

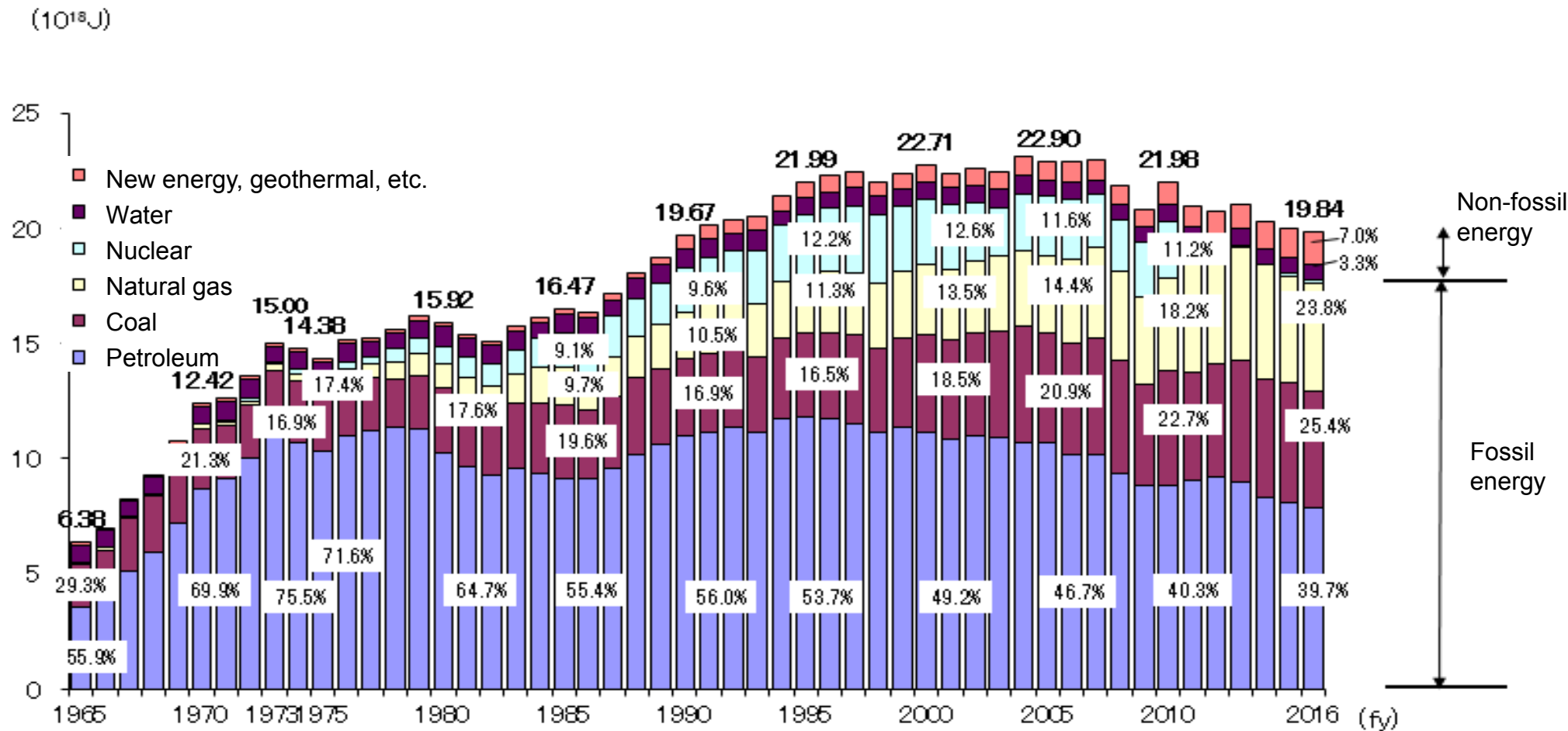
# **Update on Oil and Gas Security in Japan**

The 5<sup>th</sup> APEC Oil and Gas Security Network Forum  
10 April 2019

Agency for Natural Resources and Energy  
Ministry of Economy, Trade and Industry, Japan

# Japan's Energy Supply Structure

## Change in domestic supply of primary energy

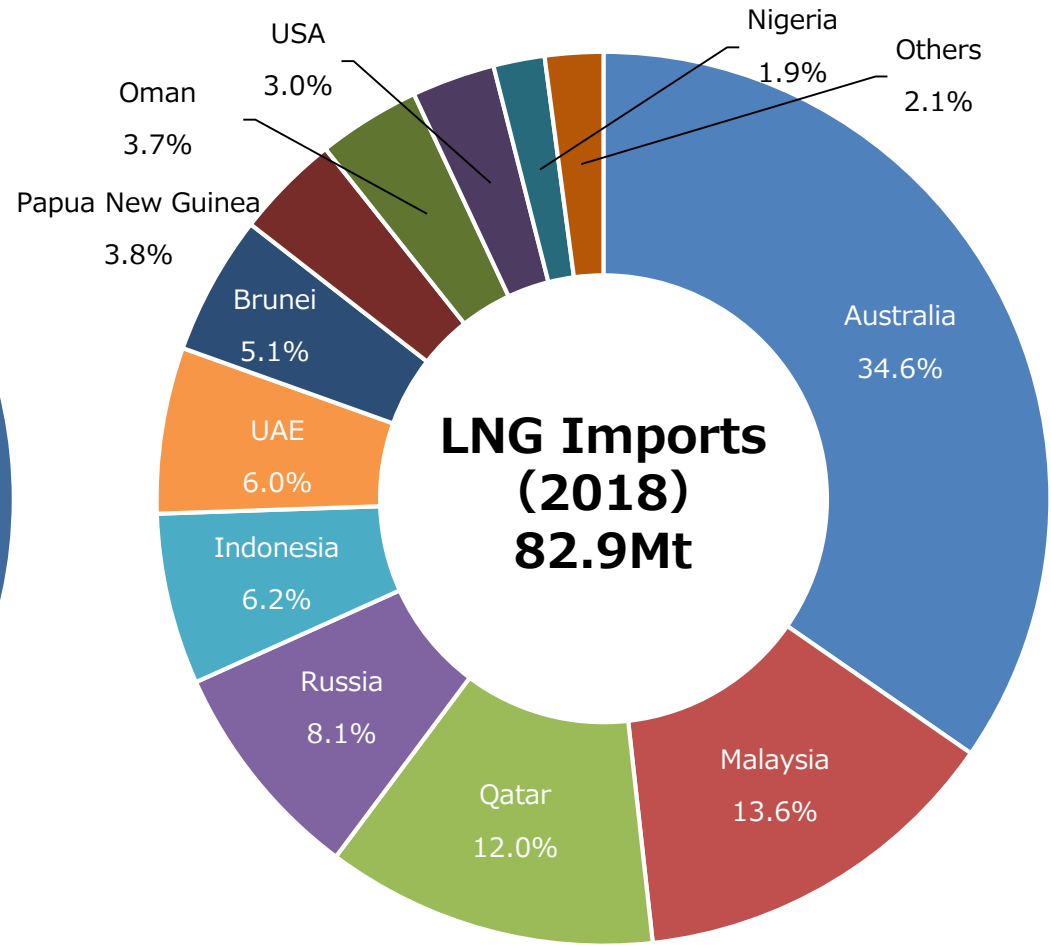
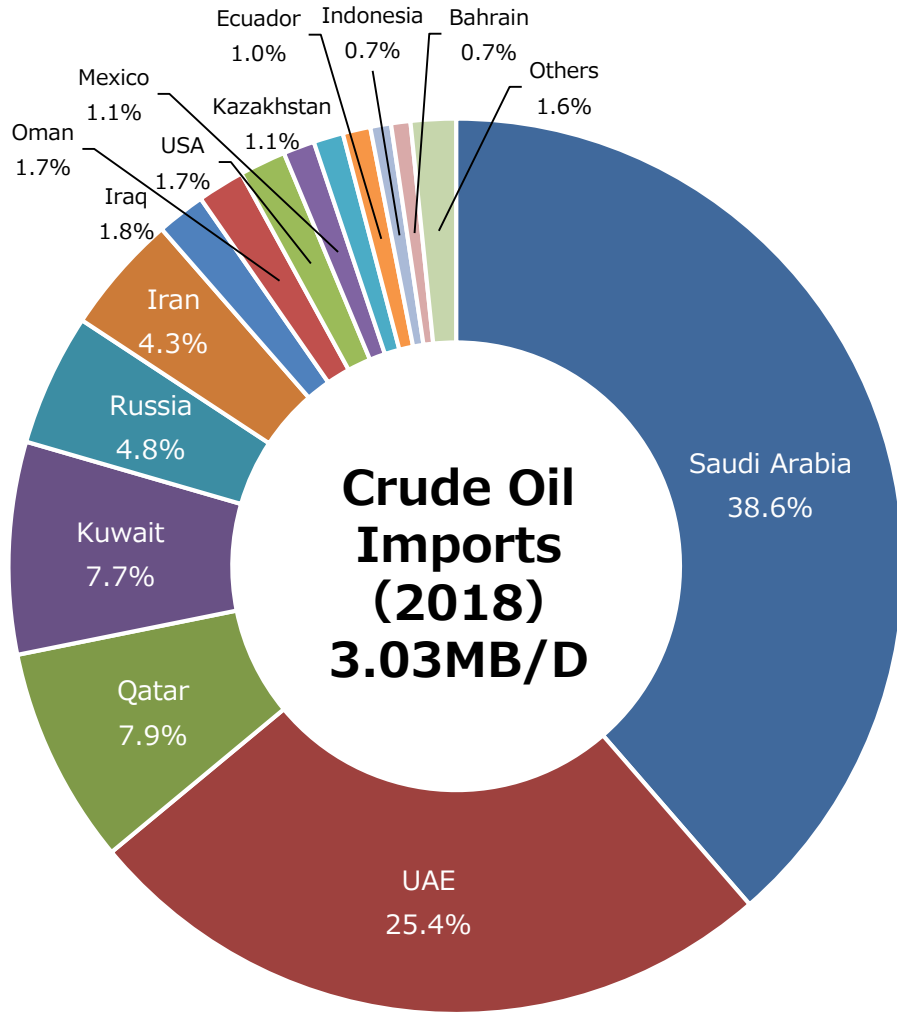


(Note 1) Calculation method changed in FY1990 and following years in General Energy Statistics of Japan.

(Note 2) New energy, geothermal, etc. include solar power, wind, biomass, geothermal, etc. (the same hereinafter).

Reference: Created on the basis of Agency for Natural Resources and Energy "General Energy Statistics of Japan."

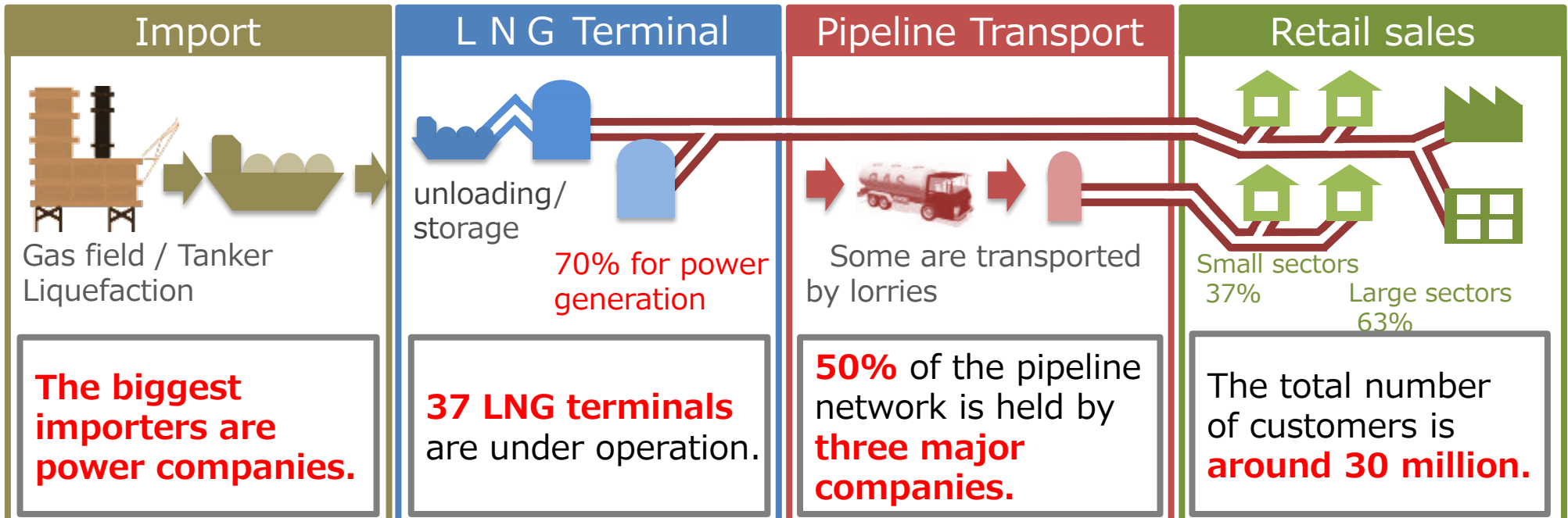
# Japan's Major Procurement of Crude Oil and LNG



**Dependency on the Middle East 88.0%**  
**Dependency on the Strait of Hormuz 86.3%**

**Dependency on the Middle East 21.7%**  
**Dependency on the Strait of Hormuz 18.0%**

# Business Structure of Japanese Gas Utilities



As of FY2017

Import Company
① JERA 42%
② <b>Tokyo Gas 17%</b>
③ <b>Osaka Gas 11%</b>
④ Kansai Electric 10%
⑤ Tohoku Electric 5%
⑥ Kyusyu Electric 5%
⑦ <b>Toho Gas 4%</b>

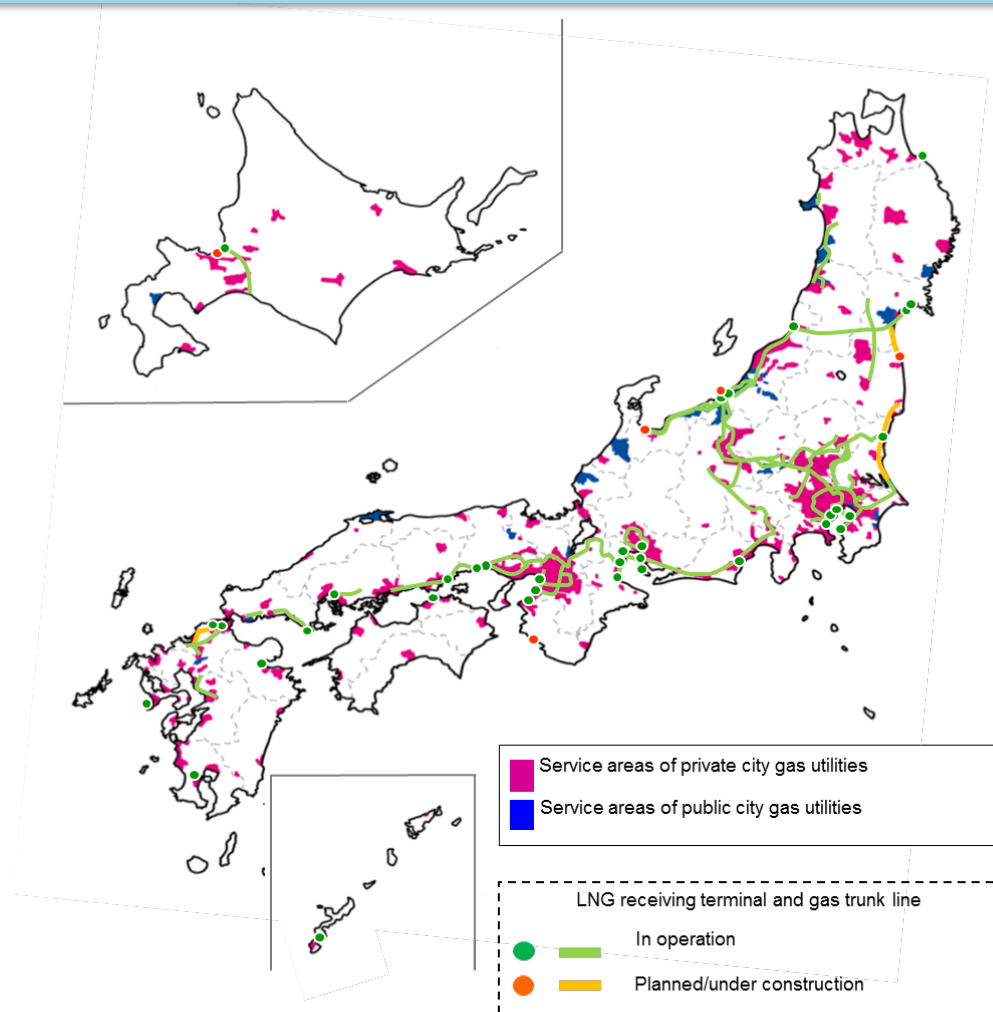
As of Jan .2019

owner	Terminal	Tank
Gas	14	48
Electric	10	51
Gas /Electric Common	6	67
Others	7	28
計	37	194

Length (thousand km)	General Gas Pipeline Service Providers (203)	Sales ratio
140 (53%)	Tokyo, Osaka, Toho (3 companies)	65%
30 (11%)	Semi-major (Hokkaido, Sendai-shi, Shizuoka, Hiroshima, Saibu, Nihon) (6 companies)	8%
77 (30%)	Wholesale by gas pipelines (118 companies)	17%
13 (5%)	Wholesale by tanker truck (76 companies)	1%
3 (1%)	Others (Electric power company etc.)	9%
262(100%)	Total	100%

# Natural Gas - Infrastructure

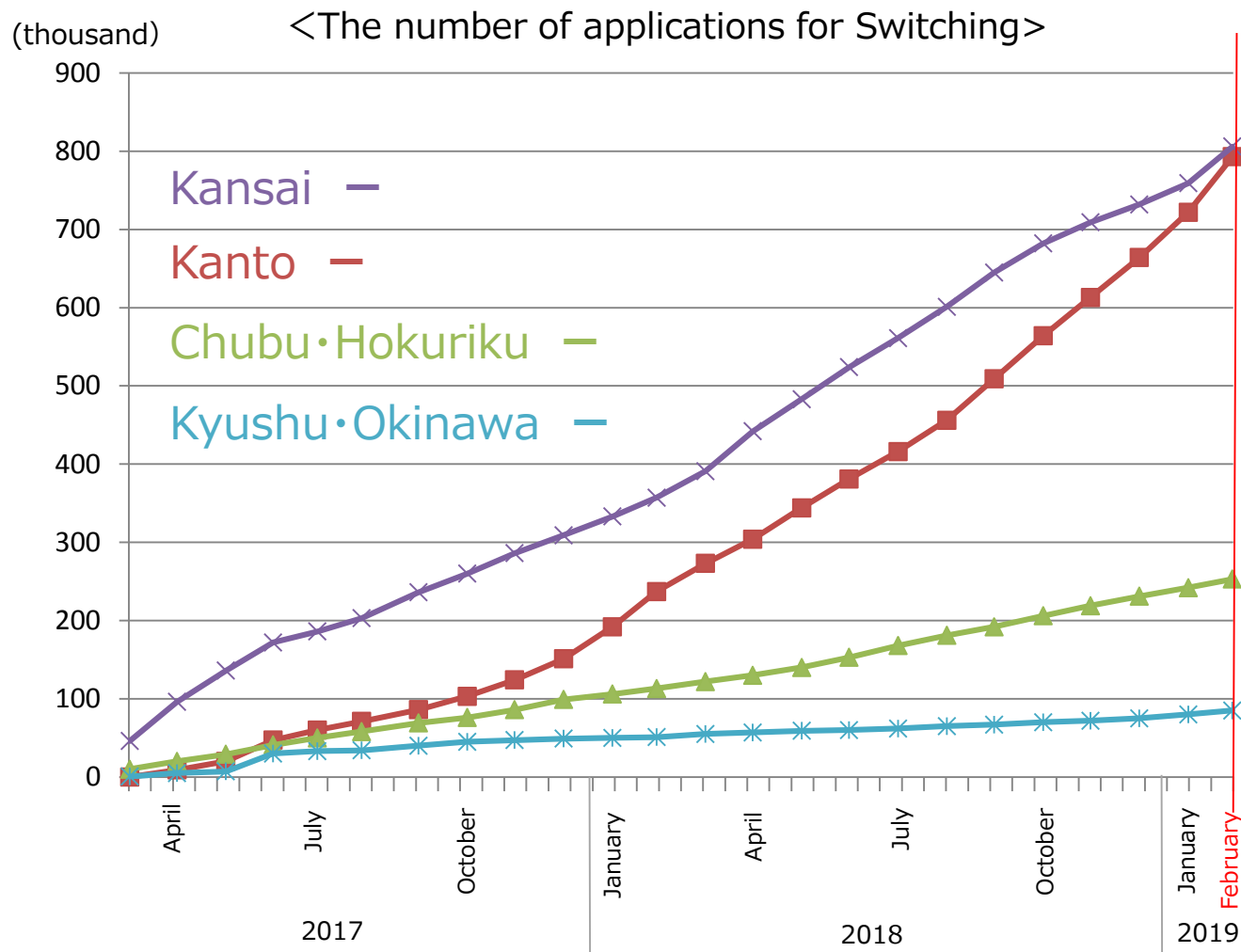
- Japan has no cross-border gas pipelines. Japanese gas markets are local, without a major national gas pipeline network.
- As most of the domestic gas pipelines are built primarily to connect LNG receiving terminals on the coast with high-demand areas.



Source: The Japan Gas Association, "Gas business handbook" (2017)

# Switching Application (Gas)

- Number of applications for “switching” (to a different gas supplier) reached 1.93 million in February 2019.
- Kansai area is the most competitive market while the number of applications for switching is gradually increasing in Kanto area.



Region	Application number
Hokkaido	—
Tohoku	—
Kanto	792,590
Chubu ·Hokuriku	253,149
Kansai	805,543
Chugoku ·Shikoku	—
Kyushu ·Okinawa	85,201
Total	1,936,483

# Petroleum stockpiling development

- Japan, as an IEA member, started its oil stockpiling in the private sector firstly, government oil stockpiling followed. After building up national oil stocks to a certain level, oil stocks in the private sector decreased gradually while national oil stocks increased (effective use of private sector tanks).

## ~ National ~

- 1978-80 10- 30 mm kl oil (crude) stock target by VLCCs storage
- 1980 -1996 10 oil sites developed
- 1987 Increased to 50 mm kl oil stock target
- 1992 **LPG stock started (target 1.5 mm ton)**
- 1998 Achieved 50 million kl
- 2009 Product stock target, joint stockpiling with oil producing country
- 2013 **5 LPG sites completed**
- 2015 90 days oil stock target.
- 2017 Fulfilled LPG to the target, 1.4 mm ton equivalent to 50-day LPG stock target.

## ~ Private sector ~

- 1972 Started (voluntary base)
- 1975 Established the legal system\* for oil stocks in the private sector (Target requirement of 90-day)
- 1981 Achieved to 90-day. **LPG increased stepwise by 5-day/year from 10 to 50-day, achieved in '88)**
- 1987 Gradual reduction of the legal requirements for oil from 90-day to 70-day.
- 1993~ 70- day for oil stocks
- 2017~ 40-day for LPG stocks

# National Oil Stockpiling sites

- JNOC (Japan National Oil Corporation) had developed 10 sites with 4 kinds of tank system from early 1980s to 1996.

## Above-ground tank (193 AGTs)



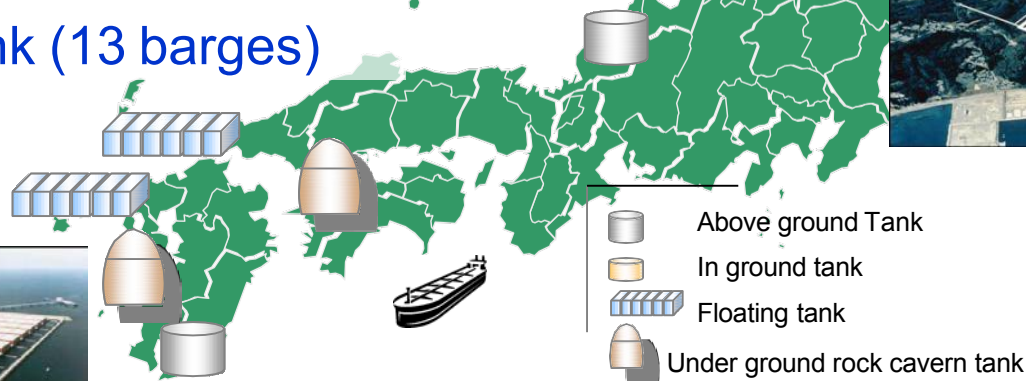
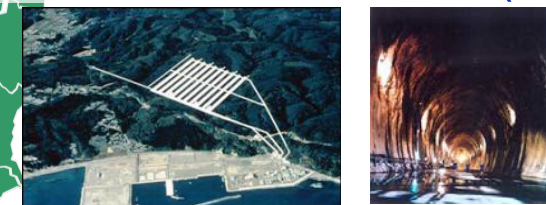
## In-ground tank (12 tanks)



## Floating tank (13 barges)



## Rock cavern tank (9 units)

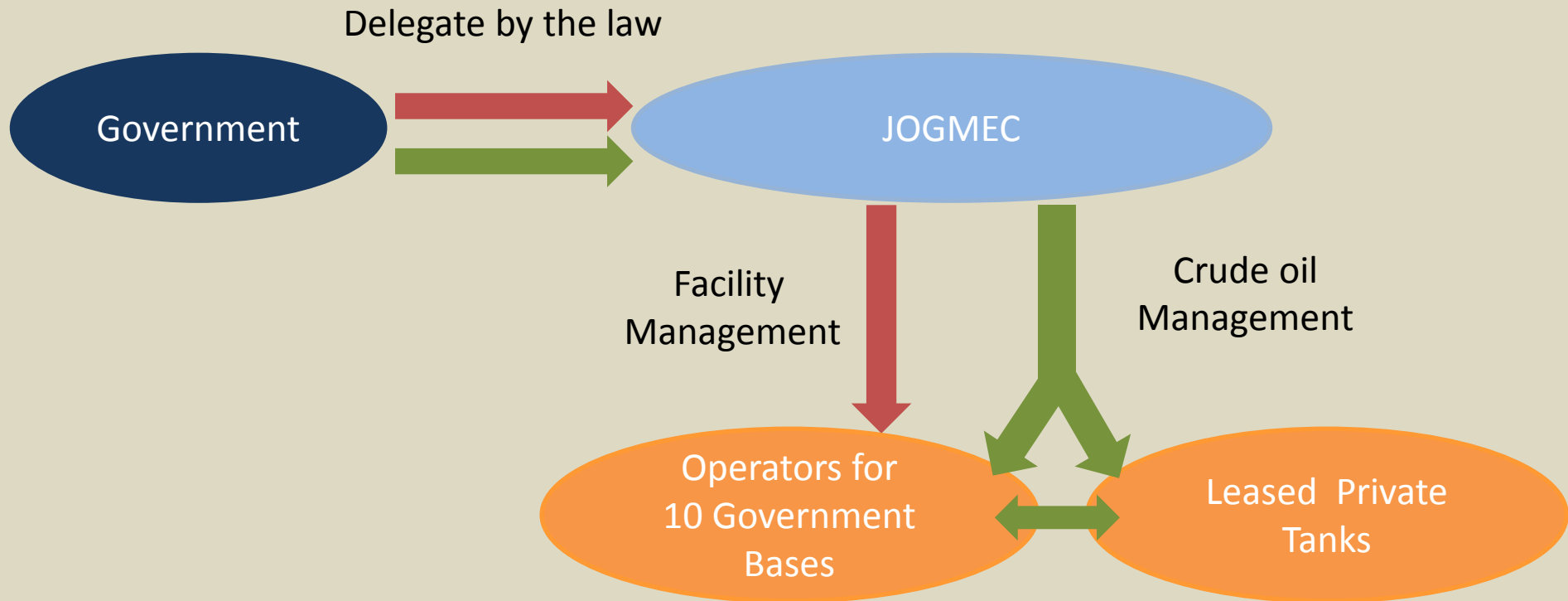


- Above ground Tank
- In ground tank
- Floating tank
- Under ground rock cavern tank



# National Stockpiling System

- Based on the Oil Stockpiling Act, the Government delegates management of both government stockpiling bases and government stockpiling oil to JOGMEC.
- In addition to national bases, the government utilizes oil refiners' tanks for promoting government oil stockpiling.



# Emergency Government Inspection of Important Infrastructures in 2018

- In 2018, natural disasters such as the downpour in the western part of Japan in July and the earthquake in Hokkaido in September damaged important infrastructures and made a heavy impact on people's lives.



Flood caused by downpour in west Japan



House collapsed by earthquake in Hokkaido



Blackout caused by earthquake in Hokkaido

- In response, government of Japan conducted an emergency inspection of the important infrastructures all over Japan to see whether they are strong enough or not against any disasters.

## Target infrastructures

- 1) Electricity supply related infrastructures of which the risk and impact of the blackout should be minimized
- 2) Infrastructures which should avoid a lethal disorder of function caused by energy supply loss
- 3) Infrastructures which should maintain its function to save human lives during natural disasters

# Major countermeasures in the fuel supply field after the inspection

## 1 Strengthening of disaster response capacities of fuel supply infrastructures

### 1) Measures taken in 2018FY

- Japanese Government supported prefectural governments to build a plan to eliminate obstacles on prioritized fuel delivery roads.

### 2) Measures to be taken in 3 years

- Japanese Government supports refineries, oil tanks and gas stations to Install emergency power generators for maintain supply capacity in each region during disasters.

## 2 Strengthening of self defense capacities of important infrastructures

### Measures taken in 2018FY

- Japanese Government conducted a immediate survey of the self defense capacities of major hospitals, mobile phone base stations, and sewage treatment plants.
- Japanese Government held seminars and conducted trainings to disseminate an usual preparation and emergency response measures.