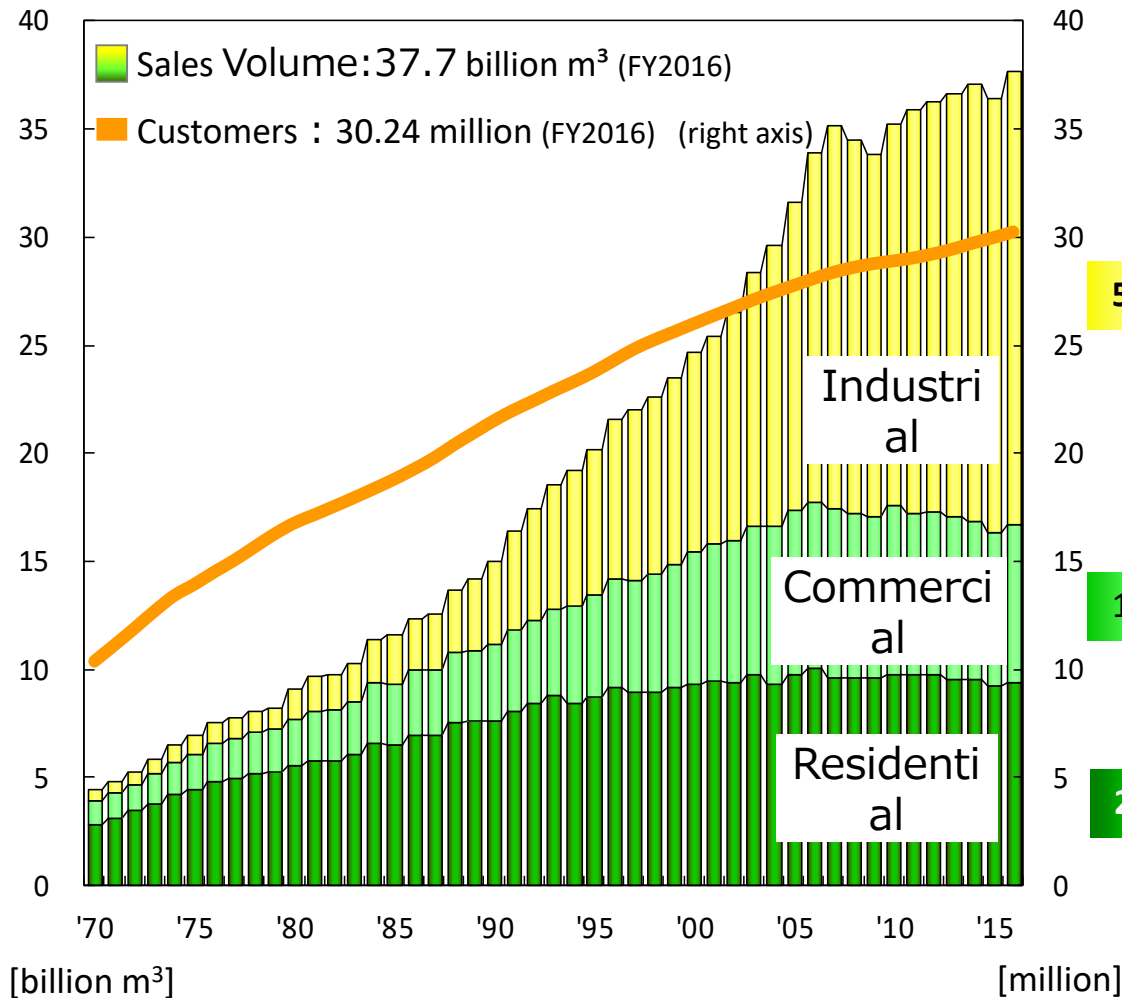


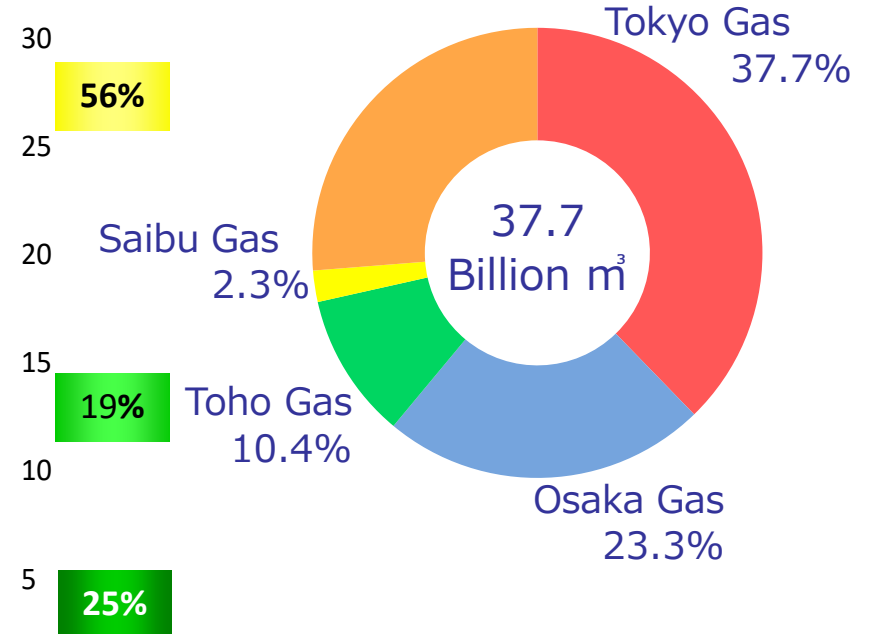
Japan's Gas Market Security

**Gas Market Office,
Electricity and Gas Industry Department,
Ministry of Economy, Trade and Industry**

City Gas Sales Volume and Number of Customers

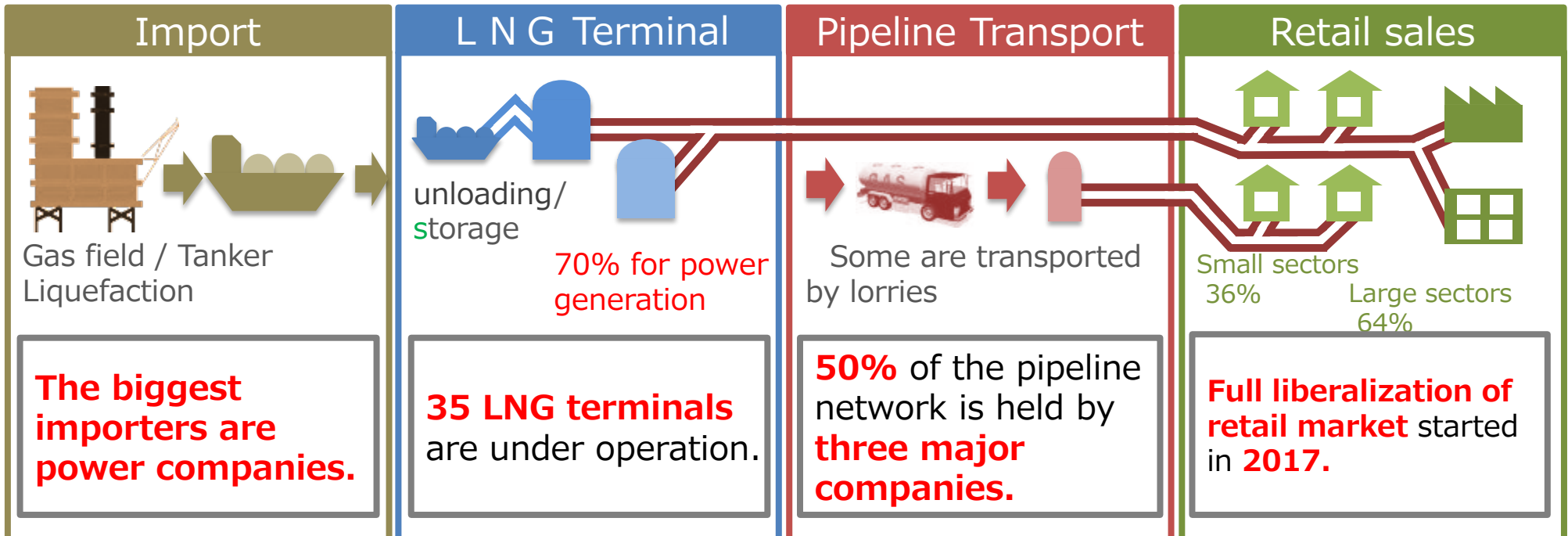


Breakdown of city gas sales volume by utilities (FY2016)



Source: The Japan Gas Association, "Gas business handbook" (2016) / "Result of city gas sales volume" (2016)

Business Structure of Japanese Gas Utilities



As of FY2014

Import Company	
① Tokyo Electric	28%
② Tokyo Gas	16%
③ Chubu Electric	15%
④ Kansai Electric	10%
⑤ Osaka Gas	9%
⑥ Kyusyu Electric	6%
⑦ Tohoku Electric	5%

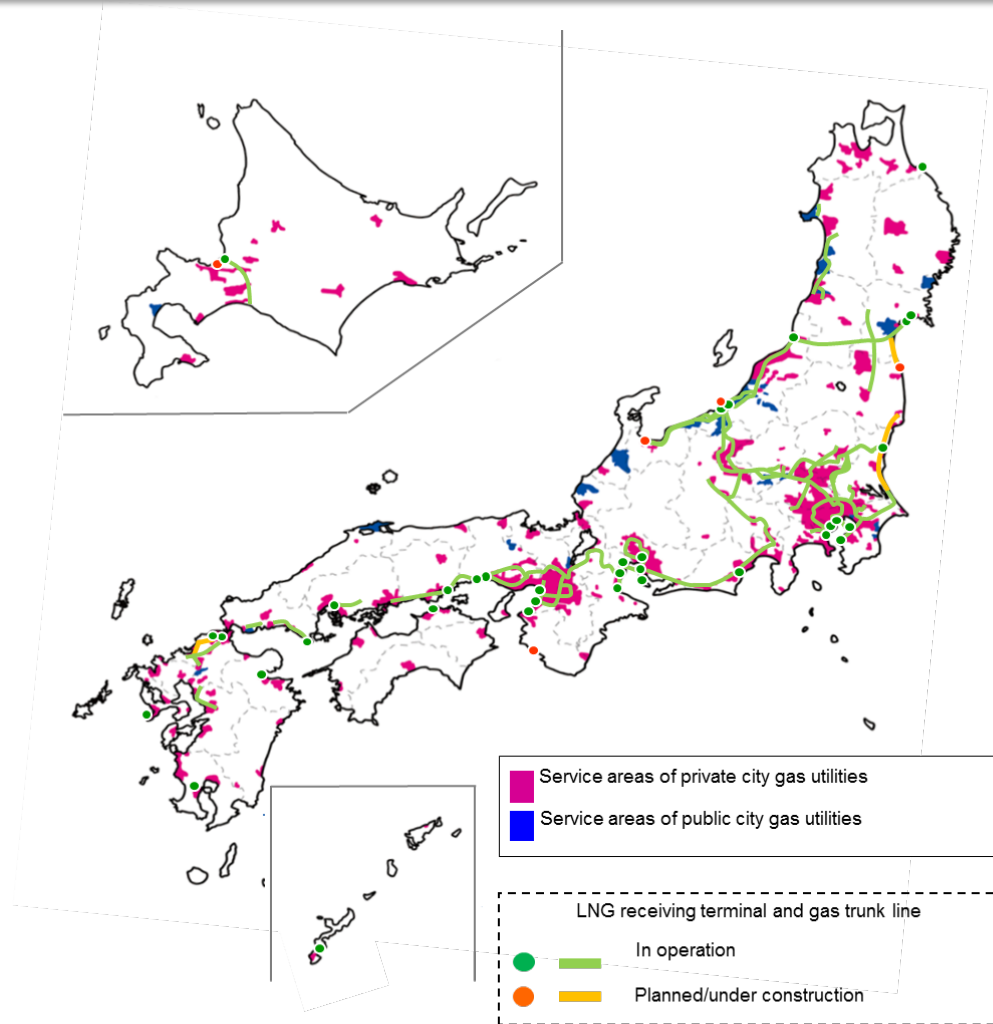
As of Oct .2016

owner	Terminal	Tank
Gas	13	48
Electric	9	49
Gas /Electric Common	6	67
Others	7	28
計	35	191

Length (thousand km)	General Gas Pipeline Service Providers (203)	Sales ratio
137 (53%)	Tokyo, Osaka, Toho (3 companies)	65%
29 (11%)	Semi-major (Hokkaido, Sendai-shi, Shizuoka, Hiroshima, Saibu, Nihon) (6 companies)	8%
76 (30%)	Wholesale by gas pipelines (117 companies)	18%
12 (5%)	Wholesale by tanker truck (80 companies)	1%
3 (1%)	Others (Electric power company etc.)	8%
258(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.

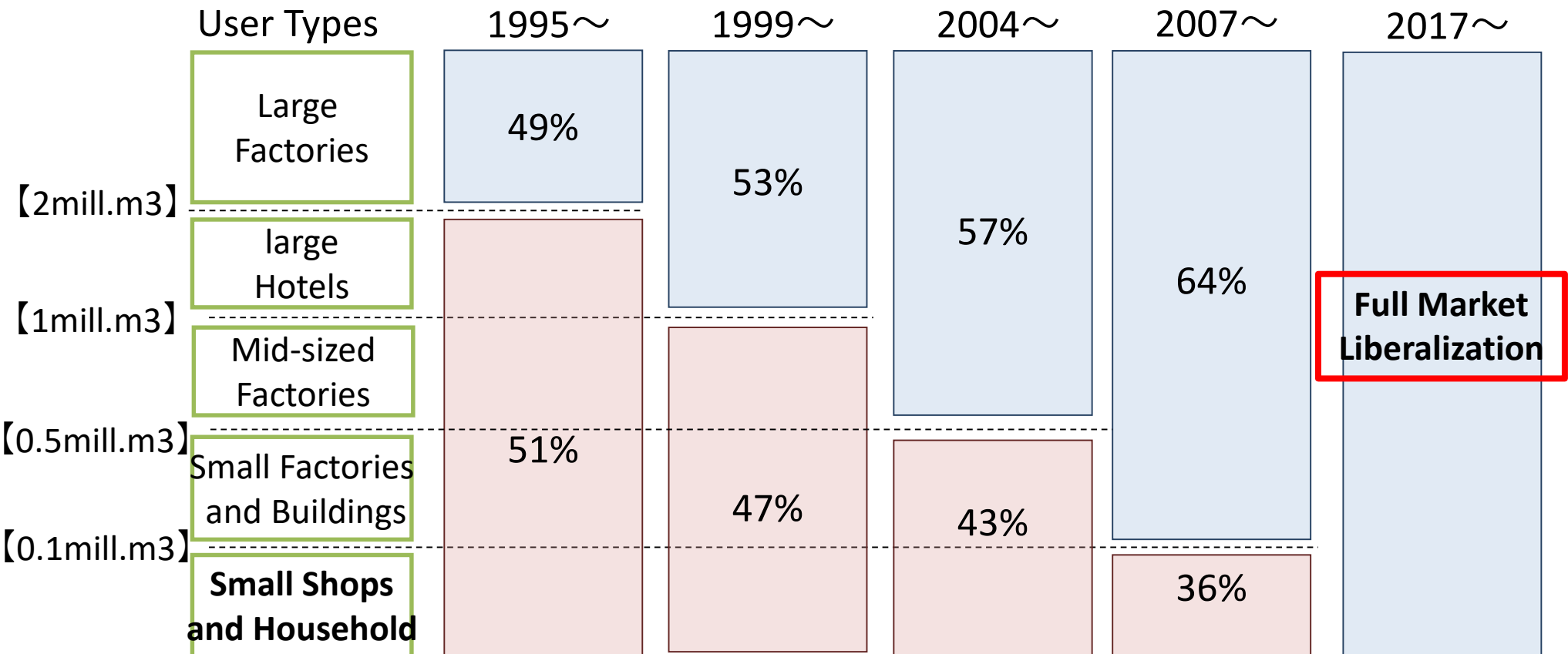


Source: The Japan Gas Association, "Gas business handbook" (2017)

Partial Market Liberalization

- Around 65% of the gas retail market had been liberalized since 1995.
- The share of new entrants in large-volume sector is around 13%.

Gradual Expansion of Gas Retail Market Liberalization



Full Retail Competition and Third Party Access (TPA) to LNG terminals

- Full Liberalization of Retail Market including households started in April 2017.
- TPA system to LNG terminals was also established at the same time.

Manufacturing
(LNG Terminal)



Since April 2017

- Gas Manufacturer (Notification)
- Third-party access (TPA) system to LNG terminals

Distribution
(Gas Pipeline Service)



- General Gas Pipeline Service Provider (License)
- Regional monopoly , regulated rates and
- obligation to provide Last Resort Service

Retail



- Gas Retailer (Registration)
- Full competition
- Transitional Measures

Emergency response to Disasters of Earthquake & Flood by METI & City Gas Industry 【Case in Kumamoto Earthquake (April 2016, Maximum Magnitude 7.3)】

Cabinet Office Major Disaster Management Headquarters

METI Disaster Management Headquarters

Orders for Power & Oil Industry

Cross-industry measures

Power industry

- Increase the number of emergency power generator vehicles

Oil industry

- Priority refueling for emergency power generator vehicles

Orders for City Gas Industry

- Request use of mobile gas generator
- Request for increasing the numbers for JGA Rescue Party
- Order for identifying the essential facilities such as hospitals and deciding supply priorities

Report & Cooperation



JGA Emergency Headquarters

Demand for rescue

Request for sending rescue parties

Disaster Management Headquarters of City Gas Utility in Affected Area (Saibu Gas)

JGA Branch Offices

Request for cooperation in sending rescue parties

Emergency Headquarters in Affected Area

City Gas Utilities under Each Branches



Gas pipe repair



Valve opening & closing



Emergency city gas supply

Sending JGA Rescue Parties

*Result: 22 utilities & 2,676 staff

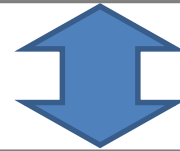
Support measures:

Gas pipe repair, Valve opening & closing, Emergency city gas supply, answering phones etc.

City gas supply interruption affecting 100,000 customers was restored in 15 days

Emergency Management Scheme for Natural Gas Supply Disruption

METI : Ministry of Trade, Economy and Industry



Report and Cooperation

Support request
for Natural Gas
(LNG)

Sufferer



JGA: The Japan Gas Association
【Emergency Headquarters】

<Collecting Information>

- Investigation of damage and inventory of victim
- Surplus trade capability of support parties
- Support plan

<Supporting Activity>

- Support among city gas industries
- Supporting between other industries(Power)

<Public Relations>

- Sharing Information and Cooperation with Government
- Publicity activities (Mass Media)



Support request
for Natural Gas
(LNG)

Support Party



Natural Gas (LNG) Trade between victim and support party based on negotiation



METI

Ministry of Economy, Trade and Industry