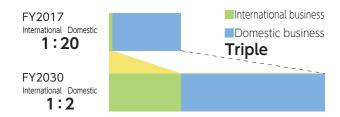
# International Energy **Business**

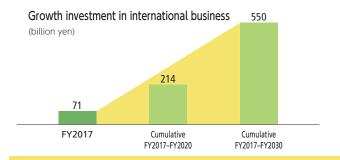
## [ What We Aim to Be in FY2030 and Summary of Current Situation ]

As an energy business operator, the Osaka Gas Group has focused on the natural gas value chain from early on and has made investments abroad accordingly. In the future we will continue to invest outside of Japan and by FY2030 will increase our international-to-domestic business ratio to 1:2. This will create a business structure that, in addition to the domestic market, will earn revenue in priority areas where we are focusing our activities, namely North America, Asia, and Oceania.

In the fiscal year ended March 2017, net sales were 22.6 billion yen and segment income was 8 billion yen. In the fiscal year ending March 31, 2018, we anticipate net sales of 25 billion yen and segment income of 4 billion yen.

## Anticipated FY2030 consolidated ordinary income





Forecast for year ending March 2018

Net Sales  $\frac{425.0}{100}$  billion

Segment Income\* ¥4.0 billion



\* Segment income = Operating income + Equity in earnings of affiliates Note: From the fiscal year ending March 2018, Sumisho Osaka Gas Water UK Limited, an equity-method affiliate, will be repositioned from Life & Business Solutions into Internatiional Energy Business.

Starting in the fiscal year ended March 31, 2015, Osaka Gas repositioned the renewable energy business from the environment/non-energy segment to the LPG/electricity/other energy segment or to the international energy segment according to the details of individual business activities. For this reason, figures from the fiscal year ended March 31, 2015 on include the international renewable energy business.

## [ Efforts to Become What We Aim To Be in FY2030 ]

## We will strengthen the profit structure of our international energy business by strengthening each business field.

In order to become what we aim to be in FY2030, we will promote expansion from upstream to downstream businesses, centering on our priority areas, namely North America, Asia, and Oceania. To do so, we will make full use of the expertise we have cultivated in Japan and the international business infrastructure we have built.

Also, we will expand our businesses based on the following three policy points.

- Concentrating management resources on priority areas and priority business in each area
- 2 Accelerating business development by collaborating with mutually complementary partner companies and utilizing M&A
- 3 Increasing business engagement and improving business implementation capabilities (human resource development, development of a quick decision-making system, etc.)

#### Know how of domestic businesses



Natural gas

power plant







conversion



Fleet operation

Existing international business bases

in USA



Project



**Downstream Business** 





(THAILAND) CO.,LTD.

City-OG Gas **Energy Services** 

OSAKA GAS **THAILAND** 

## **Upstream and Trading Business**

terminal

Gas / oil field development

LNG trading

IPP\*2

terminal business

in USA (under construction)

LDC\*3 business

Retailing and energy services

- \*1 Source: Freeport LNG Development, provided by L.P. (projected image completion) \*2 Independent Power Producer
- \*3 Local Distribution Company

### Specific Initiatives

## Europe

 Utilize existing assets and expand businesses to energy service field, etc.

## Japan

 Expand LNG procurement and sales, with a focus on Asia and the Pacific

## Southeast Asia

- Participate in new LNG terminal and IPP projects
- Promote expansion of retail business (fuel conversion, energy services, etc.)

## **Australia**

- Complete the Ichthys Project
- Acquire new upstream interests, with a focus on projects in production or in development/ expansion phase

## North America

- Complete the Freeport LNG Terminal (scheduled to start operation in FY2018)
- Acquire new IPP projects and participate in the business with the deep involvement of ownership
- Participate in gas businesses through which our know-how can be effectively utilized
- Acquire new upstream interests, with a focus on projects already in production or in the development/expansion phase

We will continue to push ahead with the launch or completion of projects in which we are already participating. We will also work to expand our scale of business, especially in areas where economic growth can be expected, focusing on businesses that can leverage the strengths of existing assets and proprietary know-how.

Specifically, in the upstream business area, we will move

forward steadily with the Gorgon and Ichthys Projects and also work on acquiring new interests, with a focus on projects already in production or in the development/expansion phase.

In the downstream business area, we will work hard to complete the Freeport Project and speed up considerations for participating in other projects such as IPP projects and LNG terminals.

## **Upstream and Trading Business**

#### [ Business Overview and Characteristics ]

The upstream business (energy resource development) of Osaka Gas is helping us to accumulate valuable expertise and knowledge in the field of and also contribute to the expansion and stabilization of profits.

We will robustly promote those ventures in which we have

already decided to engage. In addition, we will continue to carefully examine the acquisition of new interests that will improve our business capabilities, with a focus on projects already in production.

In trading, we will utilize a diversified procurement portfolio and expand sales while responding to customer's needs.

#### Status of Investments

Production started on the Gorgon LNG Project in 2016. Meanwhile, preparations are progressing toward the start of production at the Ichthys LNG Project as well.







Ichthys LNG Project

#### **Downstream Business**

#### [ Business Overview and Characteristics ]

In downstream businesses, we aim to secure stable income by utilizing the know-how and experience cultivated in the domestic energy business to improve the business value of each project.

The Group participates in LNG terminal and IPP businesses and other business in North America, Europe, the Middle East, and Australia. We are also engaged in natural gas sales and energy services in Southeast Asia, and would like to expand into projects such as power plants and LNG terminals. We will continue to amass business know-how in the region and make use of it to proactively develop our businesses.

### Status of Investments

## **Steady Progress on Freeport Project**

Construction work is proceeding steadily on the Freeport LNG Project in Texas, USA. The gas liquefaction facility is set to start shipments in FY 2018.

LNG procurement from the USA is aimed at diversifying our supply sources and our LNG price indexation. It also introduces LNG without restrictions on the country of destination, which will help us to achieve stable and competitive LNG procurement.

## Natural Gas-Fired Thermal Power Plants in the PJM Market, USA

We have acquired three natural gas-fired thermal power plants in the PJM (Pennsylvania-New Jersey-Maryland Interconnection) market, North America's largest wholesale electricity market.

As aging coal-fired power stations in the United States get decommissioned, power sources will decrease in number, and expected to take their place will be thermal power plants fired by







Shore Power Plant

Fairview Power Plant St. Charles Power Plant

natural gas, an environmentally friendly new power source.

Our aim is to focus on and expand our power generation business by building know-how about the business in the USA, which includes fuel procurement for projects and sales of electricity to the power market.

## **Business Development in Southeast Asia**

In March 2013 we set up a local representative company in Singapore and began selling natural gas. Today we also provide energy services to Thailand. We are also setting up business operations in Indonesia and the Philippines as part of an effort to ascertain local needs in a timely manner as they arise in different parts of Southeast Asia.

## Investments in the International Energy Business (investments to date)



## Participation in Upstream Projects (LNG, gas fields, etc.)

- 1 Norwegian North Sea (Idemitsu Snorre Oil Development Co., Ltd.) Stake since 2005: 2-10%
- G Qalhat LNG
  - Stake since 2006: 3% LNG output: 3.3 million tons/year
- Universe Gas & Oil Company, Inc. (Sanga Gas Field) Stake since 1990: 1.5%
- Crux Gas and Condensate Field Stake since 2007: 3%
- Sunrise LNG Project
  - Stake since 2000: 10% Projected LNG output: about 4 million tons/year (planned)
- (B) Evans Shoal Gas Field Stake since 2000: 10%
- Ichthys LNG Project
- Stake since 2012: 1.2% Projected LNG output: 8.4 million tons/year (planned)
- Gorgon LNG Project
- Stake since 2009: 1.25% Projected LNG output: 15 million tons/year (planned)
- Western Papua New Guinea Gas and Condensate Field Stake since 2014: 10-20% (ratio depends on field)
- 1 Pearsall Shale Gas and Liquids Development Project Stake since 2012: 35%

## Participation in Downstream Projects (LNG receiving terminals, IPPs, etc.)

- Sagunto LNG Terminal
  - Ownership interest since 2010: 20% Vaporization capacity: 6.4 million tons/year
- Erogasmet
  - Ownership interest since 2015: City gas distribution business
- 4 Shuweihat S2 IWPF
  - Ownership interest since 2011: 10% (25% equity interest in the operation and maintenance
  - Power generation capacity: 151 MW Freshwater processing capacity: 10 million gallons/day
- Osaka Gas (Thailand)
  - Ownership interest since 2013: Energy services business
- OGP Energy Solutions
  - Ownership interest since 2015: Energy services business
- O NS-OG Energy Solutions
  - Ownership interest since 2014: 30% Cogeneration business
- OCITY-OG Gas Energy Services
  - Ownership interest since 2013: 49% Gas retail business
- (i) EII (Energy Infrastructure Investments)
  - Ownership interest since 2008: 30.2% Four pipelines, two gas-refining facilities, two power plants, two interconnected power transmission lines Power generation capacity: 18 MW

- The Hallett 4 Wind Farm Project
  - Ownership interest since 2009: 39.9% Power generation capacity: 53 MW
- Marianas Energy IPP
- Ownership interest since 2005: 100% Power generation capacity: 87 MW
- Osaka Gas Power America
  - Ownership interest since 2005: 8 IPP projects Power generation capacity\*: 380 MW \* Excludes 50% interest in 87 MW generation capacity of Marianas Energy IPP
- Tenaska Gateway IPP
  - Ownership interest since 2004: 40% Power generation capacity: 338 MW
- Freeport LNG Terminal (vaporization business) Ownership interest since 2008: 10.81% Vaporization capacity: 13 million tons/year
- Freeport LNG Project
  - Ownership interest since 2012: 25% (first train) LNG output: 4.64 million tons/year (planned)
- 4 Aurora Solar Power Generation Project Ownership interest since 2012: 50% Power generation capacity: 51 MW
- 6 St. Charles Energy Center Natural Gas-Fired Power Plant Ownership interest since 2015: 25% Power generation capacity: 181 MW
- Shore Natural Gas-Fired Thermal Power Plant Ownership interest since 2017: 20% Power generation capacity: 145 MW
- Fairview Natural Gas-Fired Thermal Power Plant Plant Ownership interest since 2017: 50% Power generation capacity: 525 MW