

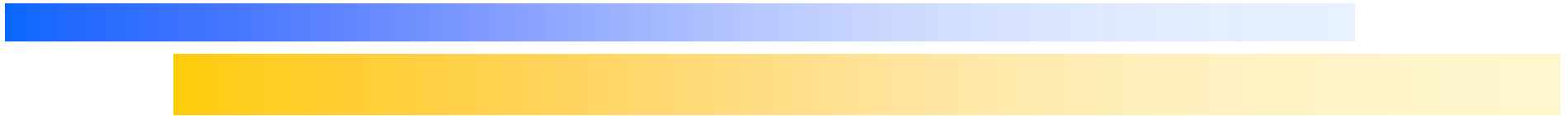
Country Report



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The Japan Gas Association (JGA)

July 9, 2009
The 10th Round Table Meeting
in Chiba Prefecture, Japan

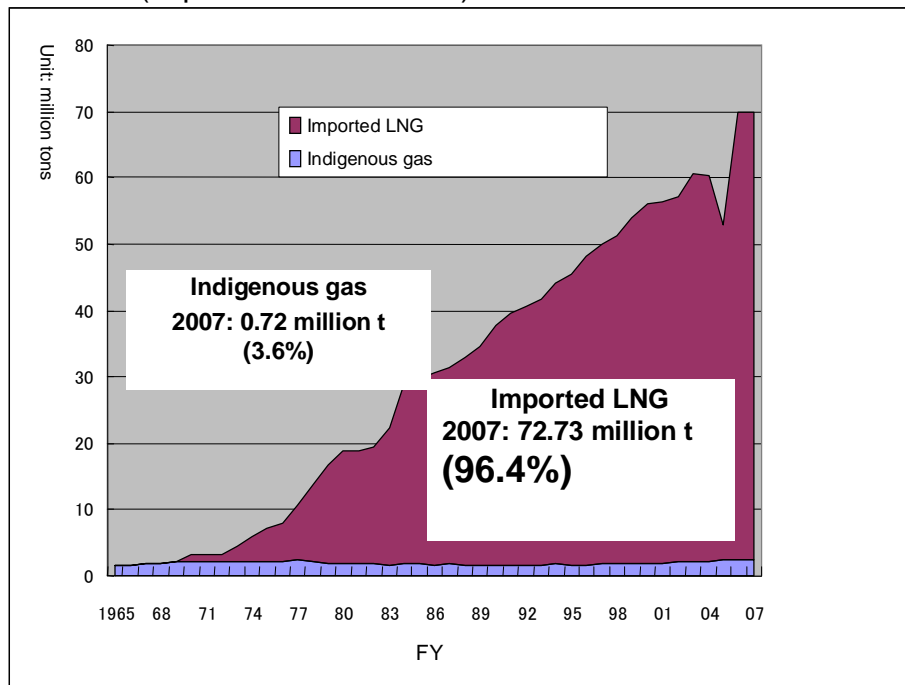
I. Introduction



1-1. Natural Gas Situation in Japan

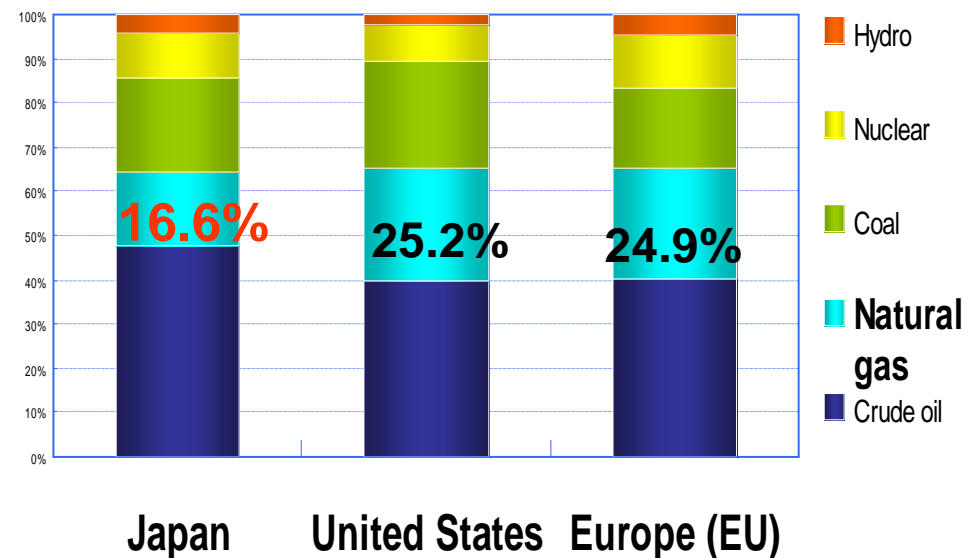
- u Very high dependency on imported natural gas (96.4% in 2007)
- u The share of natural gas in the total primary energy consumption is lower than in Europe and the US (16.6% in 2007).

Chart 1 - Natural gas import dependency (imported vs. domestic)



Source: METI, "Annual Statistics on Resources and Energy"

Chart 2 - Breakdown of primary energy consumption (Europe, the US and Japan) (2007)

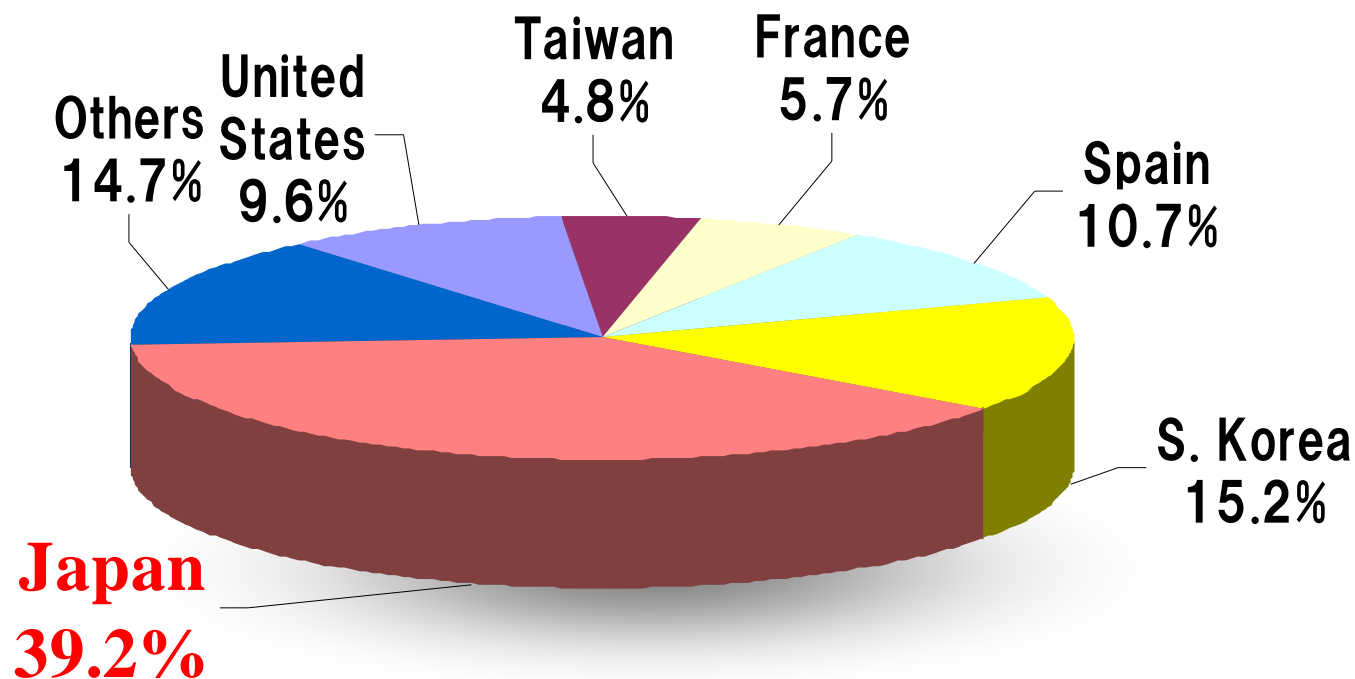


Source: BP Statistical Review of World Energy, June 2008

1-1. Natural Gas Situation in Japan

- Japan's LNG trading accounts for about 40% of worldwide LNG trading.

Chart 3 - Breakdown of global LNG trading (2007)



Source: BP Statistical Review of World Energy, June 2008

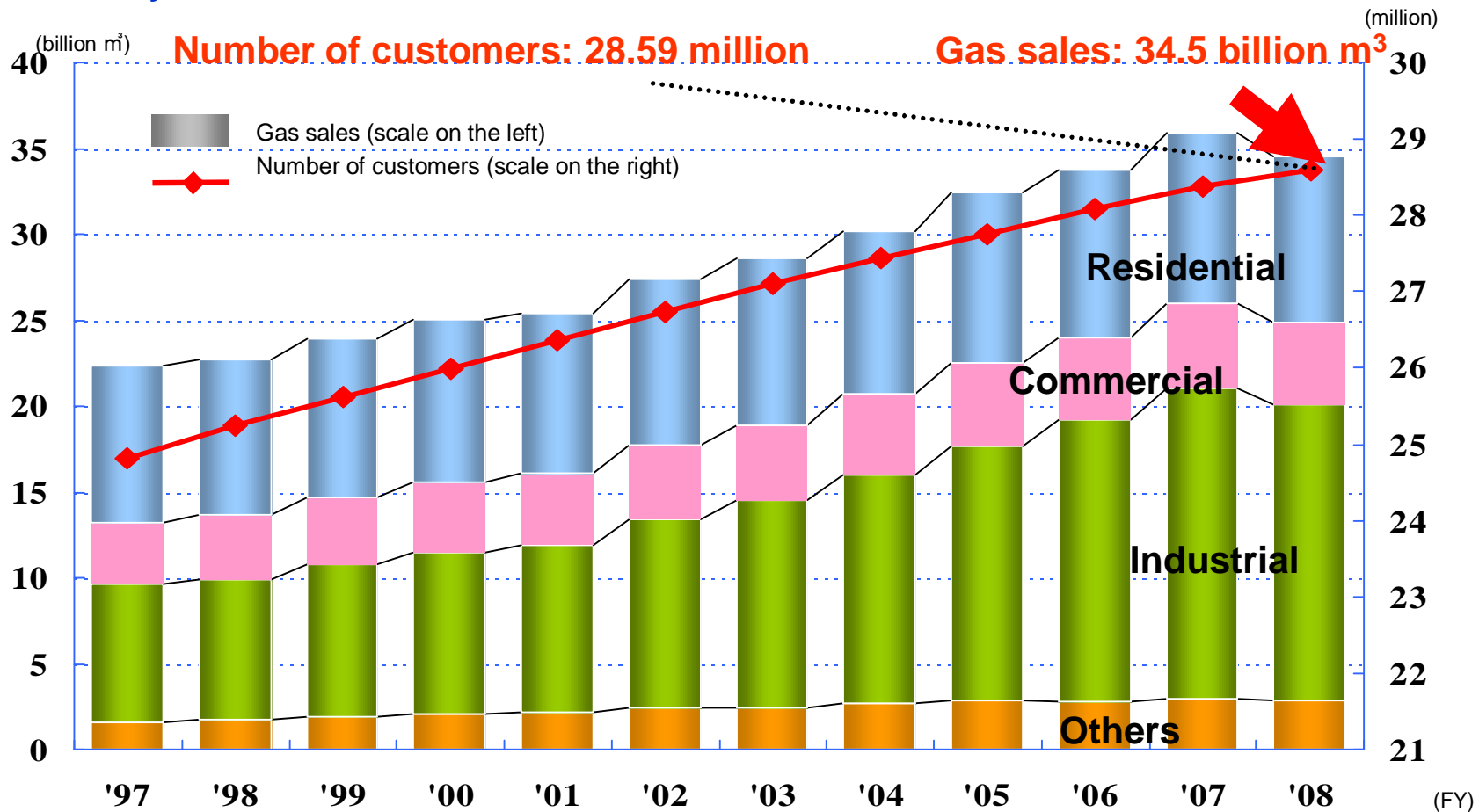
II. The City Gas Industry



1. Market situation
2. Institutional reforms
3. Japan's national policies on energy and the environment

2-1. Gas sales and the number of customers

Gas sales continued to grow for 30 years, but last year annual sales fell for the first time due to the global recession. The number of customers is growing firmly.



Source: JGA

I Residential: Households (cooking, water heating, space cooling/heating, drying, etc.)

I Commercial: Company offices, wholesale and retail stores, restaurants and bars, hotels and inns, department stores and supermarkets, barber shops and beauty parlors, laundry service, entertainment, dormitories and hostels, etc.

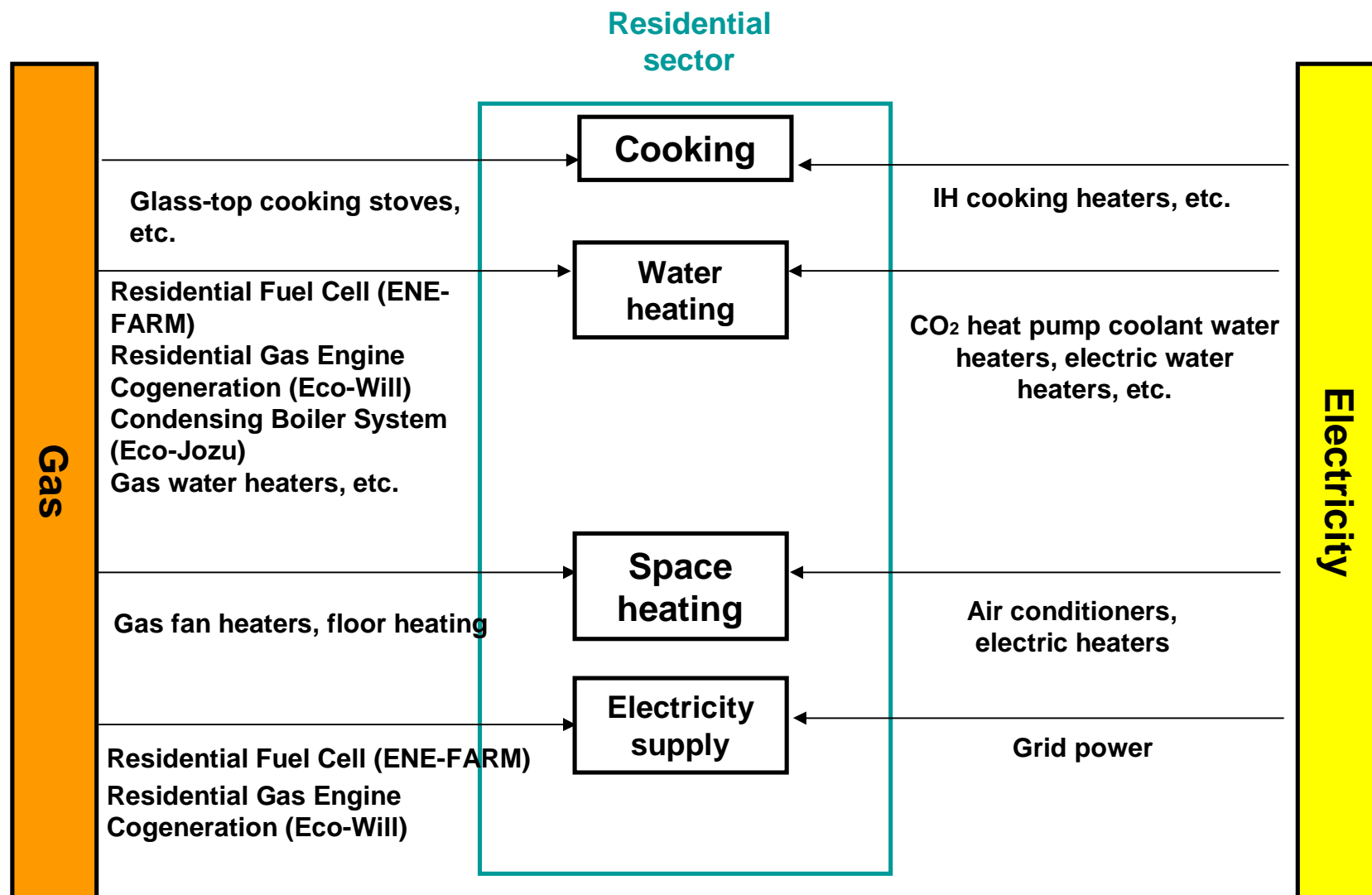
I Industrial: Food industry, textile industry, paper/pulp industry, chemical industry, ceramic/quarrying industry, steel industry, nonferrous metal industry, metal industry, machinery industry, other manufacturing business, etc.

I Others: Schools, public agencies, hospitals, clinics, etc.



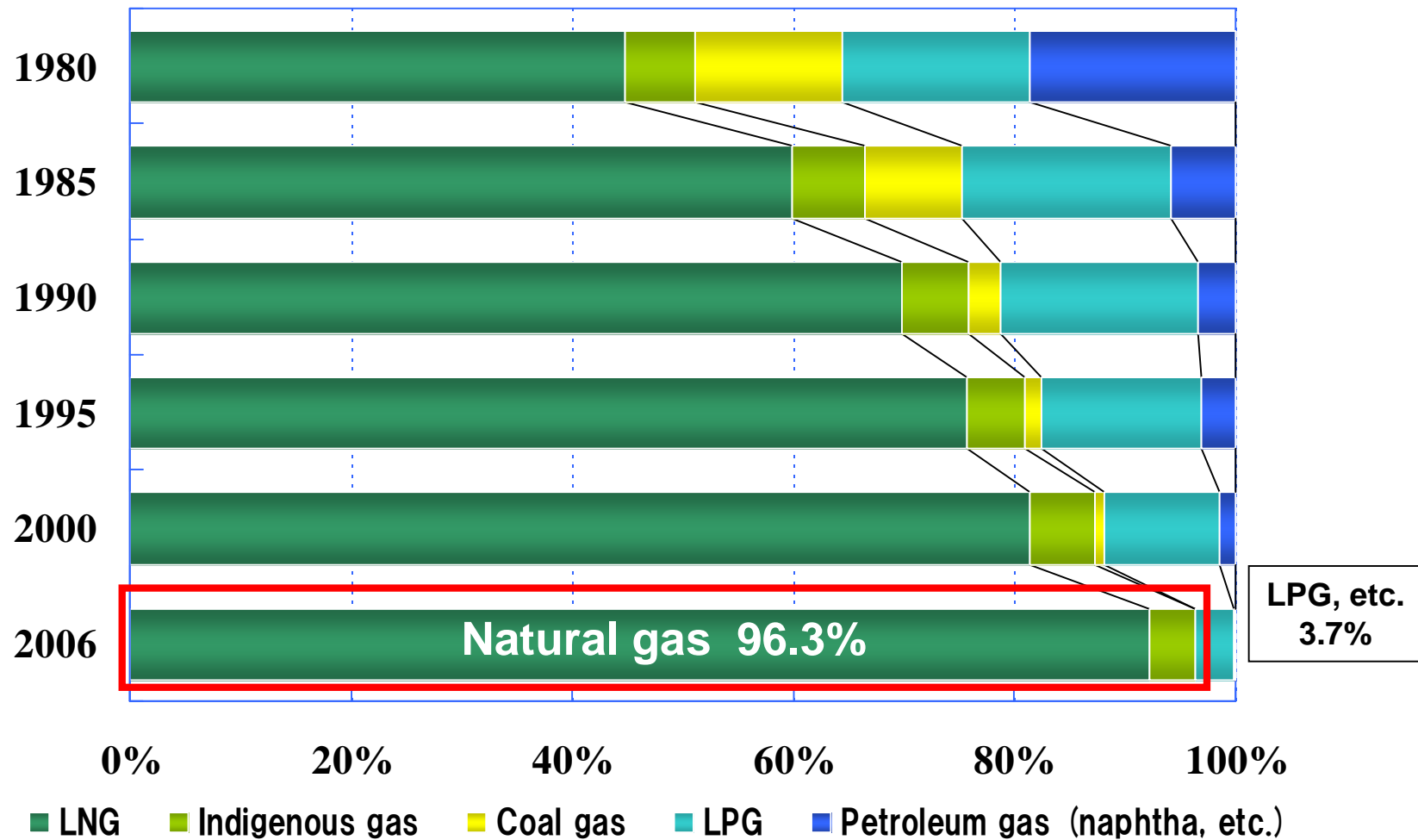
2-1. Energy competition with the gas market

In Japan, gas has been in fierce competition with other energy sources since even before deregulation.



2-1. Change in the composition of city gas (gas sources)

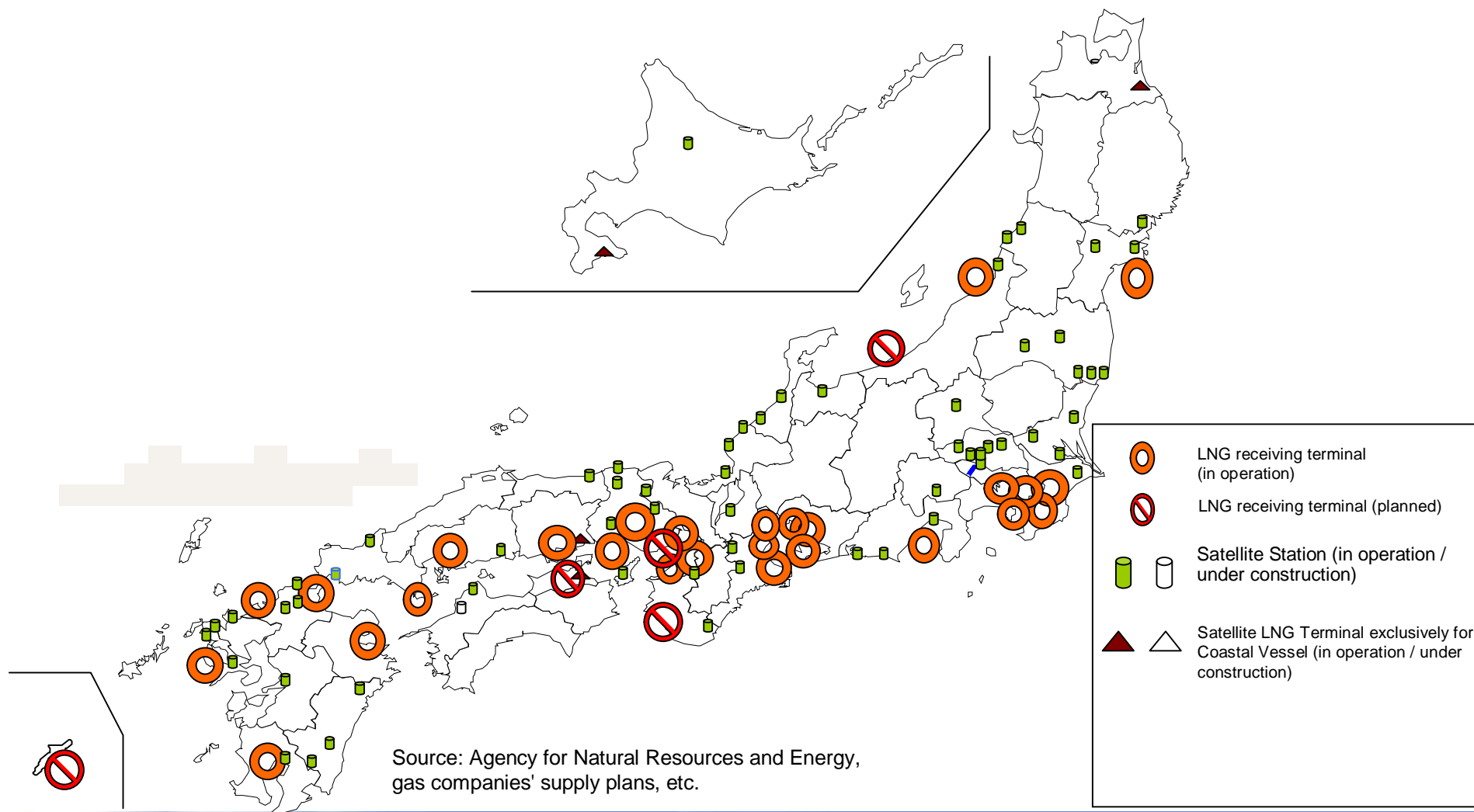
- City gas is mostly produced from natural gas (including indigenous gas).



Source: JGA

2-1. Construction of natural gas supply infrastructure 1

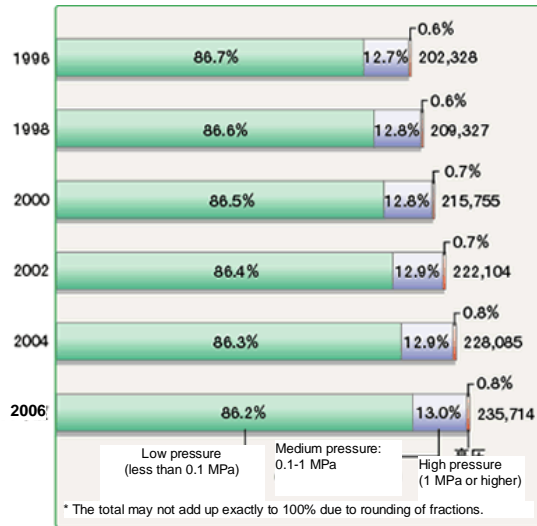
u Japan has 30 LNG receiving terminals in operation (as of March 2008).



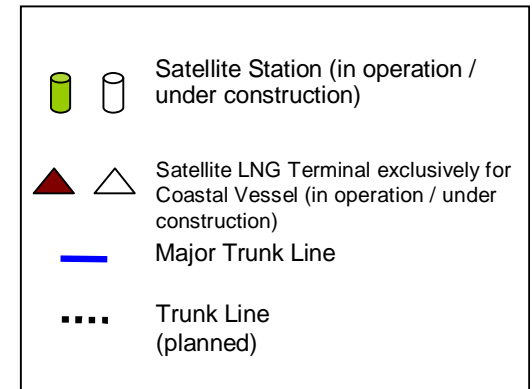
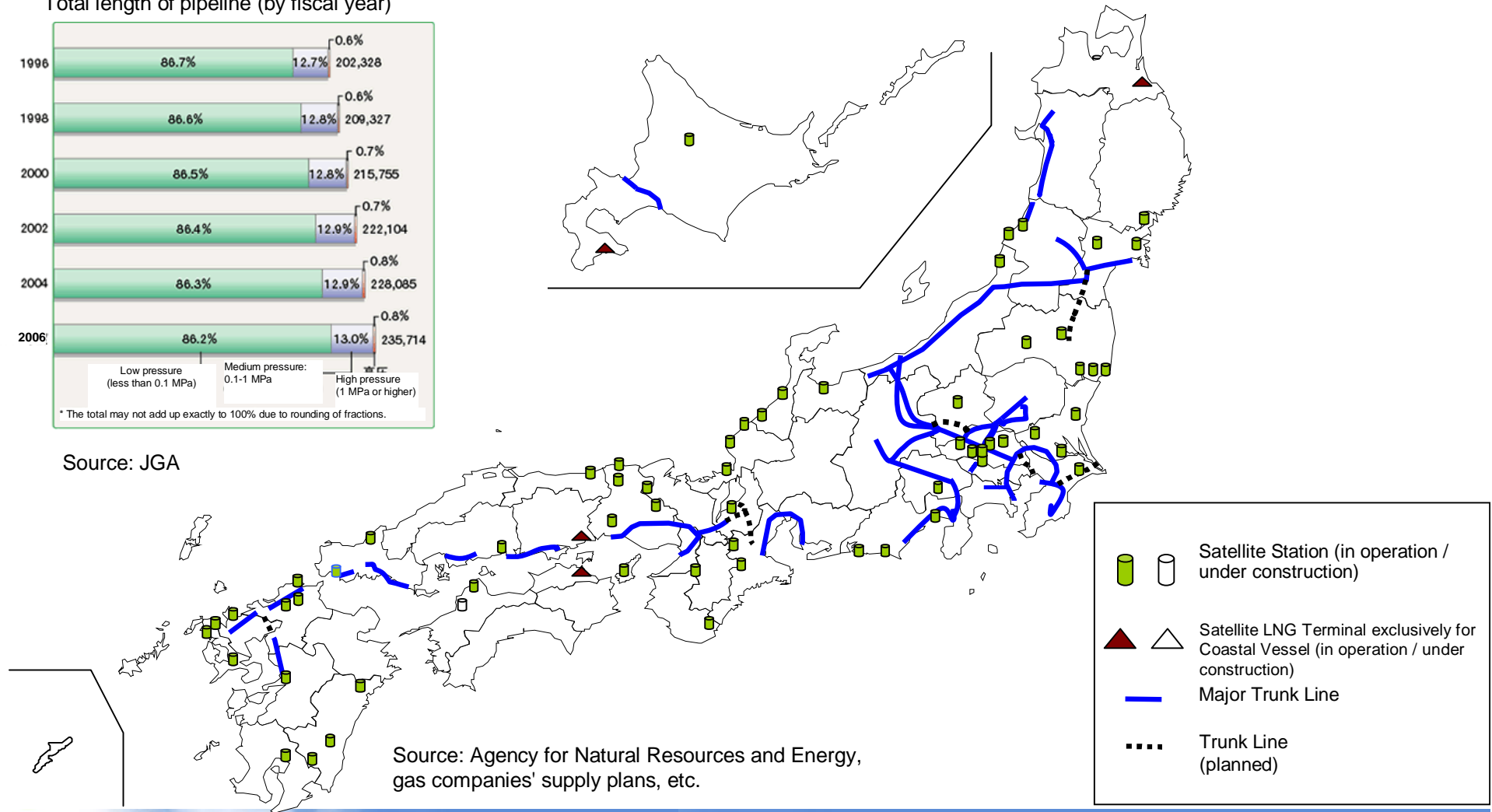
2-1. Construction of natural gas supply infrastructure 2

u Japan has no nation-wide trunk line.

Total length of pipeline (by fiscal year)

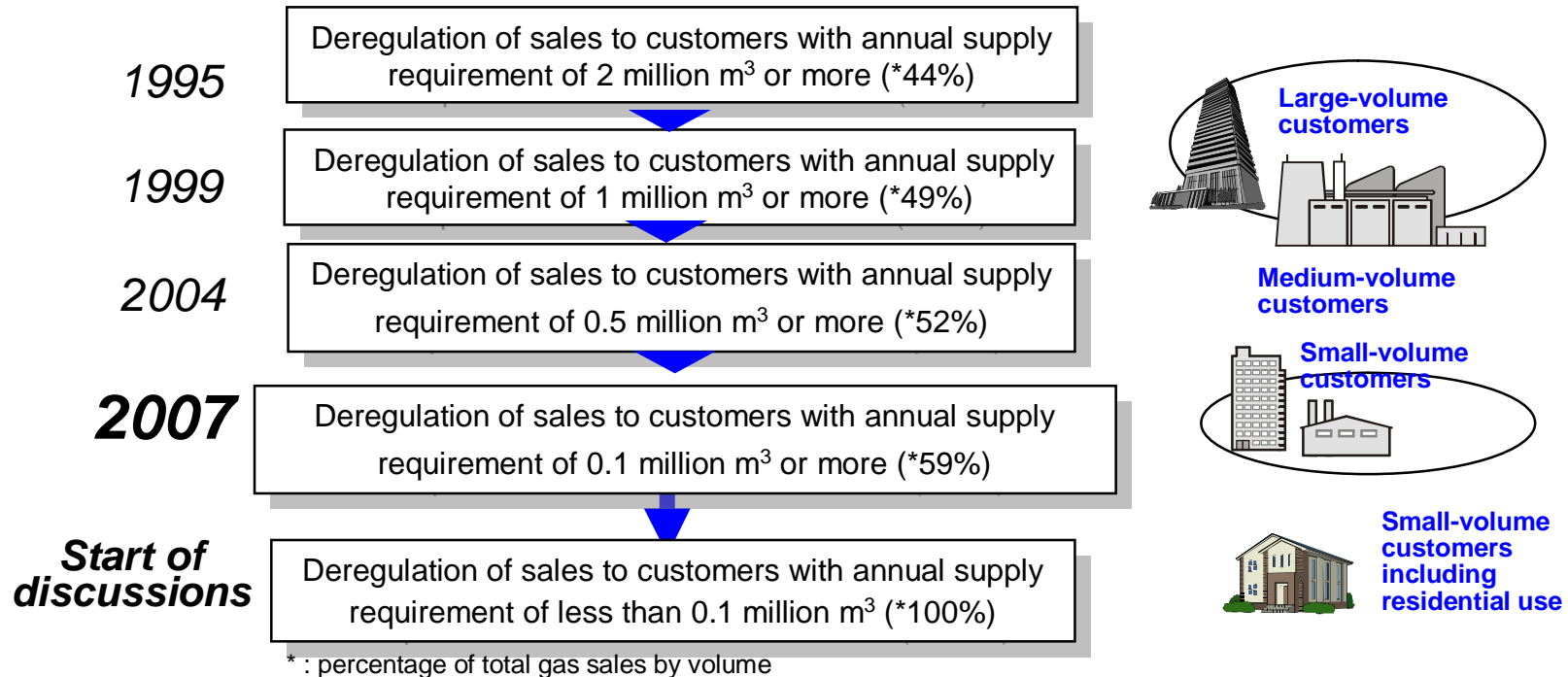


Source: JGA



2-2. Progress in institutional reforms for the gas market

u Retail deregulation



u Proportion of new entrants in the deregulated gas market

***12.2%** (as of March 2009) (28 companies, 226 supply contracts (as of May 2009))

Source: Agency for Natural Resources and Energy

*: percentage of total gas sales by volume

2-3. Japan's national policies on energy and the environment

1. Two major priorities for Japan's energy policies

- (1) Ensuring stable supply
- (2) Environmental suitability



For (2), countermeasures against global warming are important.

2. Recent events concerning Japan's energy policies

(1) Basic Act on Energy Policy (established in 2002)

└ Basic Energy Plan (established in October 2003, revised in March 2007)

(2) New National Energy Strategy (established in May 2006)

(3) Amendment of Law Concerning Promotion of the Development and Introduction of Alternative Energy in review

2-3. Japan's national policies on energy and the environment

Initiatives concerning the Kyoto Protocol first commitment period

- Japan is obliged to achieve a 6% reduction of GHG emissions from the 1990 level in the Kyoto Protocol first commitment period (2008-2012).
- In the residential/commercial sector, however, both energy consumption and CO₂ emissions have significantly increased.



(1) Kyoto Protocol Target Achievement Plan

- The Kyoto Protocol Target Achievement Plan (established in April 2005) was reviewed in February 2008 to ensure achievement of the Kyoto Protocol target. As a result, additional measures and programs for reducing GHG emissions were established.

(2) Amendment of Act on the Rational Use of Energy and Act on Promotion of Global Warming Countermeasures

- Regulatory emphasis, which had originally focused on the industrial sector, was extended to cover the commercial sector and the residential sector.

2-3. Japan's national policies on energy and the environment

Initiatives concerning mid- to long-term actions against global warming

(1) Action Plan for Achieving a Low-Carbon Society

The Action Plan for the Realization of a Low Carbon Society, which aims at achieving a 60-80% reduction of CO₂ emissions by 2050, was discussed and sanctioned by a cabinet meeting. The development and deployment of stationary fuel cell systems is acknowledged in the Action Plan as a project for developing innovative technologies.

(2) Mid-term target for reduced GHG emissions (by 2020)

Japan's mid-term target (by 2020) is to achieve a 15% reduction from the 2005 level (decision made on June 10, 2009).

(3) Initiatives by the Liberal Democratic Party and the Democratic Party of Japan to establish a basic law, etc.

↳ Liberal Democratic Party: Basic Law Concerning the Promotion of Activities for the Realization of a Low Carbon Society

↳ Democratic Party of Japan: Basic Law Concerning Actions against Global Warming (GHG emission reduction of 25% by 2020, and more than 60% by 2050, both from the 1990 level)

III. Efforts by the Japanese City Gas Industry



1. Creating a low carbon society
2. Expanding the advanced use of natural gas
3. Raising competitiveness against electricity
4. Increasing security and safety
5. International activities

Gas Vision 2030 (April 2008)

Efforts up to 2030 for creating a low carbon society

① Helping build a low carbon society

- By developing and introducing innovative and advanced technologies and expanding the use of natural gas, we will support CO₂ reduction and energy conservation by our customers, helping to build a low carbon society.
(Gas sales are expected to increase by about 20 billion m³) .

② Strengthening of natural gas supply infrastructure

- To assist the activities in ① above, we will overcome various challenges throughout the supply chain from upstream to consumption.
- We will strive to increase reliability (safety, security and stability).

→ Actions 1-7

3-1. Creating a low carbon society

Gas Vision 2030

①

Action 1 Contributions toward a low carbon society

②

Action 2 Cost-efficient and stable procurement of gas sources

Action 3 Development of efficient production and distribution infrastructure with environmental considerations

Action 4 Dramatic increase in seismic resistance of distribution networks

Action 5 Maintaining and increasing the world's highest level of safety

Action 6 Mid- to long-term technical development for innovation

Action 7 Reforming the business structure

3-1. Creating a low carbon society

Gas Vision 2030

Action 1. Contributions toward a low carbon society

1. Promoting the expanded and advanced use of natural gas
2. Prompting energy utilization with optimum deployment of technologies and resources for efficiency
3. Seeking the evolution of distributed energy systems
 - ① Local production and consumption
 - ② District and community based energy utilization
 - ③ Best energy mix
4. Promoting the use of renewable energy sources
5. Striving to create a hydrogen-based society by 2050

Potential to reduce CO₂ emissions by about 48 million tons and energy consumption by about 12 million oil-equivalent kL

3-1. Creating a low carbon society

Study Group on the Direction of the Gas Industry in a Low Carbon Society (From April to June 2009)

•**Objective:** Established in the Electricity and Gas Industry Department of the Agency for National Resources and Energy to identify challenges for the gas industry in constructing a more sophisticated energy supply structure and preventing global warming, and also to discuss specific policies for overcoming the identified challenges, with the ultimate goal of creating a low carbon society.



To help realize a low carbon society in the future, Japan's gas industry must pursue more advanced use of natural gas by the following three main actions:

1. **Deployment of “smart energy networks” of distributed energy systems particularly in the residential/commercial sector, including using renewable energy sources, for seeking the best mix of electricity and heat supply on both the demand and supply sides**
2. **Creation of a hydrogen-based society (development of fuel cells and the preparation of hydrogen supply infrastructure)**
3. **Advanced use of natural gas in the industrial sector (for reducing energy consumption and CO₂ emissions)**

3-2. Expanding the advanced use of natural gas (fuel cells for residential use)

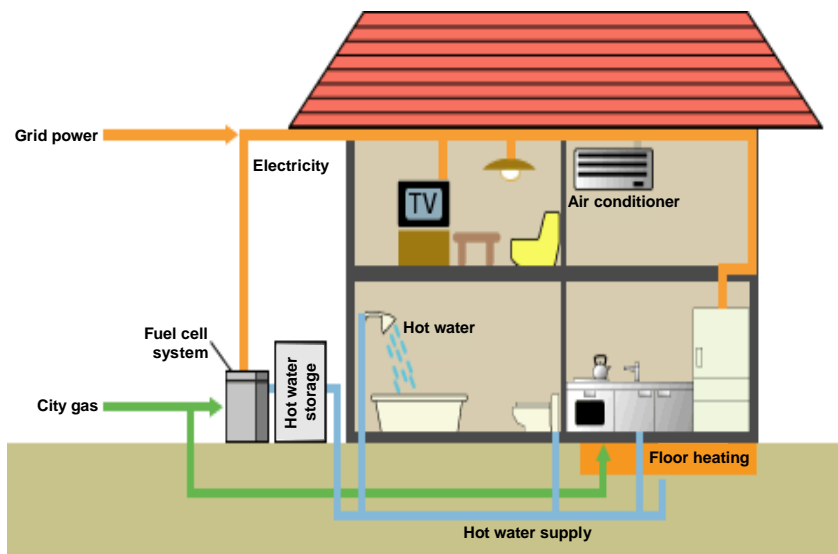
Residential Fuel Cell (ENE-FARM)



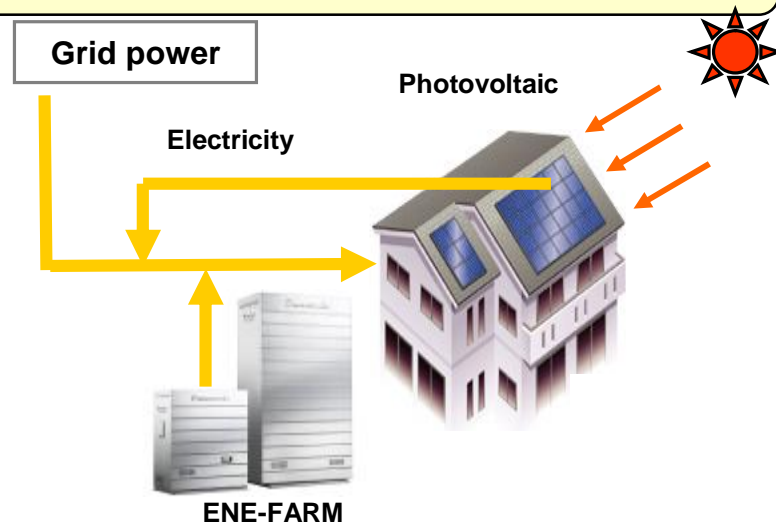
Announcing ENE-FARM as the unified brand name
(June 25, 2008)

- April 2005: Start of a large demonstration project for stationary PEFC systems
- End of March 2007: 2,187 PEFC systems installed in residential houses for demonstration
- May 2009: Fuel cell systems released to the market under the unified brand name of “ENE-FARM”. Target sales for the period up to the end of FY2013 are 100 thousand units.

ENE-FARM system concept



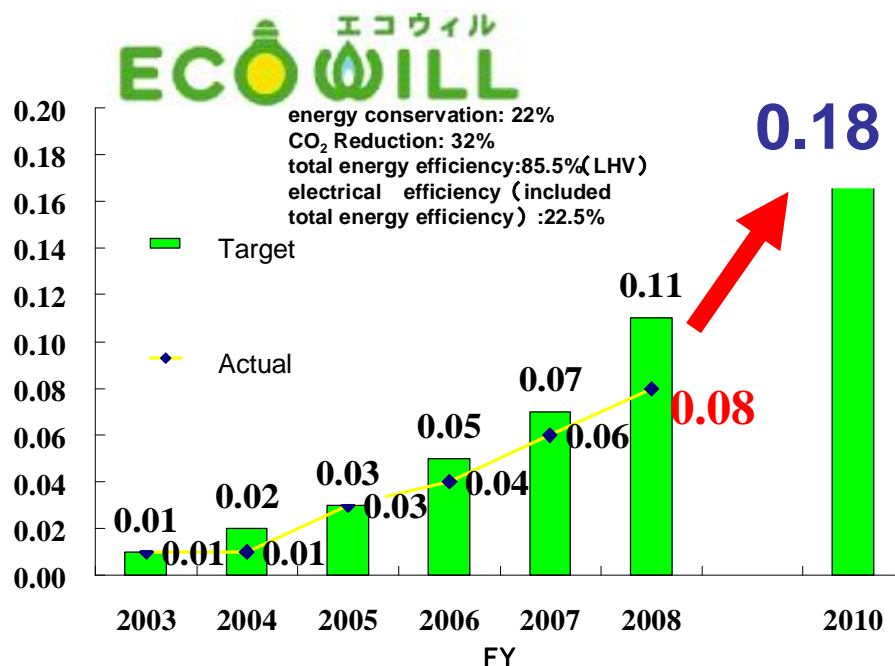
Two in-house generation options (ENE-FARM and photovoltaic)



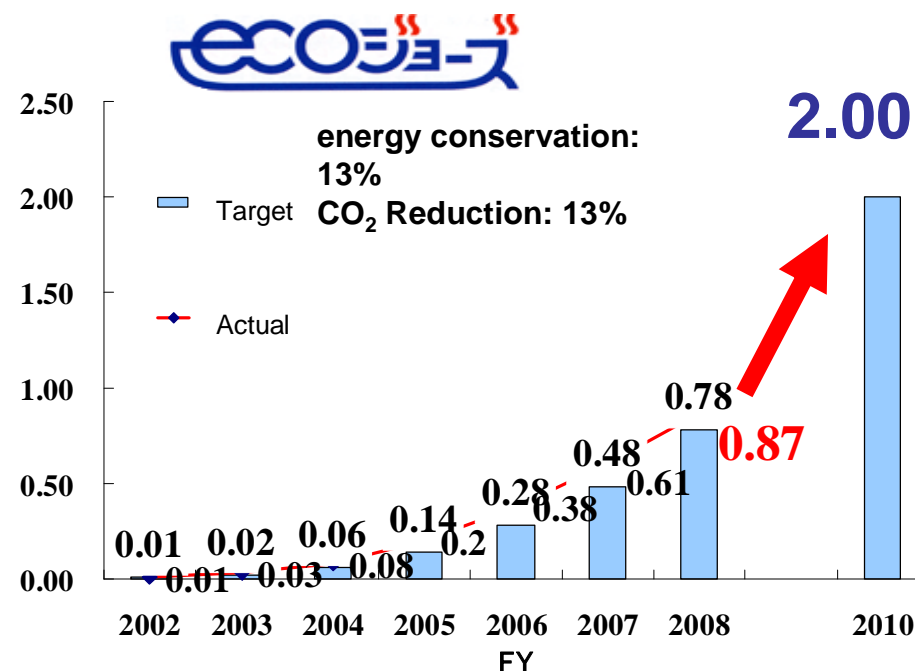
3-2. Expanding the advanced use of natural gas (Residential gas engine cogeneration and condensing boiler system)

Target for 2010 and achievements (city gas only)

Residential gas engine cogeneration (Eco-Will)



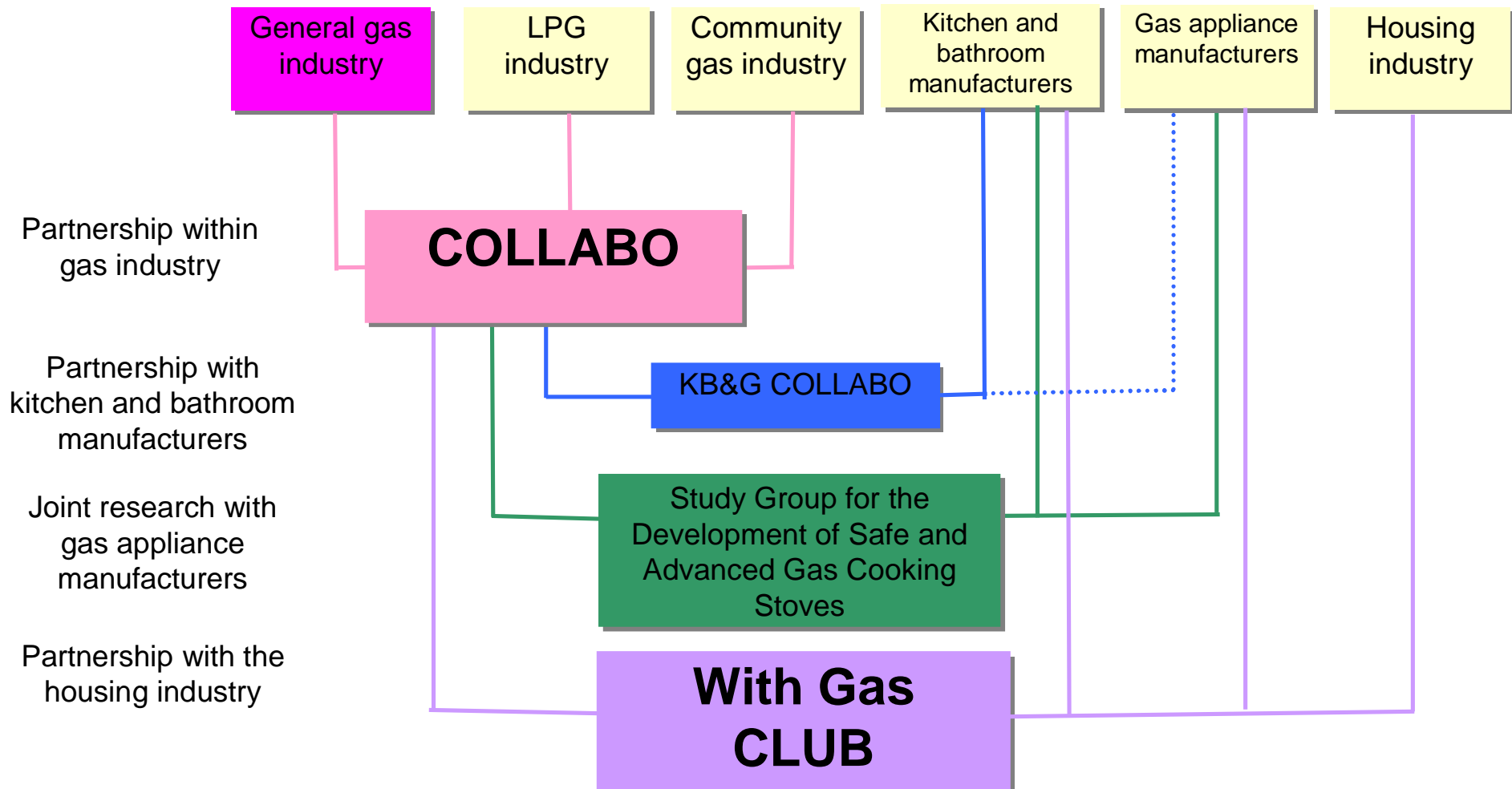
Condensing boiler system (Eco-Jozu)



The deployment of highly efficient gas appliances, such as residential fuel cell (ENE-FARM), residential gas engine cogeneration (Eco-Will) and condensing boiler system (Eco-Jozu), is accelerated by government support such as subsidies for installation.

3-3. Raising competitiveness against electricity

Partnership with related industries

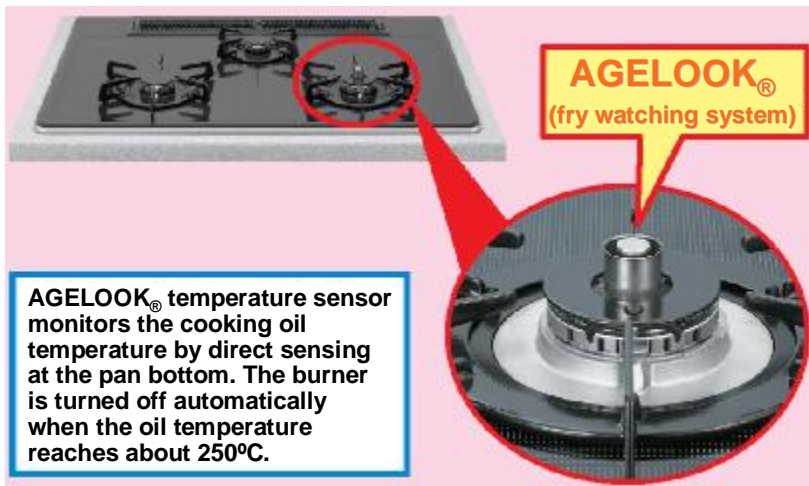


3-4. Increasing security and safety

Development of technologies for safer gas appliances

Efforts toward higher safety (almost completely eliminate fatal accidents by 2010)

-Development of imperfect combustion prevention device and overheat prevention device



Overheat prevention device

Protection against earthquake

- Intelligent gas meters (100% deployment) and installation of seismometers (1,200 units throughout Japan)



Intelligent gas meter

- Development and expanded use of advanced techniques for joining and inspecting steel and cast iron gas pipes, and improved techniques for joining and inspecting polyethylene pipes



Polyethylene pipes

3-5. International activities

IEA (International Energy Agency)

Established as an OECD organization in 1974 following the first oil crisis, as proposed by Henry Kissinger, then U.S. Secretary of State.

To prevent global warming and conserve energy, studies the following:

- Future scenarios and strategies on energy
- Energy efficiency improvement
- Clean utilization of fossil fuels
- Renewables, etc.

IGU (International Gas Union)

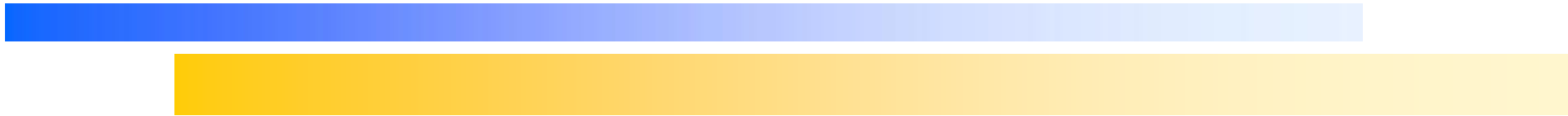
Established in 1931 to promote development of the gas industry, such as for addressing energy and environmental issues, international cooperation and technologies.

Focuses on the role of natural gas in addressing climate change:

- Long-term outlook for the global natural gas industry
- Sustainability studies

JGA (Japan Gas Association)

IV. Conclusion



4. Conclusion

To increase the use of natural gas for a low carbon society, the gas industries of South Korea, Taiwan and Japan should cooperate with each other in making appeals to national governments, and work with international organizations/frameworks.

Making appeals to national governments

Working with international organizations/frameworks

Gas industries of South Korea,
Taiwan and Japan



中華民國公用瓦斯事業協會
The Gas Association of the Republic of China



대한가스협회 한국도시가스협회



THE JAPAN GAS ASSOCIATION