

Market of Gas Industry in Japan

Qatar-Japan Joint Seminar

March 21, 2010

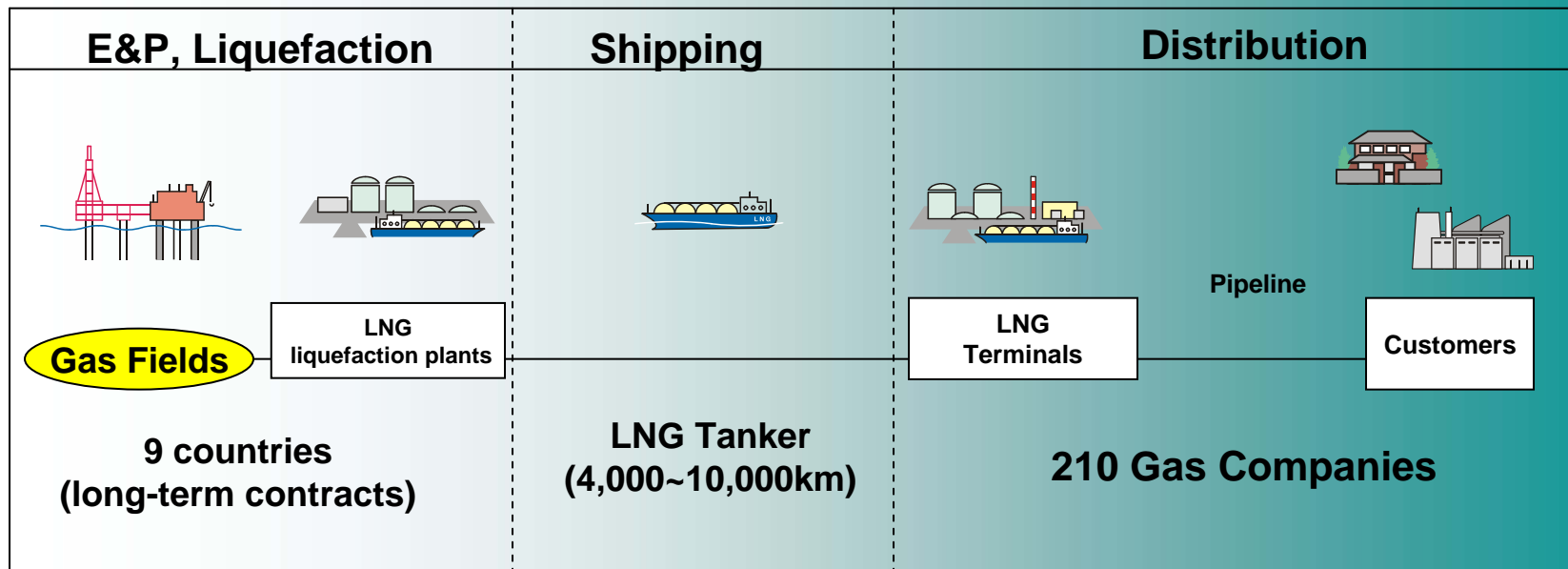
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Tokyo Gas Co., Ltd.

Index

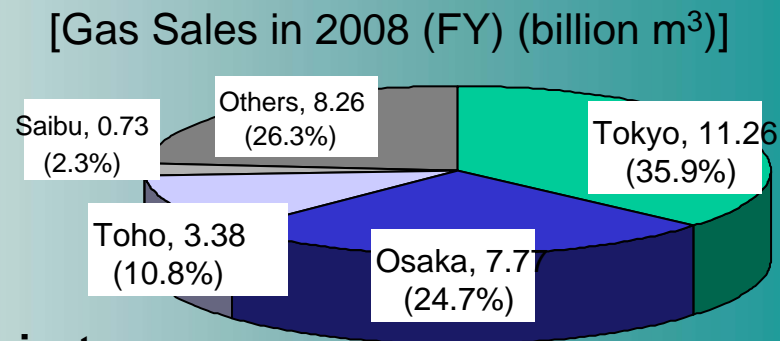
- **Outline of gas industry in Japan**
- **Vision of gas industry towards
future growth and market outlook**
- **Tokyo Gas future growth plan**
- **Summary**

Outline of gas industry

Gas industry in Japan



High dependency on imported LNG (90%)



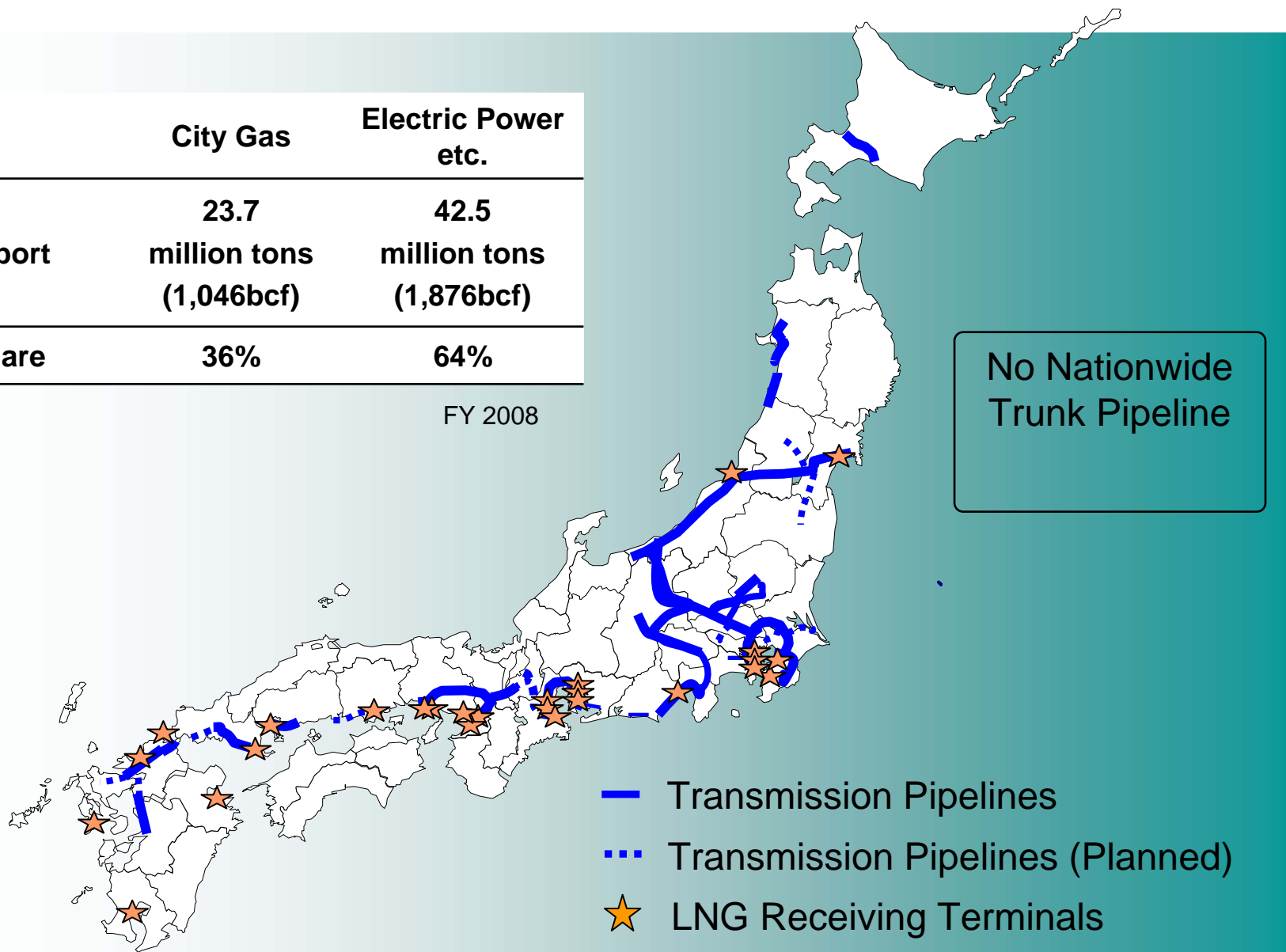
Qatar, Indonesia, Malaysia, Australia, Brunei, etc.

LNG terminals and pipelines in Japan

	City Gas	Electric Power etc.
Import	23.7 million tons (1,046bcf)	42.5 million tons (1,876bcf)
Share	36%	64%

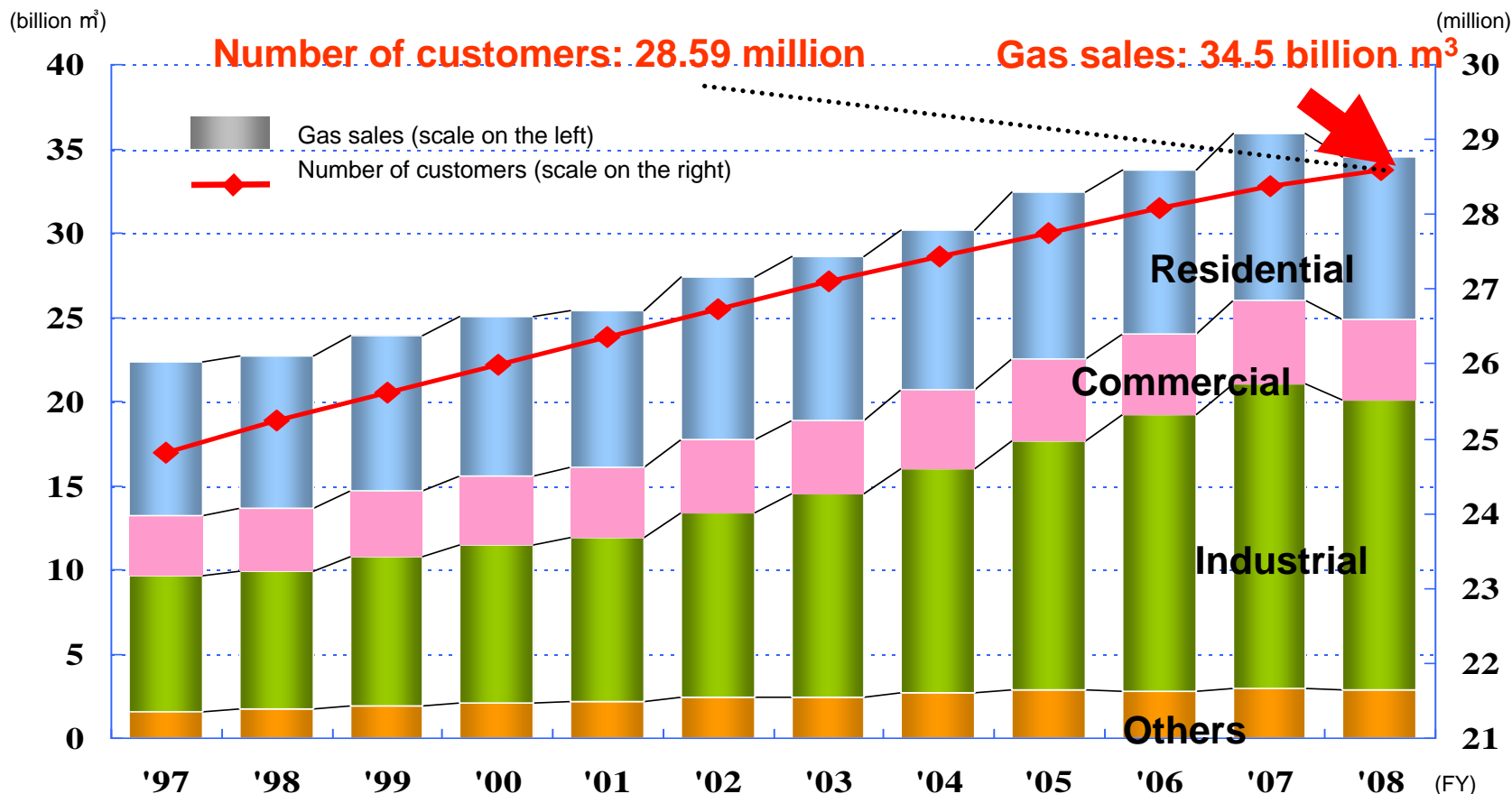
FY 2008

No Nationwide Trunk Pipeline



- Transmission Pipelines
- - - Transmission Pipelines (Planned)
- ★ LNG Receiving Terminals

Gas sales and number of customers

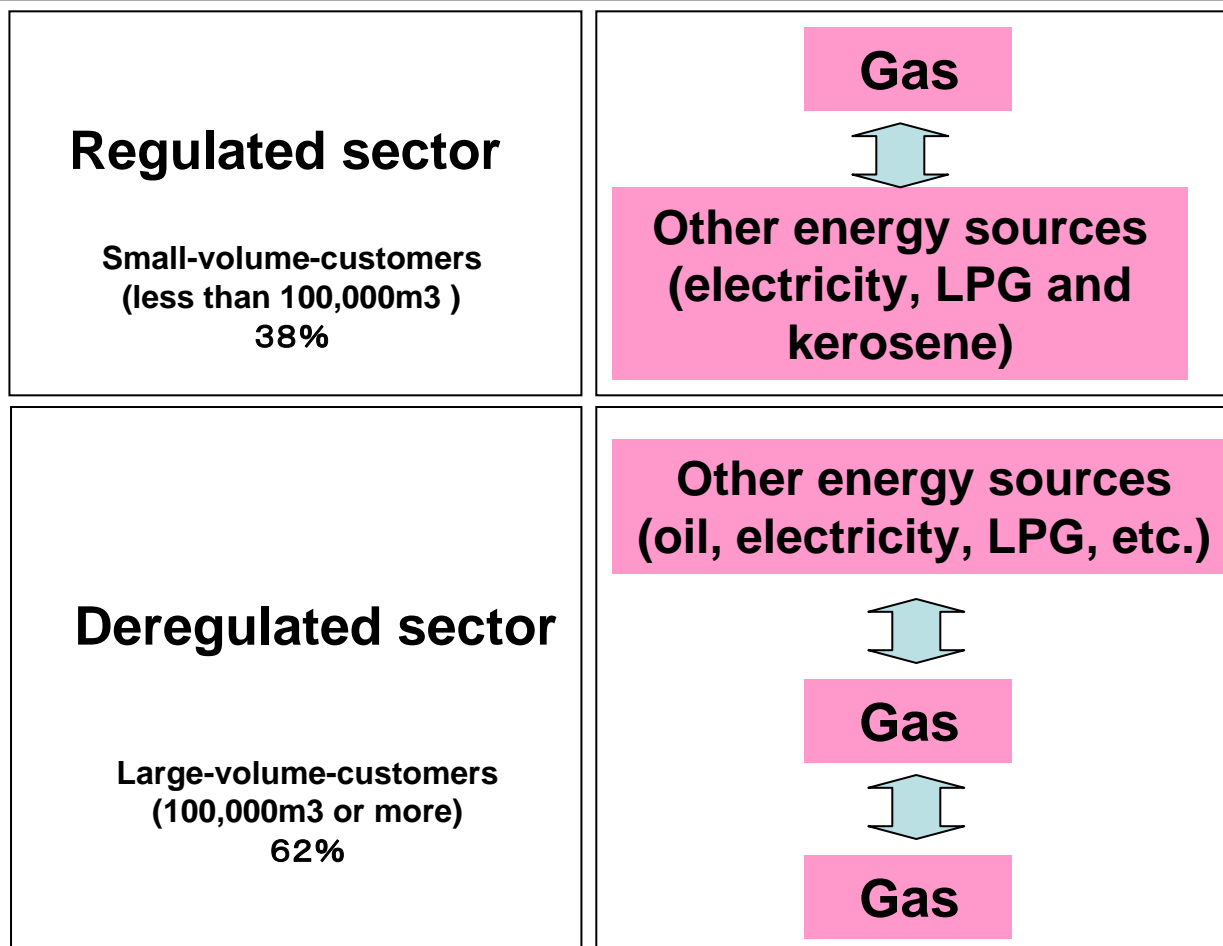


Source: JGA

- 1.5 times increase over 10 years.
- Sharp demand increase in Industrial sector
- Decline in 2008 due to the global recession

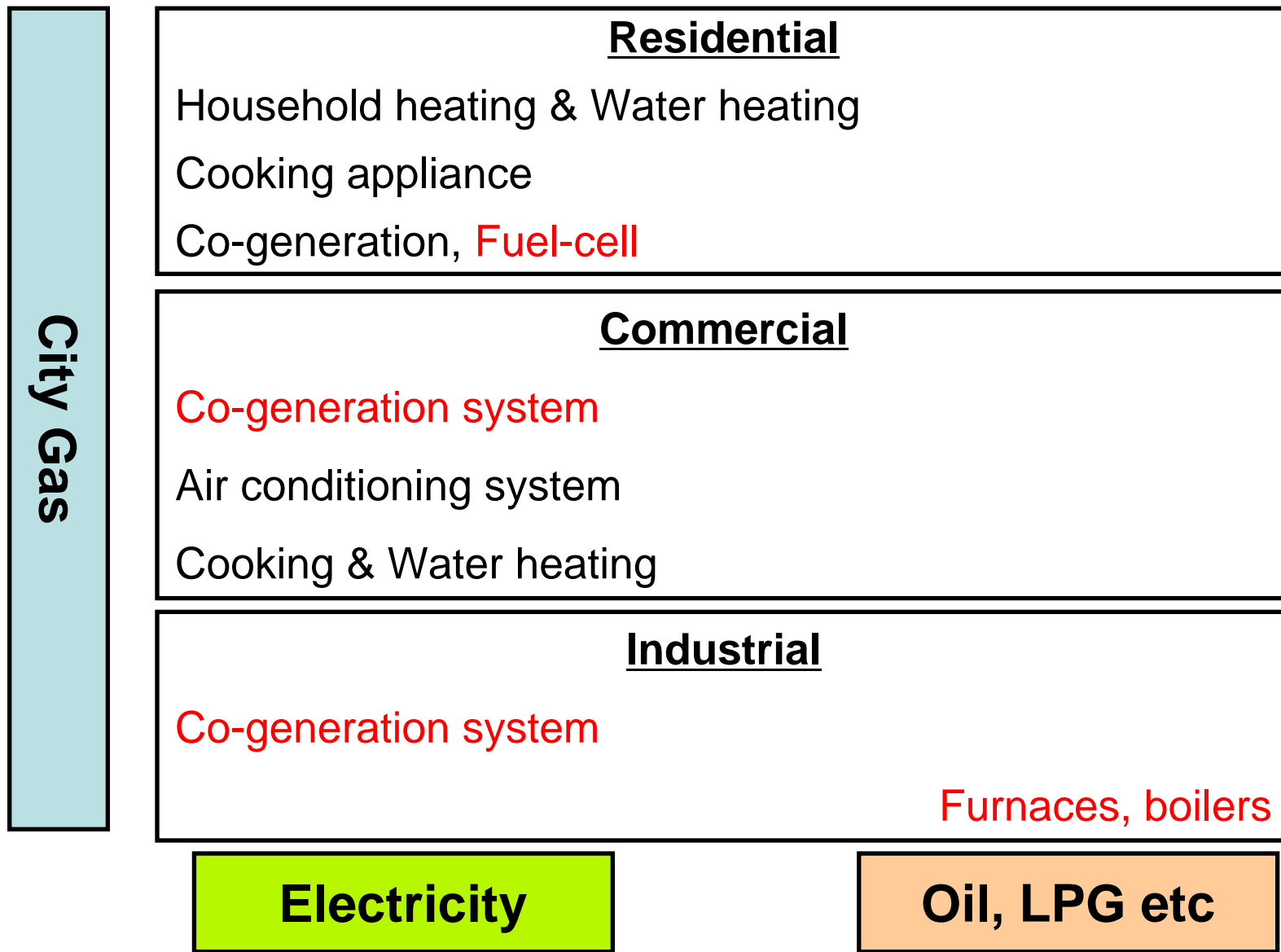
Competitions among energy industry ①

In addition to the competitions with other energy sources, gas-vs.-gas competitions are also intensified.



Competitions among energy industry 2

Competitions, particularly with electricity, are becoming fierce in each field.



Vision of gas industry towards future growth and market outlook

Target reduction of GHG emissions in Japan

Japan's government policy

Kyoto Protocol Target
Achievement Plan (March 2008)

Reducing GHG emissions by

6% from 1990 level between
2008 and 2012

Formulation of mid-term target
(Speech by Prime Minister Aso on 10
June 2009)

15% from the 2005 level
(8% from 1990 level) by 2020

Formulation of mid-term target
(Prime Minister Hatoyama announced at the UN
climate change summit on 22 Sep 2009)

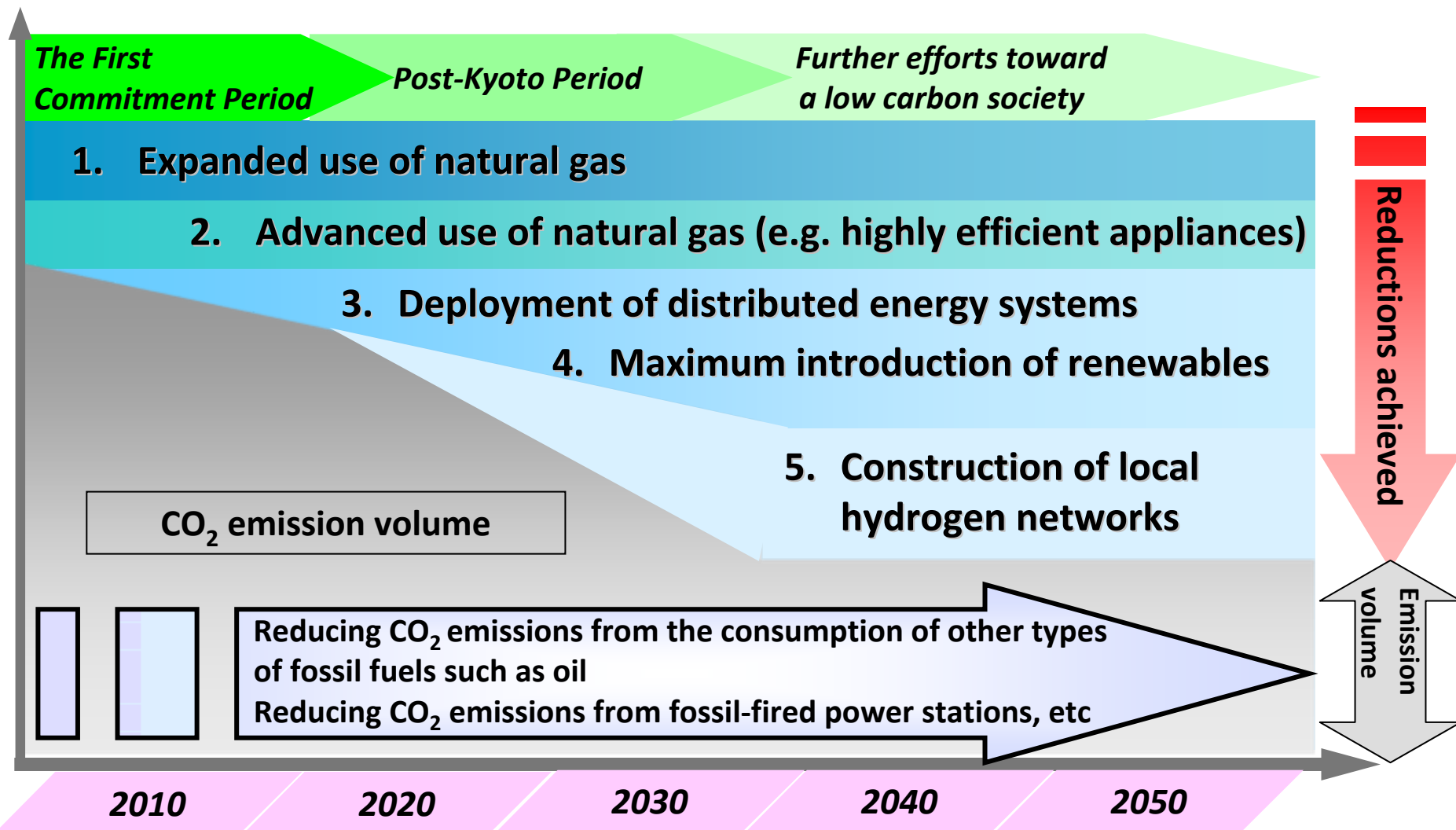
25% from the 1990 level
by 2020

Action plan for Achieving a low
carbon society (July 2008)

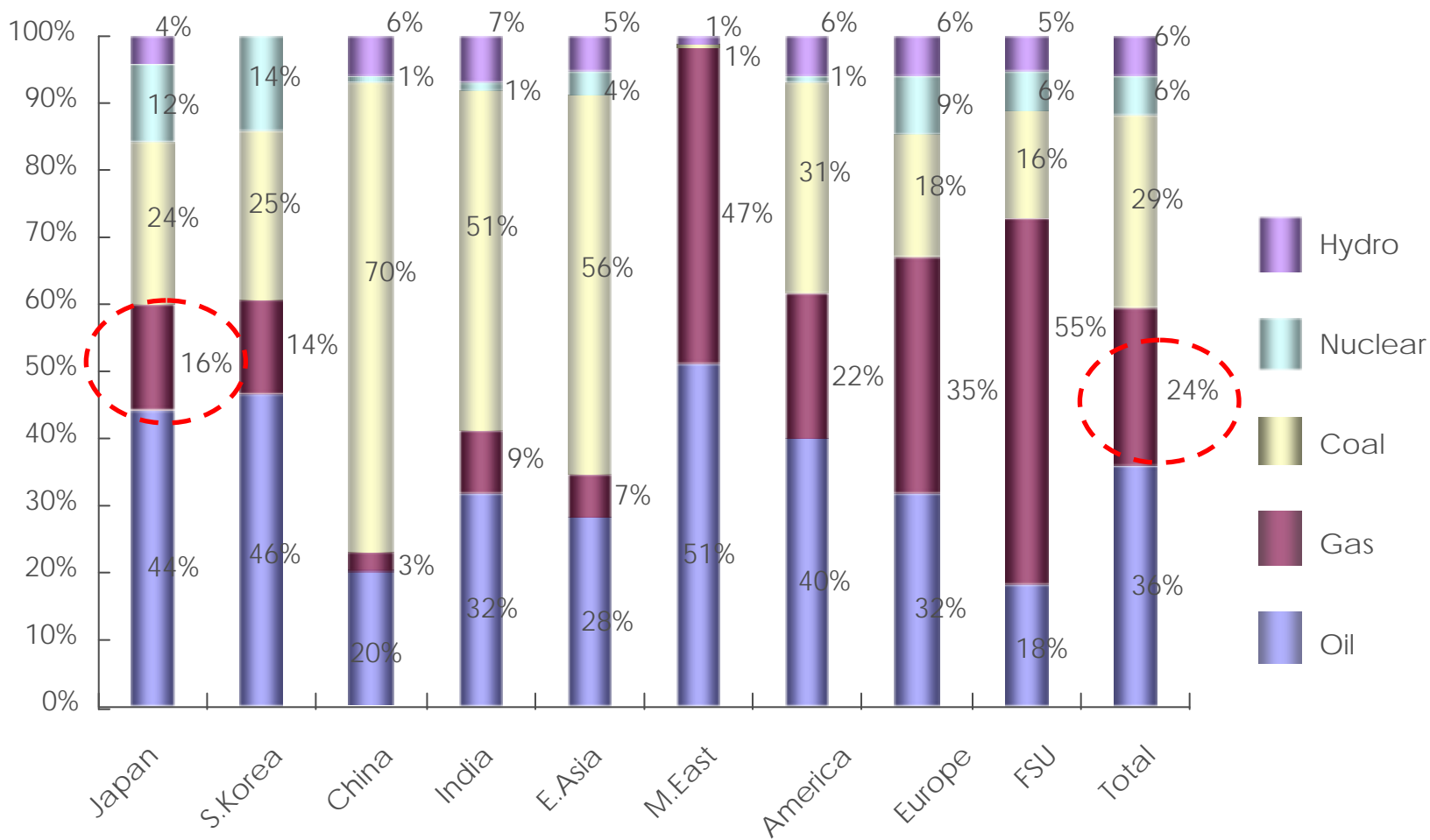
60-80% from the present
level by 2050

Vision of gas industry for a low carbon society

Supporting 60-80% reduction of CO₂ emissions by expanding the advanced use of natural gas



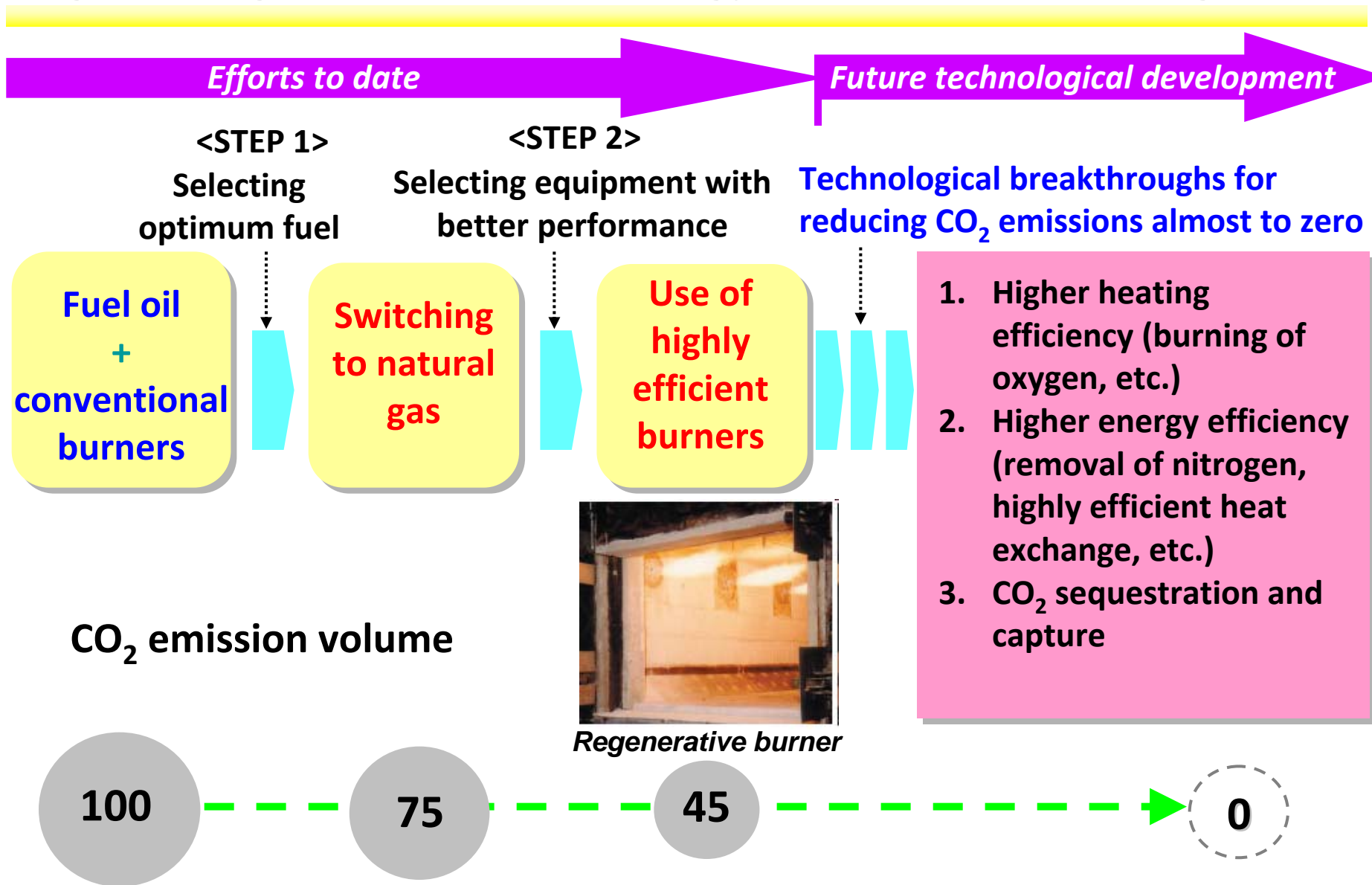
Primary energy consumption comparison of the World (CY 2007)



Source: BP Statistical Review of World Energy, June 2008

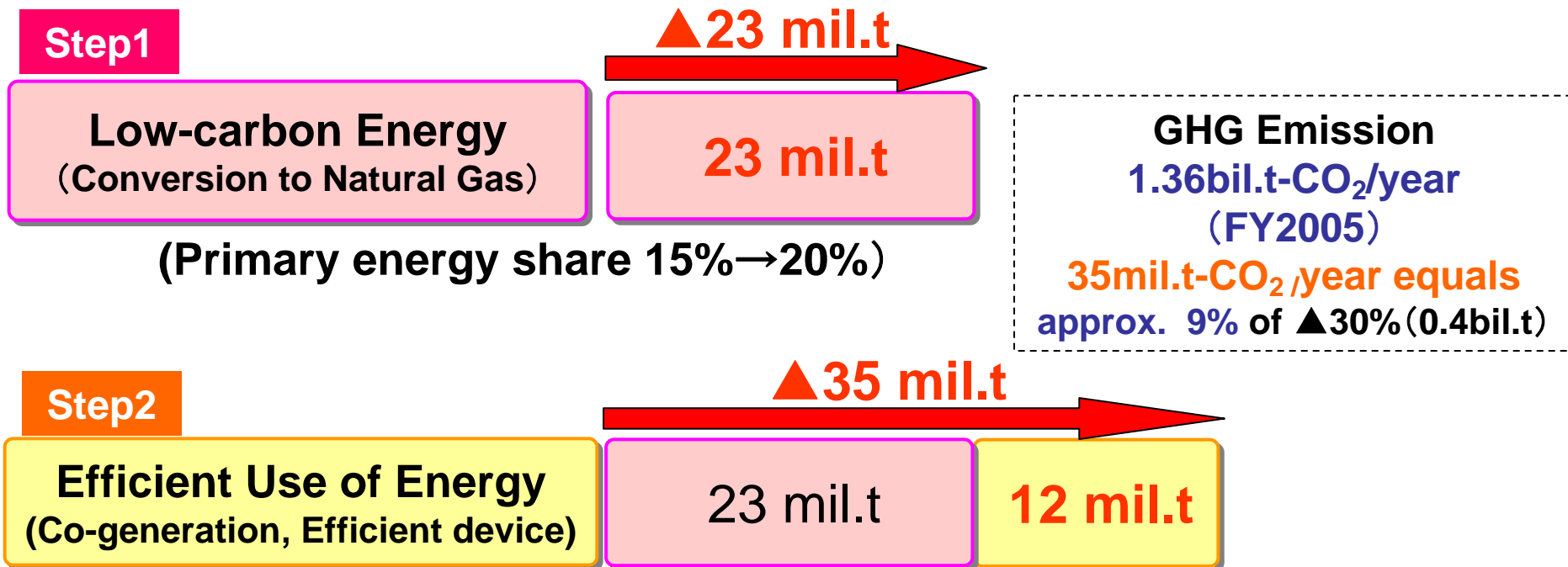
Examples of advanced use of natural gas

(using natural gas with advanced energy conservation technologies)



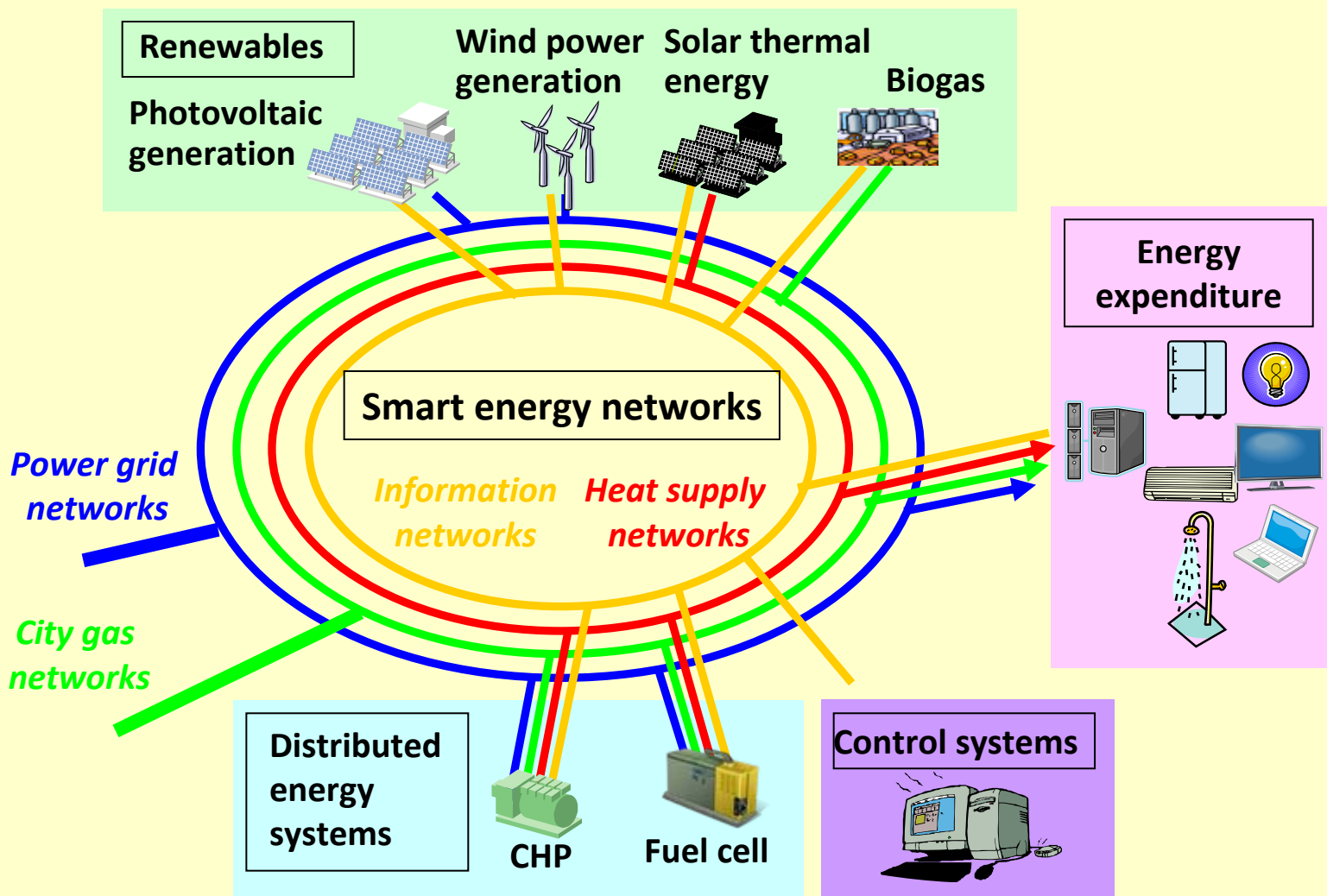
Natural Gas Potential for CO2 reduction in Japan

More than 35mil.t-CO2 can be reduced



※Numbers above are based on the premise of positive political support for natural gas utilization

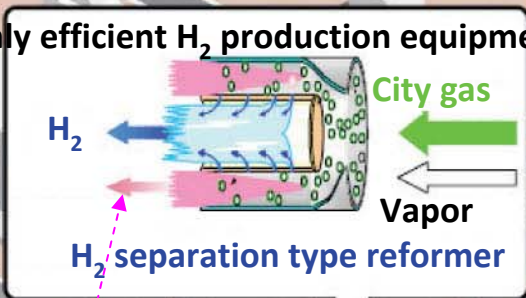
Distributed energy systems in a low carbon society (Smart energy networks)



Future energy system

~ integration of advanced technologies ~

Highly efficient H₂ production equipment



Sequestration and capture of highly concentrated CO₂

Collective housing

Hydrogen station

Hospital

Collective housing

Public hall

Hotel

Center for centralized monitoring

Highly efficient CHP system

Generation efficiency of 60% or higher



Sequestration and capture of highly concentrated CO₂

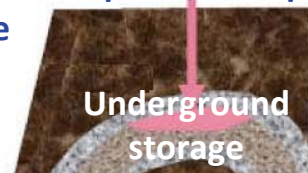
Combination of high temperature fuel cell and gas turbine

Collective housing

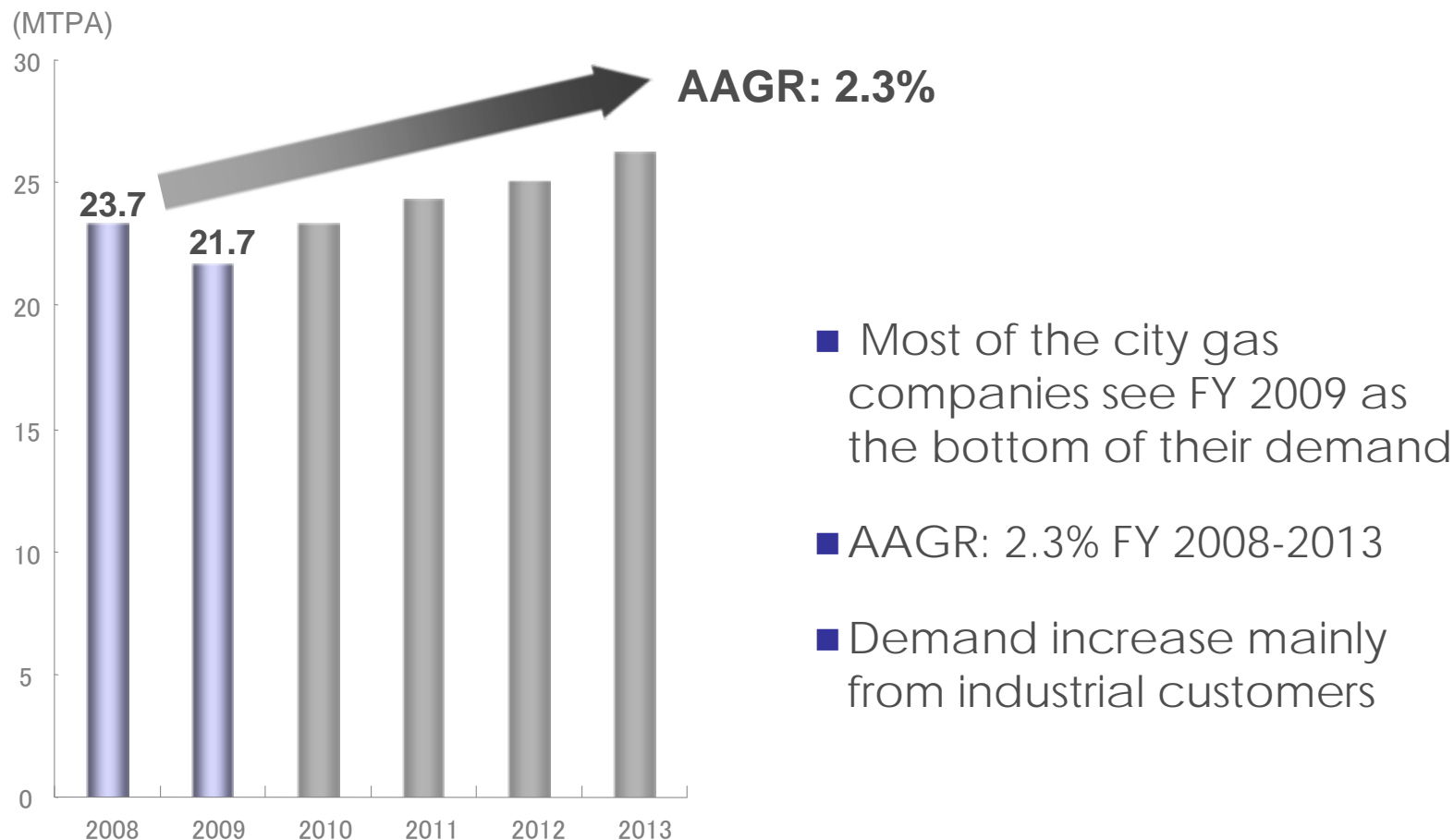
CCTS
Carbon dioxide capture, transportation and storage

Underground storage

Energy infrastructure:

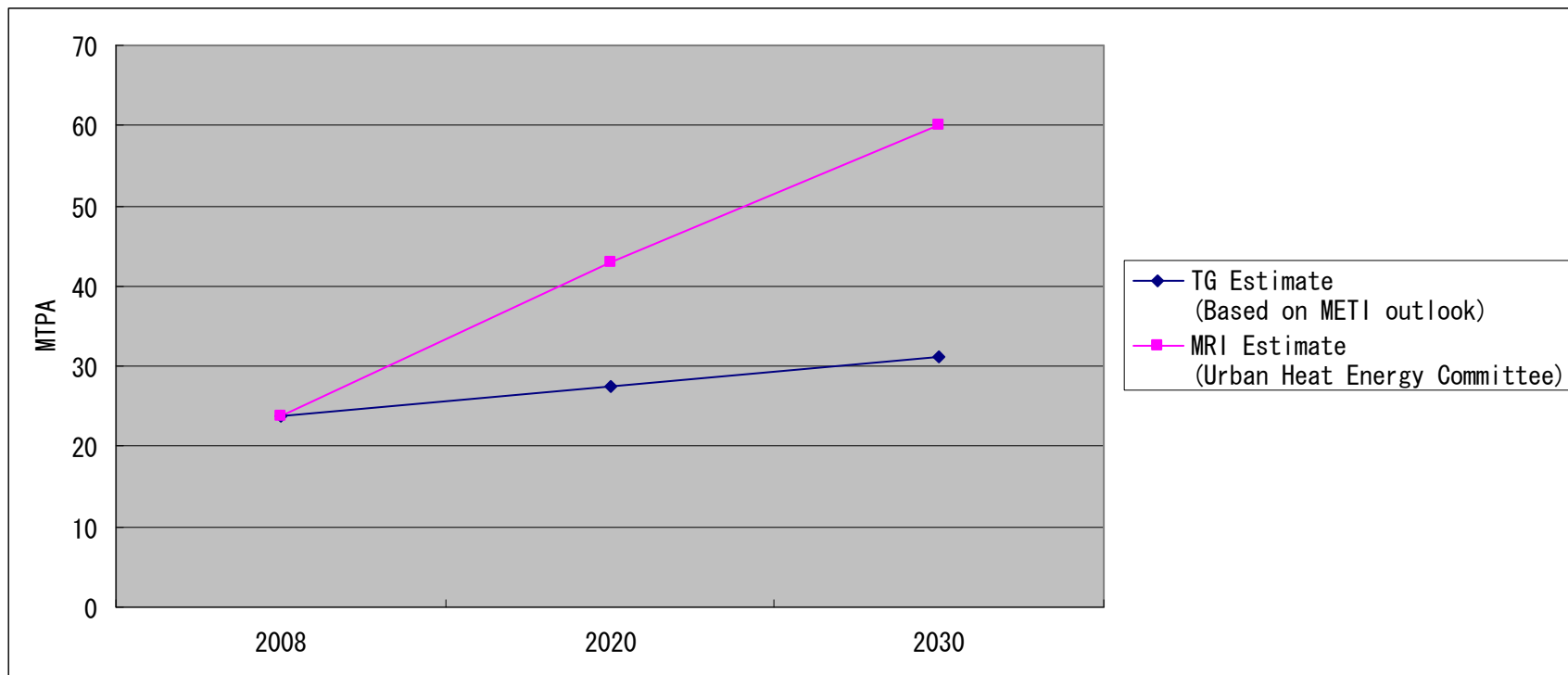


LNG Demand Outlook in Japan for Gas Industry



Source: Osaka Gas, Toho Gas, Saibu Gas, Shizuoka Gas, Hiroshima Gas, Sendai, Tokyo Gas and Tokyo Gas estimates

Long term LNG Demand Outlook in Japan for Gas Industry



- **LNG Demand is expected to increase towards low carbon society.**
- **Increase rate will change depending on various factors.**

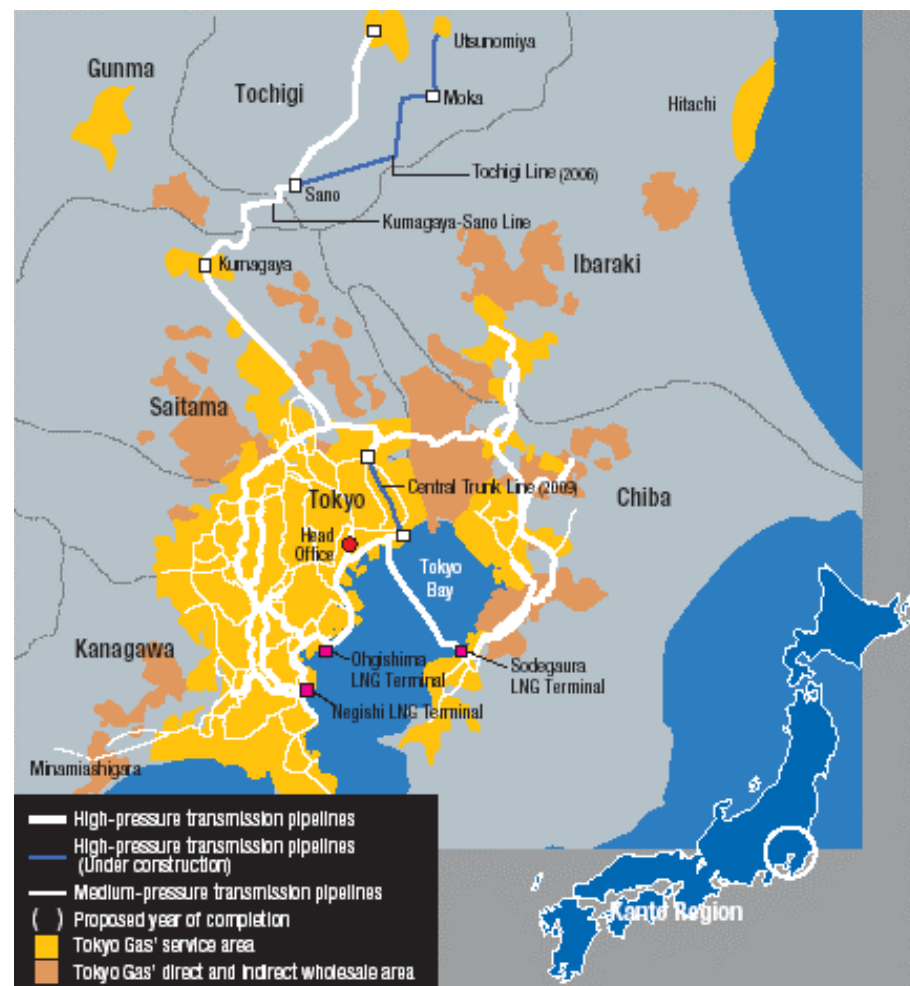
Keys to future gas demand increase

- Competitive LNG price
- Government support
 - Support for pipeline construction
& high efficient appliances
- CO2 price
- Global economy and Japanese industrial business conditions
- Oil price

Tokyo Gas future Growth Plan

Tokyo Gas---Company Overview

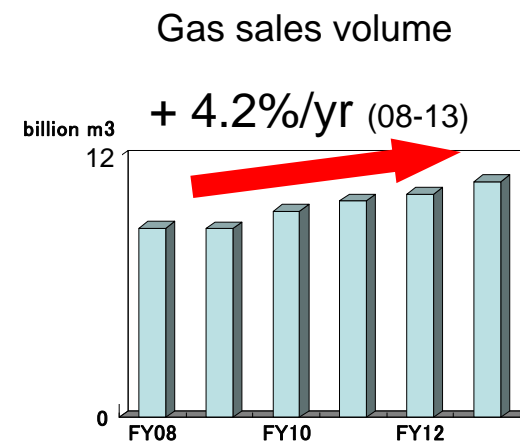
- Established in 1885
- Japan's largest gas utility with 10 million customers in the Tokyo metropolitan area
 - 52,310 km pipeline network
 - Gas sales volume: ~ 14 billion m³
- LNG imports: 10.9 million tons
 - Long-term contracts with Qatar, Malaysia, Australia, Brunei, Indonesia and Alaska



TG gas sales outlook ①

Industrial and Commercial

- Market cultivation in the 200-km area around Tokyo
- Expanded gas sales volume for TG power plants
- Value-added energy services

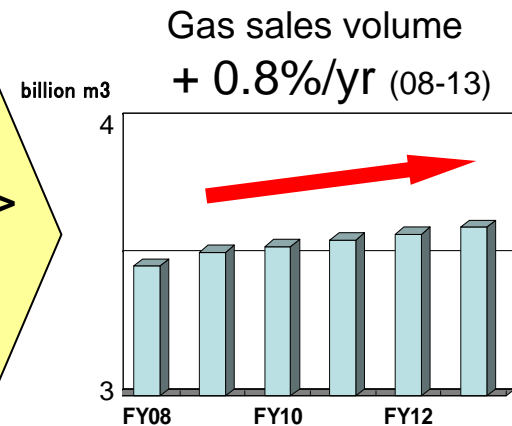


Residential

- Cultivation of new demand
- Marketing reinforcement for existing customers

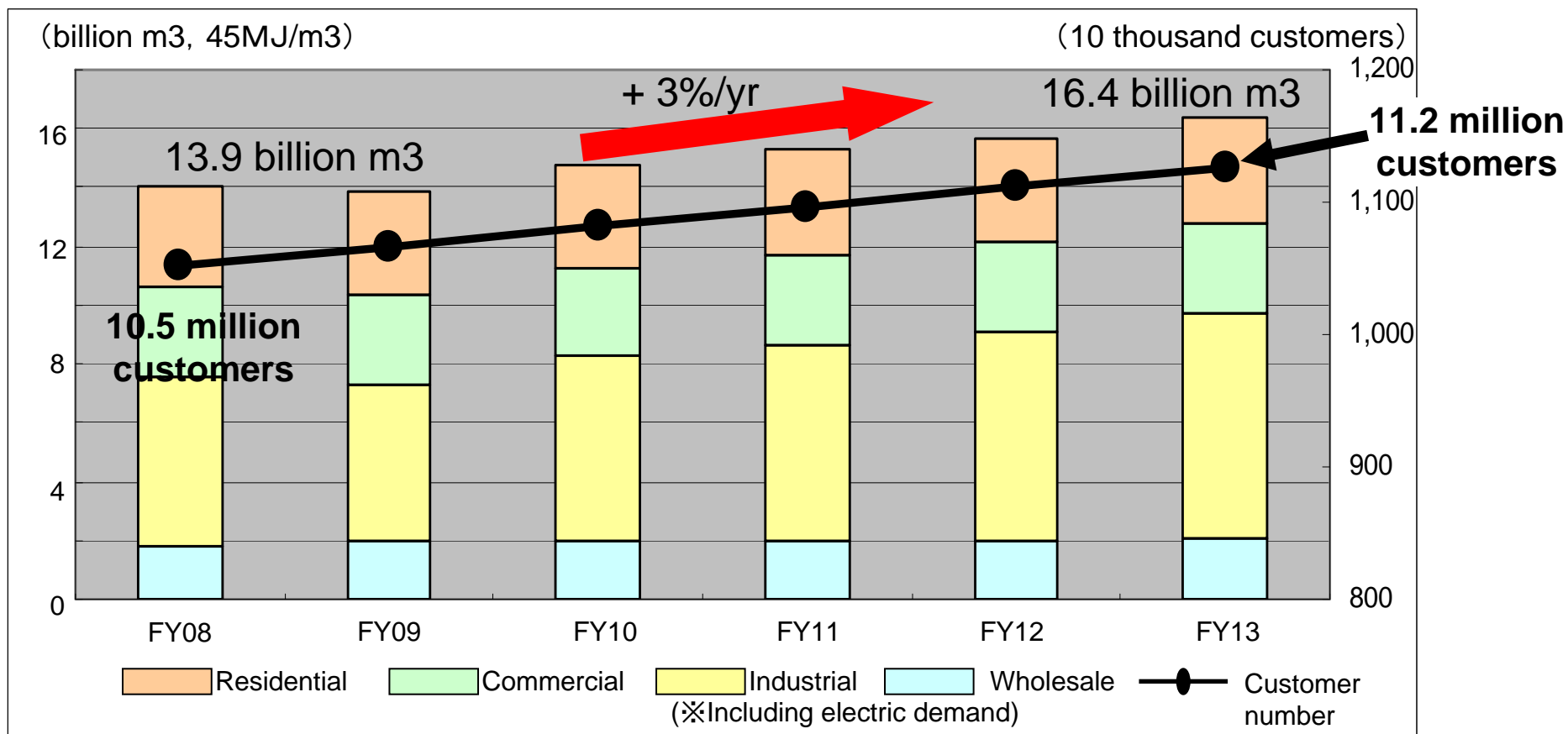
Prevention of all-electric housing
<Target for all-electric rate for new constructions : less than 10%(FY2013)>

Increase in number of customers
(+700,000 customers over 5 year)



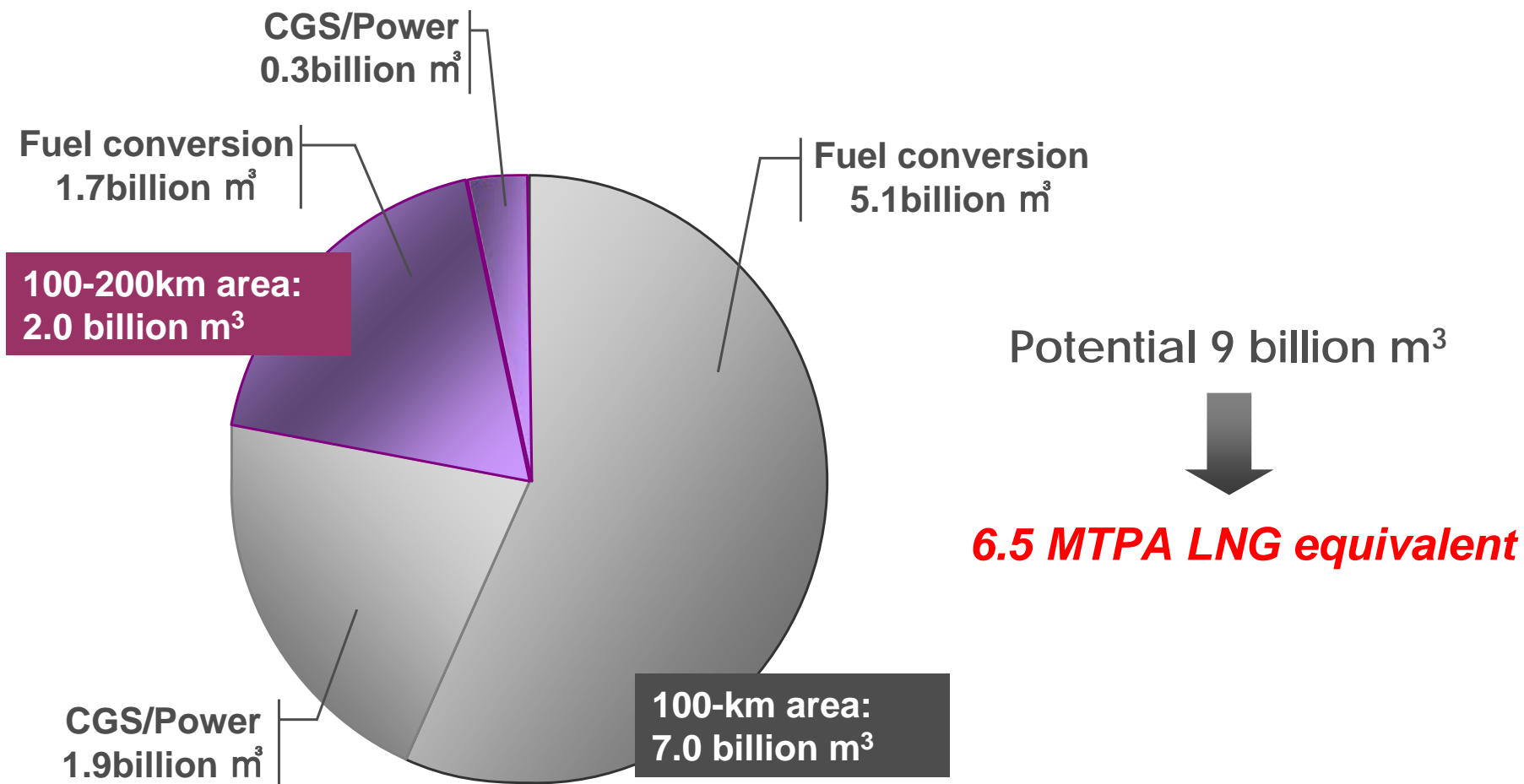
TG gas sales outlook ②

- Steady growth in the city gas sales volume and number of customers

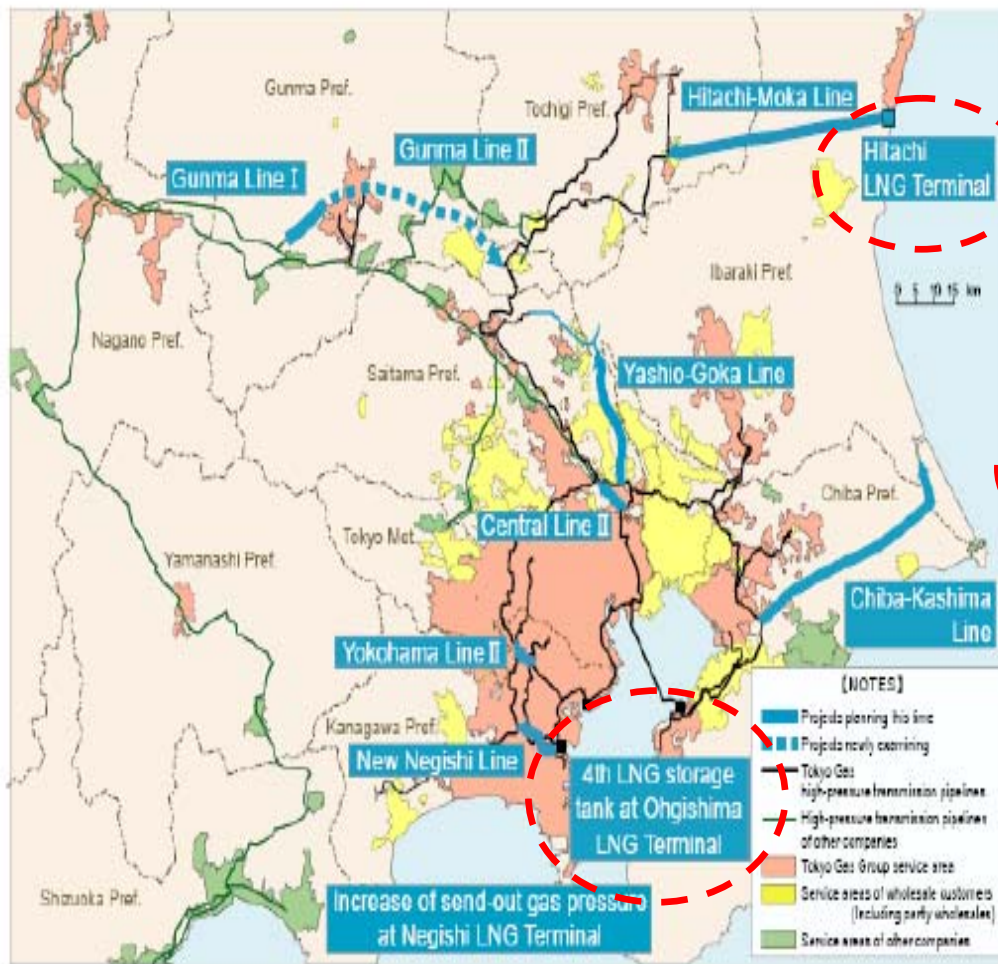


Potential Industrial and Commercial City Gas Demand of Tokyo Gas

Further cultivation of 200km-area-around-Tokyo



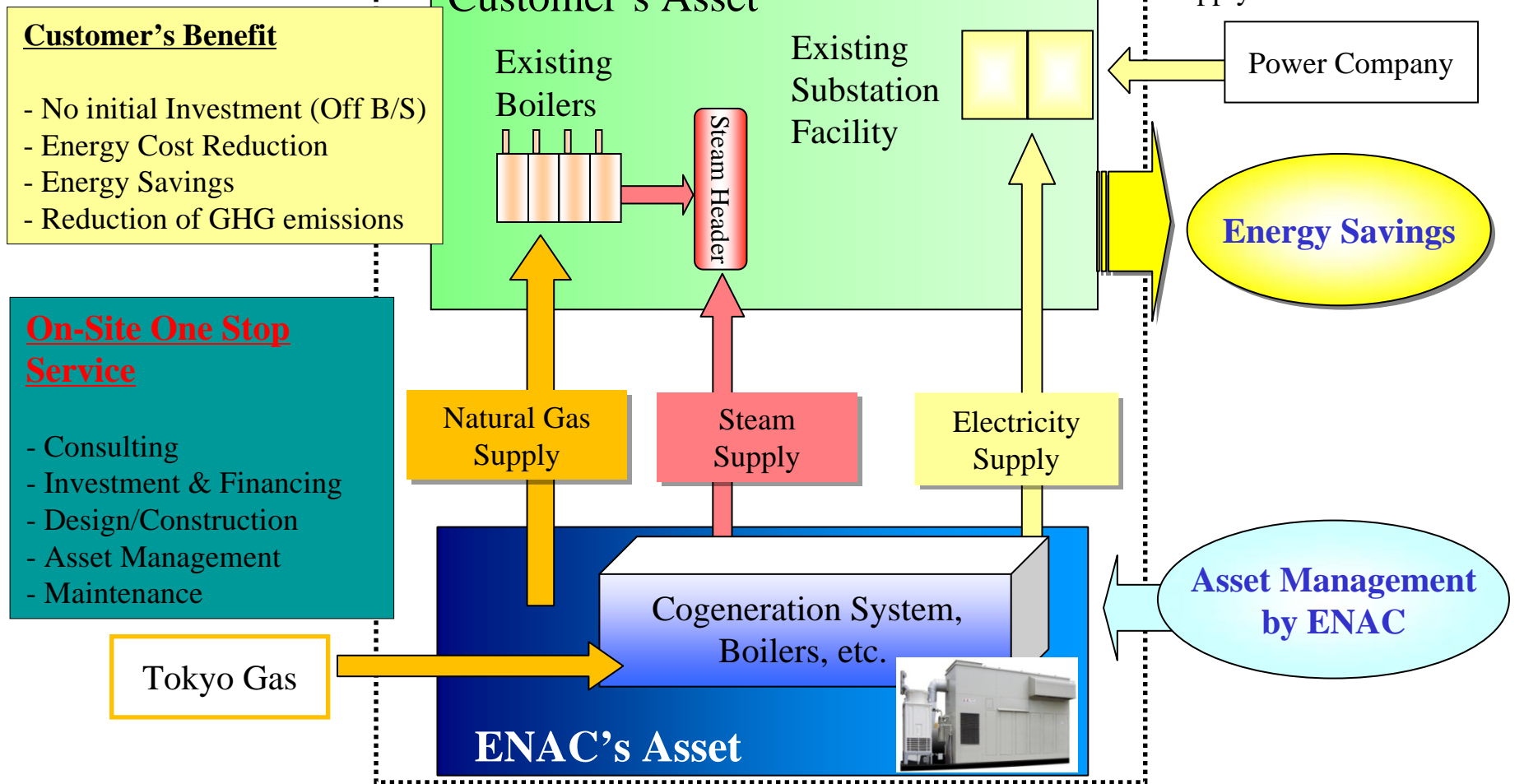
Major Plans of Infrastructure Developments



Facilities	Schedule
Gunma Line, Phase 1	2009
Chiba-Kashima Line	2011
Yashio-Goka Line	Around 2015
Hitachi Terminal & Hitachi-Moka Line	Around 2017
Ohgishima Terminal No.4 LNG Tank	2013
Pressure upgrading at the Negishi Terminal	2013
Chuo Line, Phase II	2010
Shin-Negishi Line	2013
Yokohama Line, Phase II	2013

Energy Service

Customer's site



Summary

- Gas demand expected to be increased 2010 onward (especially in industrial sector) towards low carbon society
- Future growth of gas market depends on various factors (competitive LNG price, government support, CO₂ price, etc).

Thank you!
