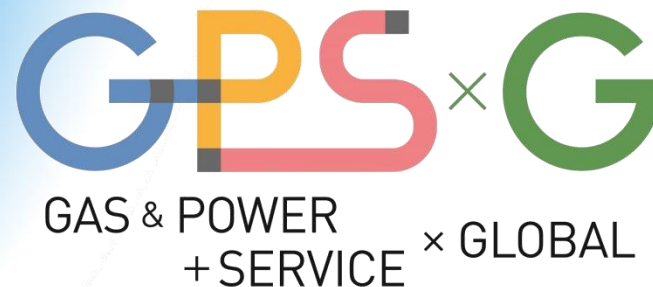




# Tokyo Gas Group Activities in FY2019

Toward the achievement  
of GPS2020



April 10, 2019

Tokyo Gas Co., Ltd.



## *View of group management in the year since appointment as president*

- Oil distributors and a variety of other firms have entered the gas market in the Tokyo metropolitan area. **Energy competition is consequently intensifying, and growing numbers of small scale, large scale, and wholesale gas customers are switching suppliers.** It is in this challenging business environment that we approach the **milestone “50th anniversary of LNG use”**. This serves as a timely reminder of the **contribution that wider and more advanced use of natural gas** can make to the development of a low-carbon society, and the **importance of improving resilience to major disasters** in order to ensure the safe, stable supplies.

## *Progress on Tokyo Gas Group’s FY2018-20 management plan*

- **Steady progress is being made on GPS2020** on both the offensive and defensive fronts. We are gaining more electricity customers, expanding our service lineup, and increasing our involvement in overseas projects. Alongside these activities, our activities this year **pave the way for achieving the goals set by “GPS2020”** by (1) **evolving the total energy business** (Gas & Power + Services (GPS)) by, among other things, achieving the targeted number of electricity contracts ahead of schedule, and (2) **accelerating global business development** (xG) by engaging in more overseas projects so as to **establish a firm basis for development and rapid progress in the 2020s**.

## *Future steps in response to changes in the business environment*

- The “Four Ds”<sup>\*</sup> and other major developments are expected to transform the environment faced by Tokyo Gas Group. To be ready for the **“the next half a century”**, we must **treat these environmental changes as opportunities and create new value by tackling various challenges**. This fiscal year, we will announce our future vision of Tokyo Gas Group.

<sup>\*</sup> Decarbonization, Decentralization, Deregulation, and Digitalization.



# Topic (1) Strengthen LNG value chain

- Past** We have entered several **unprecedented and innovative long-term agreements** that will allow us to contribute to **the launch of new LNG production projects**. These include an agreement to purchase gas from the Mozambique LNG project (joint procurement with Centrica), and letters of intent with the LNG Canada project, Energia Costa Azul LNG project, and Shell Eastern Trading. We are also **expanding the LNG network linking Asia and Europe** by entering agreements such as one on mutual cooperation with RWE.
- This FY** To improve flexibility and enhance competitiveness in **resource procurement** and **LNG trading**, we will **pursue further global alliances with partners in Japan and overseas**, such as **Centrica** and **RWE**, and **help vitalize the global LNG market** by bringing new LNG projects on stream and developing networks.

## Mozambique LNG Project

LNG will be procured under a long-term agreement from Africa for the first time. The industry's first partnership between Japanese and European firms, this will allow flexible supply and demand adjustment that takes advantage of the differing market environments.

## LNG sale and purchase agreement with Shell Eastern Trading

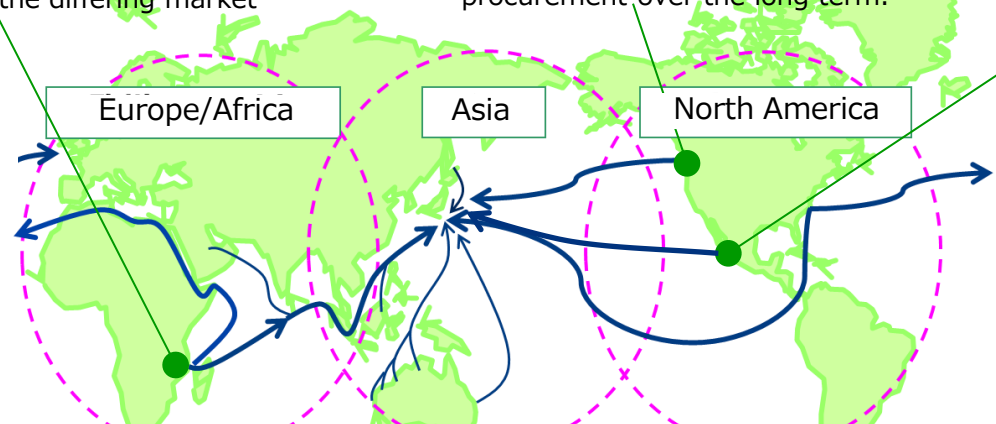
In a first for both companies, this introduces pricing based partially on coal prices. A portfolio format will be used to supply Tokyo Gas from multiple sources in order to ensure competitiveness and supply stability.

## LNG Canada Project

LNG will be procured from Canada for the first time. Our contribution to the launch of Canada's first major LNG production project will make possible stable, price competitive, flexible procurement over the long term.

## Energia Costa Azul LNG Project

LNG will be procured from Mexico for the first time, resulting in stable, price competitive, flexible procurement over the long term.



**More global alliances with partners from Japan and overseas in resource procurement and LNG trading**

**Contribution to launch of LNG production projects**

**Development of LNG network linking Asia and Europe**

**Contribution to vitalization of LNG market**

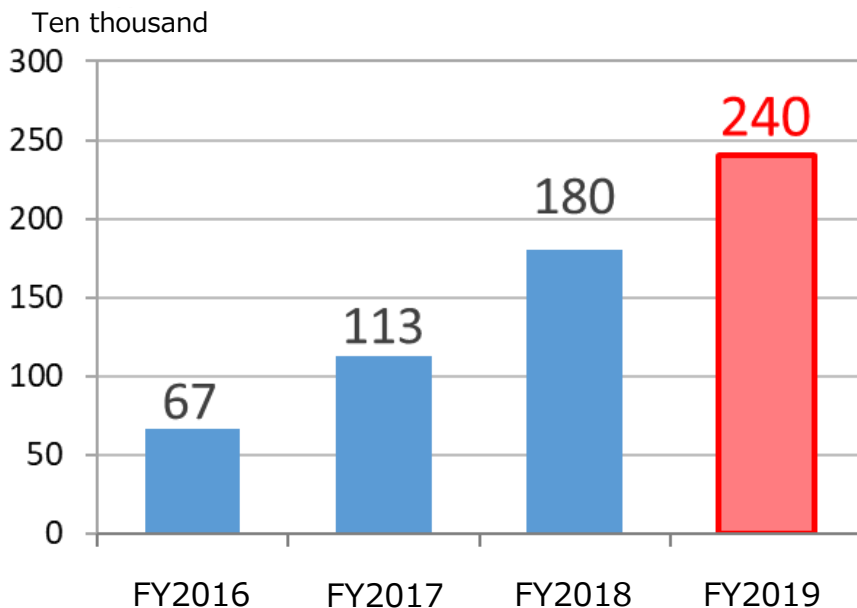


## Topic (2) Supplying electricity and services to customers



- Past** We offer packaged gas and electricity solutions and were Supplying electricity to around 1.8million customers as of the end of March. We are also expanding and enhancing services to meet the needs of residential, commercial, and industrial customers.
- This FY** We will achieve our target number of electricity contracts one year ahead of schedule (Supplying electricity to **2.4 million customers** by the end of this fiscal year). We will also **further expand the “co-creation services” that we offer in collaboration with various business partners**, and **add to our lineup of services for residential customers (such as our Special gas equipment support and Home assistance services)** (approximately 800,000 contracts).

### Growth in electricity sales to residential customers



\*Number of customers supplied (end of fiscal year)

### Expansion of services for commercial and industrial customers

**SolarAdvance**



#### Renewable energy optimization service

In March we launched our Solar Advance onsite zero emission energy service utilizing PV power generation. Pairing this with the Helionet Advance system for predicting customer energy demand and optimizing equipment use, **we will offer solutions for maximizing efficiency of use of renewable energy power sources.**



## Topic (3)

# Acceleration of global business development

**Past** We are leveraging our domestic and international experience of the natural gas and LNG businesses to **contribute to renewable energy projects** tailored to local conditions, **build and manage natural gas and LNG infrastructure, and supply energy.**

**This FY** By utilizing the business expertise acquired to date, building and using community-based networks, and developing highly expert human resources and structures, we will continue to make steady progress on existing projects and **win new projects** around the world.

### Participation in renewable project in Mexico



#### Tres Mesas 3 power plant (Mexico)

We have joined a renewable energy project in Mexico through Heolios EnTG, a joint venture established in partnership with ENGIE. The project has 373,000 kW of solar power capacity and 77,000 kW of onshore wind power capacity, and we are stepping up our involvement in overseas renewable projects.

### Expansion of projects in Southeast Asia



#### Energy-saving service (Malaysia)

We are facilitating the adoption of gas appliances and recommendation of energy-saving solutions through the adoption of gas engine cogeneration systems in Malaysia and the formation of business partnerships with local firms in Indonesia.



#### Artist's impression of LNG receiving terminal after completion (Philippines)

In the Philippines, where LNG is projected to be adopted due to the decline in domestic gas production, we have signed a joint development agreement with First Gen to build and operate an LNG receiving terminal. Government approval for this project has been obtained.



# Topic (4)

## Action to create a low-carbon society



Past

We are taking actions to leverage **our value chain strengths** in various fields, such as **generation and use** of energies that reduce carbon emissions, and construction of **small to large scale, centralized and decentralized** energy systems.

This FY

We will **provide consulting services** to develop plans to **help customers commit to 100% renewable power** and to assist procurement of renewable electricity, contribute to the **development of communities with better business continuity plans** through the use of smart energy networks, develop **demand response services** to make possible virtual power plants, and **acquire renewable power plants**.

### Onsite energy services ZEB/ZEH

Generation	Use
Smaller scale	Large scale
Centralized	Decentralized



Cogeneration



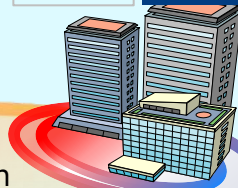
Storage sells

Generation	Use
Smaller scale	Large scale
Centralized	Decentralized

**Purchase of PV after FIT  
Virtual power plants**

### Community development × BCP

Generation	Use
Smaller scale	Large scale
Centralized	Decentralized



*Development of Tamachi lot*

- We are developing smart energy networks in Tamachi and Toyosu with a view to enhancing BCP.

- We are helping customers to reduce their carbon emissions by using Helionet Advance to **optimize their use of diverse energy systems**, including renewable energy power sources and gas cogeneration systems.
- We are preparing to launch a service for **buying photovoltaic electricity after FIT**.
- We plan to begin **using storage sells** in the industrial sector in the first half of FY2019.



**Renewable and  
LNG power plants**



*Kyoto PV plant  
(acquired Feb. 2019)*

- We are acquiring solar and offshore wind power projects.
- Entry into operation of the Kobelco Power Moka Unit 1, which is powered by low-carbon natural gas, in the second half of 2019 will expand Tokyo Gas's power generating capacity.



# Topic (5)

## Action on digital innovation



Past

We have been investing in decentralized power sources (storage sells, etc.) and firms with blockchain technologies, and we are conducting studies that will lead to the **creation of new energy operations**. We are also working to **solve business challenges** and **raise productivity** by, for example, using AI to make electricity spot market forecasts and adopting the use of digital equipment in field operations.

This FY

We will establish a new Business Creation Project Dept. this fiscal year. This will be **spun off in FY2019** to **accelerate the creation of new business and services** using digital technologies. Recognizing the importance of securing revenue bases in an unforgiving business environment, we will establish a new **Business Transformation Project Dept.** to raise productivity through e.g., **business process reengineering (BPR)** to **streamline and enhance business processes**.

### Creation of new business and services

#### Creation of new energy business

- We will develop load adjustment capabilities using storage sells and cogeneration systems (e.g. by taking part in a pilot project in the United Kingdom).

#### Creation of new services

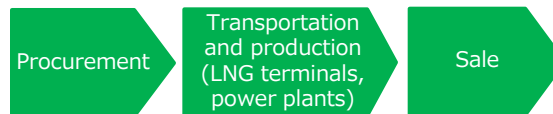
- We will explore **the creation of business that combines services and energies** in gas appliance distribution, maintenance, energy, and other specific markets in which we excel.
- We will pursue a wide range of projects with a view also to **developing sub-brands**.

Creation of Business Creation Project Dept.

To be spun off during FY2019

### Data-based solution of business challenges

We will explore 1) integrated management of data on gas production and operation of power generation facilities and information on demand, prices, and ship allocation, etc., 2) optimized operation of facilities through AI-based forecast of operation and sales plans, and 3) optimization of the entire value chain.



#### Demand forecasting

#### Optimization of ship allocation and terminal/power plant operation

#### Oil, LNG, and power prices forecasting

#### Optimization of market transactions

### Improvement of productivity through BPR, etc.

Use of cloud, etc. and organizational redesign

- Corporate operations
- Customer interface

#### Streamlining and enhancement of business processes, improvement of use friendliness for customers

Use of digital channels (SNS, chat, etc.)

- Receipt from customers

Use of virtual reality/tablets

- Worksite patrols and inspections
- Customer proposals

Use of digital technologies  
Process revision and decluttering  
Thorough benchmarking

Creation of Business Transformation Project Dept.

Supporting you Always and bettering every day.

