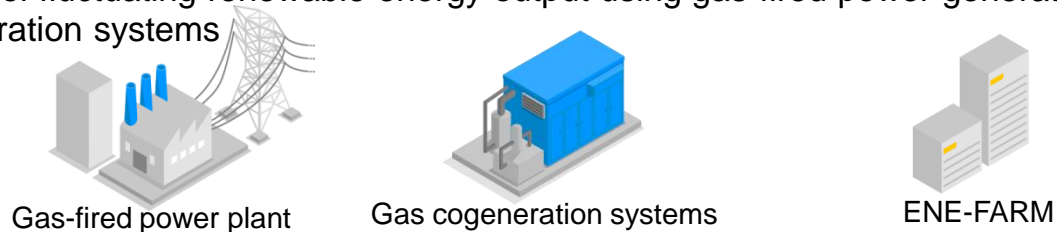
## New businesses utilizing decentralized resources

- Promote new businesses utilizing PV, storage batteries, EV etc. as well as VPP\*\*\*



## Stable supply through the combination of renewable energies and natural gas using digital technology

- Adjustment of fluctuating renewable energy output using gas-fired power generation and gas cogeneration systems



## Effective use of natural gas

\* PV: Photovoltaic power    \*\* EV: Electric vehicles

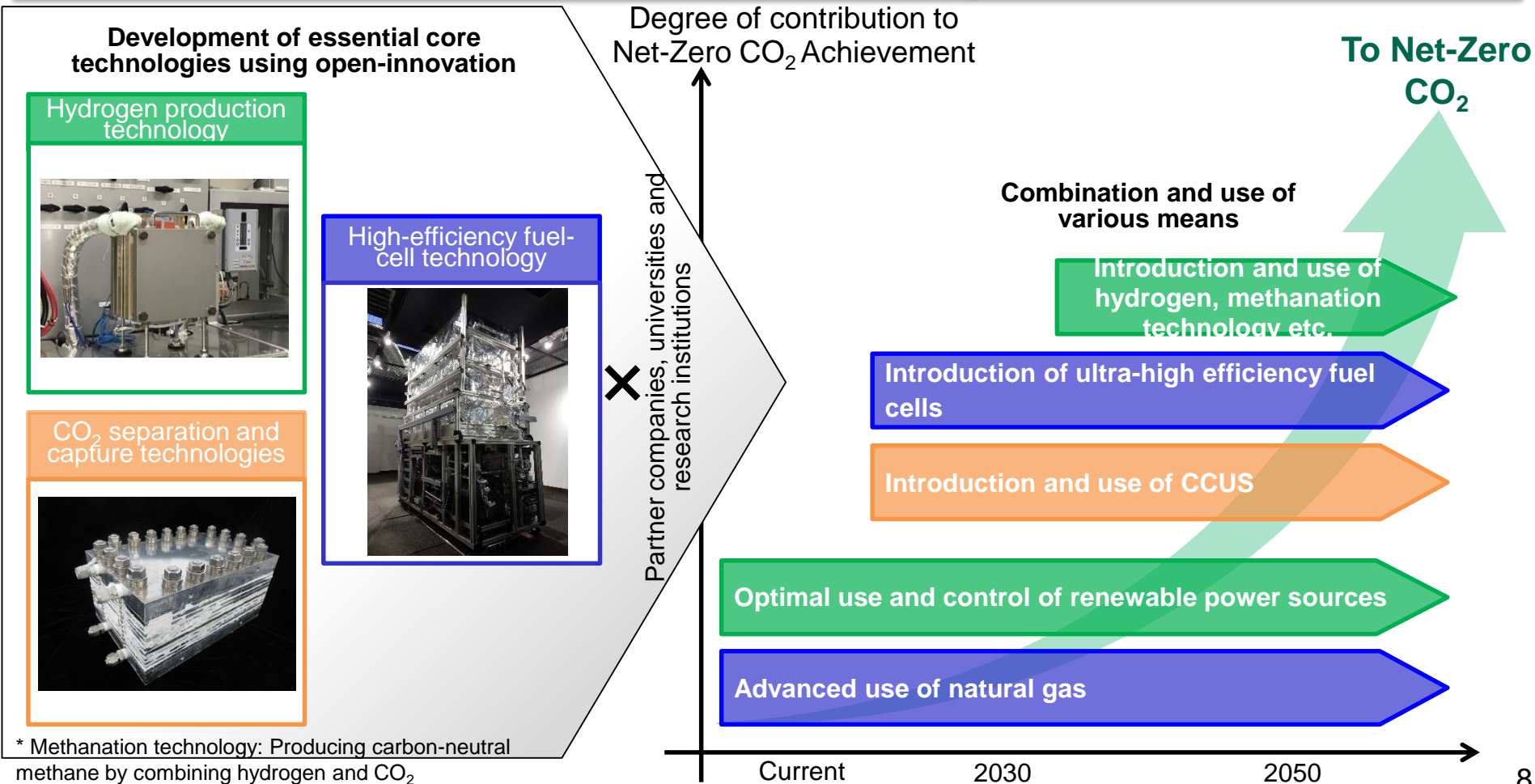
\*\*\* VPP: Virtual power plant. A mechanism that uses IoT to manage and control decentralized power sources, batteries, etc. as if they were a single power plant.



# 5 Action 2: Decarbonization technology innovations

- We will promote innovations in essential core technologies that contribute to decarbonization in the period leading up to 2030.
- After 2030, we will promote hydrogen production and direct use that make use of both domestic and global renewable power sources and the introduction and use of methanation technology,\* etc. to meet the demand for heat. In addition, these means will be combined and utilized for achieving Net-Zero CO<sub>2</sub> through IoT, AI.

## Roadmap to Net-Zero CO<sub>2</sub>



\* Methanation technology: Producing carbon-neutral methane by combining hydrogen and CO<sub>2</sub>

# 5 Action 3: Resolving problems in daily life and businesses

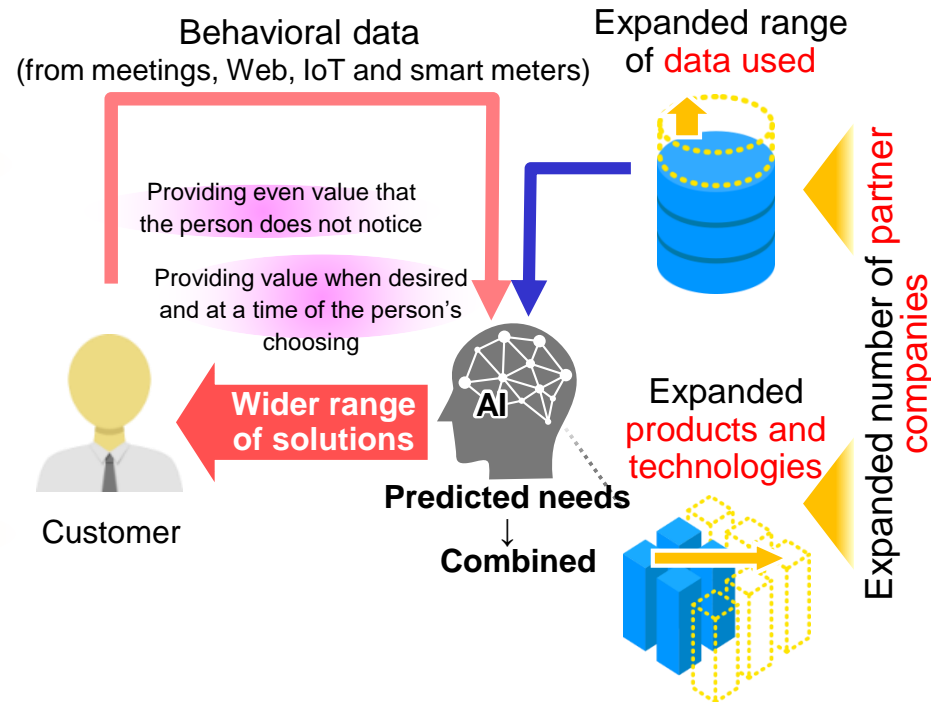
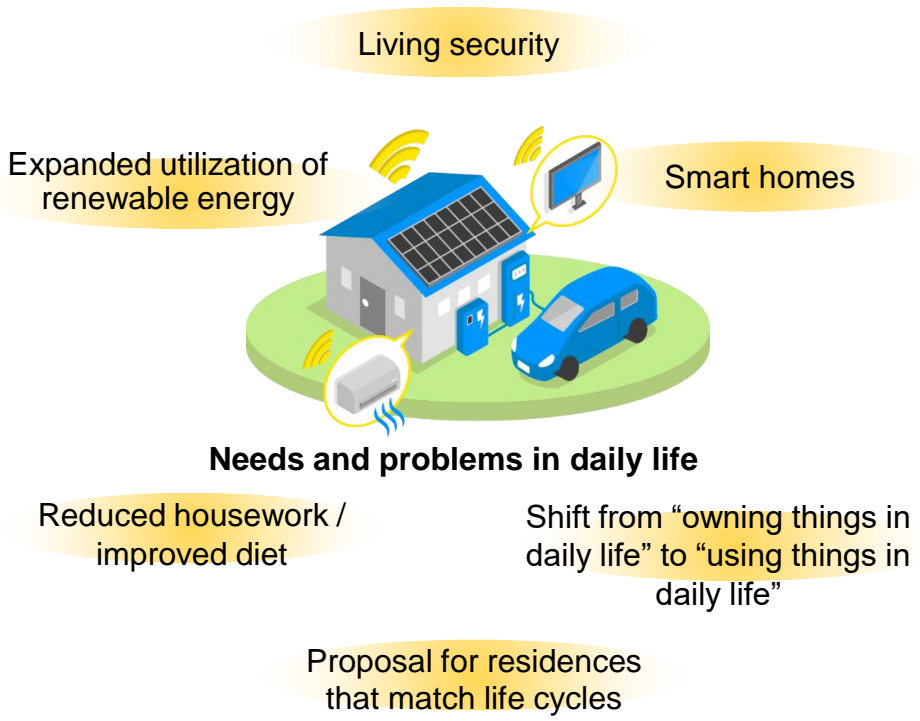
- We will confront problems in daily life and businesses and provide various solutions, beginning with “Energy as a Service.” Efforts to create and provide new solutions, including the establishment of new companies, will be accelerated.
- A digital infrastructure for value co-creation will be established and advanced digital marketing will be employed. In addition, we will expand the number of business partners, the amount of data used, and products and technologies to enable a broader range of solutions to be created and provided.

Resolving various customer needs and problems

- Accelerate the creation of new solutions including the establishment of new companies

Instantly offering wide-ranging values tailored to customers

- Establishment of a digital infrastructure for value co-creation



# 5 Action 4: Enhanced resilience functions through the use of natural gas

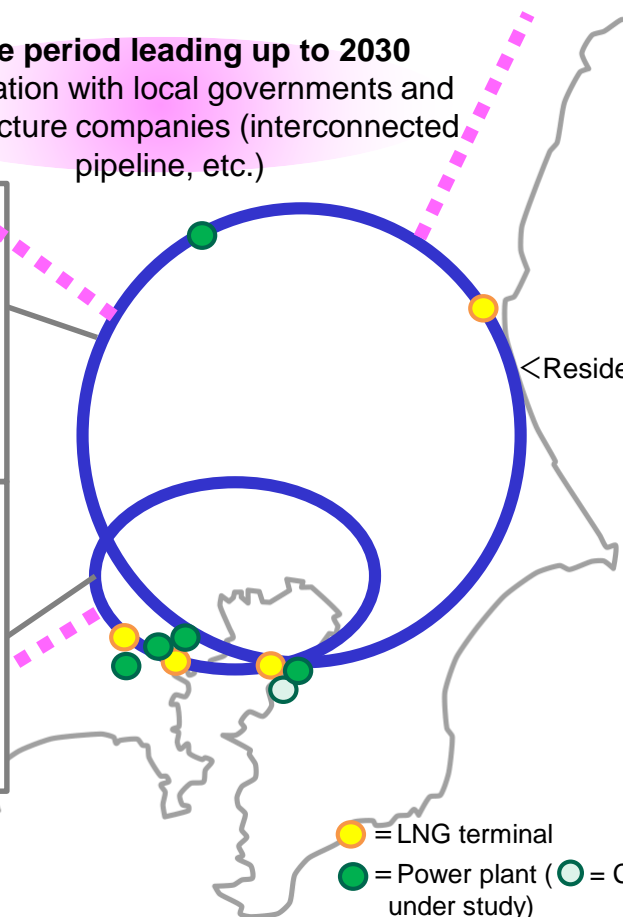
- The opening of the Ibaraki Line in 2020 will create our second circular trunk pipeline network. The Tokyo Gas Group, through stronger cooperation with local governments and infrastructure companies, will work to **strengthen the resilience of the natural gas infrastructure** towards 2030 in the Tokyo metropolitan area that is the political, economic and industrial center of Japan.
- By expanding decentralized energy systems, we will promote **disaster-resilient lifestyles and urban design** that can continue to supply energy even in the event of an emergency.

## Enhanced resilience of natural gas infrastructure

In the period leading up to 2030  
Cooperation with local governments and infrastructure companies (interconnected pipeline, etc.)

**2020**  
Four LNG receiving terminals interconnected through a main trunk pipeline network by opening of the Ibaraki Line

**1999**  
Three LNG receiving terminals interconnected through a main trunk pipeline network in order to increase and expand natural gas use



## Disaster-resilient lifestyles and urban design

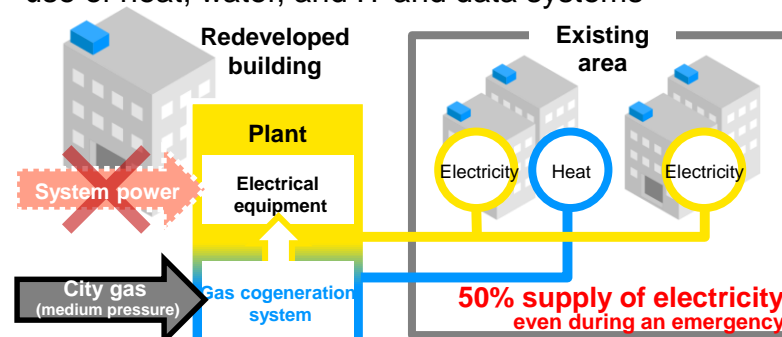
- Enhanced disaster preparedness functions for homes and businesses through the expansion of decentralized energy systems



<Residential fuel cell ("ENE-FARM")>

<Gas cogeneration system>

- Urban design that not only provides electricity in the event of an emergency but also ensures the stable use of heat, water, and IT and data systems



<Nihonbashi Smart Energy Project>

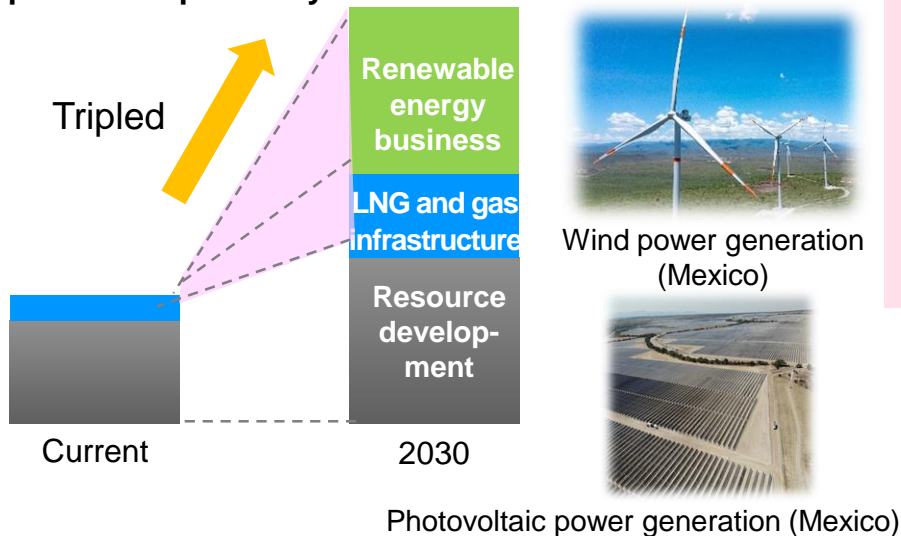
# 5 Action 5: Overseas expansion

- The Tokyo Gas Group will strive to achieve Net-Zero CO<sub>2</sub> on a global scale through business development, considering the energy market environment in each country.
- We will work to **triple overseas profits through business operations** that utilize the Group's strengths in the LNG value chain.
- In addition to resource development, we will diversify operations our activities **gas & power supply and the renewable energy business.**

## Utilization of LNG value chain functions Expansion into renewable energy business

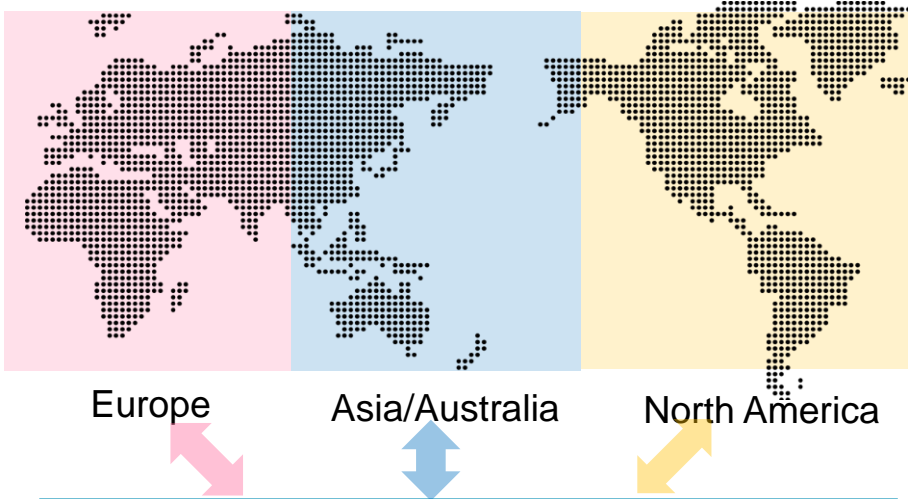
- Expand operations at an accelerated pace by means of growth engine type investment\* that utilizes our expertise cultivated through project investments.
- Promote shale gas and other resource development that creates the Group's earnings base, and expand into renewable energy business, gas & power supply and LNG terminal business.

### Expansion of profits by overseas investment



## Expansion of LNG trading

- Work with business partners mutually taking advantage of individual strengths and regional differences, etc. to develop full-fledged trading in expanding LNG markets.
- Optimally combine LNG trading, owned LNG vessels and receiving terminals, using digital technologies as well
- Increase LNG added value through transport and operation



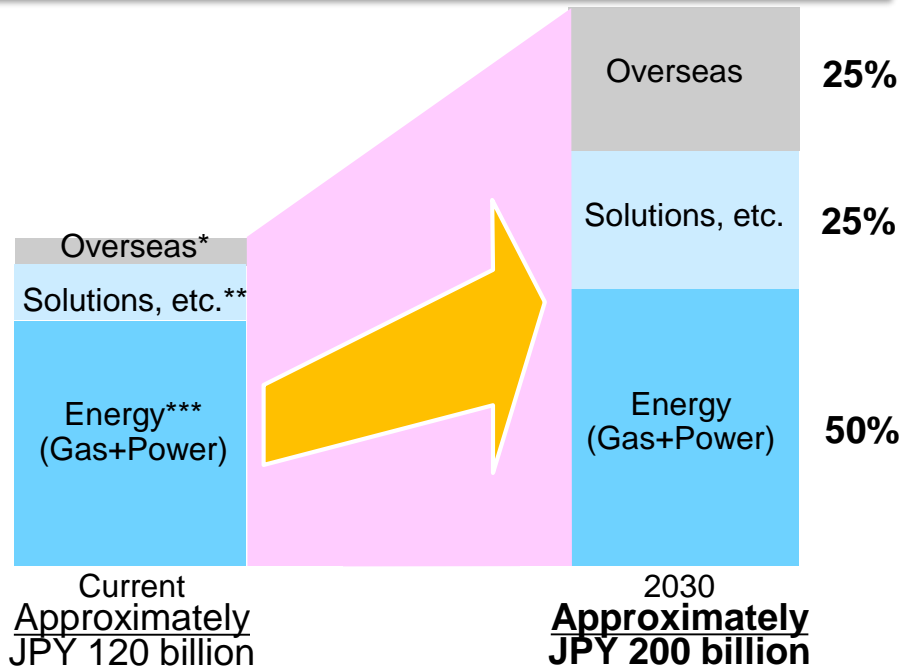
Use in each LNG value chain function  
 Provided to customers both at home and abroad  
 (Southeast Asia, etc.)  
 Expansion of trading scale to 5 million tons

Growth engine type investment: Activities to grow operating companies by investing them and taking part in their management.

# 6 Management guidelines and key figures for achieving growth

- In the first half of the 2020s, we will concentrate primarily on making operations more cost-effective in accordance with the transformation of the LNG value chain, in order to expand energy (gas + power) profits.
- Throughout the second half of the 2020s, we will work to increase profits from services and overseas projects in which we have invested, and actively use means such as M&A to achieve growth.
- We will work to increase the overall profit level to approximately **JPY 200 billion** by 2030, while maintaining profitability and fiscal health and judging the results of activities based on key figures. We will meet shareholder expectations through the increase in enterprise value.

## Company portfolio in 2030: Profit level



\* Overseas: All overseas businesses

\*\* Solutions, etc.: Ongoing service agreements, engineering, real estate etc.

\*\*\* Energy: Domestic gas and power business

## Key figures

Challenge 1: Leadership in the effort to achieve Net-Zero CO<sub>2</sub>

CO <sub>2</sub> reduction contribution	-10 million tons
Renewable power source transaction volume	5 million kW (domestic and international, including purchasing)

Challenge 2: Establishment of a value co-creation ecosystem

No. of customer accounts****	20 million
------------------------------	------------

Challenge 3: Transformation of the LNG value chain

Natural gas transaction volume*****	20 million tons
-------------------------------------	-----------------

\*\*\*\* Total no. of gas, power and service agreements (domestically and internationally)

\*\*\*\*\* LNG equivalent including overseas business and trading



## 7 Engagement with current and future colleagues

- The Tokyo Gas Group will make “**Three Promises**” to **current and future colleagues working on the “Three Challenges.”**
- We will formulate a personnel strategy and conduct diversity activities in order to fulfill these promises.

### 1. We will produce work that will have a major impact on society.

We commend a spirit of taking on challenges and the ability to learn from mistakes.



### Three Promises

### 2. We will create a venue for encounters with diversity and friendly competition.

The Tokyo Gas Group will be a gathering place for diverse thinking and experience.

### 3. We will emphasize the self-fulfillment of each person.

We believe in the potential of each individual and will support each employees activities.



