

# Changing Energy Flow and the Efforts by the Japan LP Gas Industry

**Jun Matsuzawa**  
**Chairman, Japan LP Gas Association**

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# JLPGA is celebrating its 50<sup>th</sup> anniversary

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We, the Japan LP Gas Association (JLPGA), are glad to celebrate our 50<sup>th</sup> anniversary this June.

We would like to extend our deepest gratitude to you for all your support and cooperation.

We would like to take this opportunity to enhance our activities in order to further promote mutual understanding between gas producing countries and gas consuming countries for the bright future of the LP Gas industry.

1963 Establishment	Membership: 35 companies	Import: 227,000 tons	Demand: 1,585,000 tons
	Initially called "LP Gas Producers-Importers Conference"		
1969	Name was changed to "Japan LP Gas Association"		
2013 Present	Membership: 15 companies	Import: 12,633,000 tons (Actual fig. for FY2011)	Demand: 16,294,000 tons (Actual fig. for FY2011)

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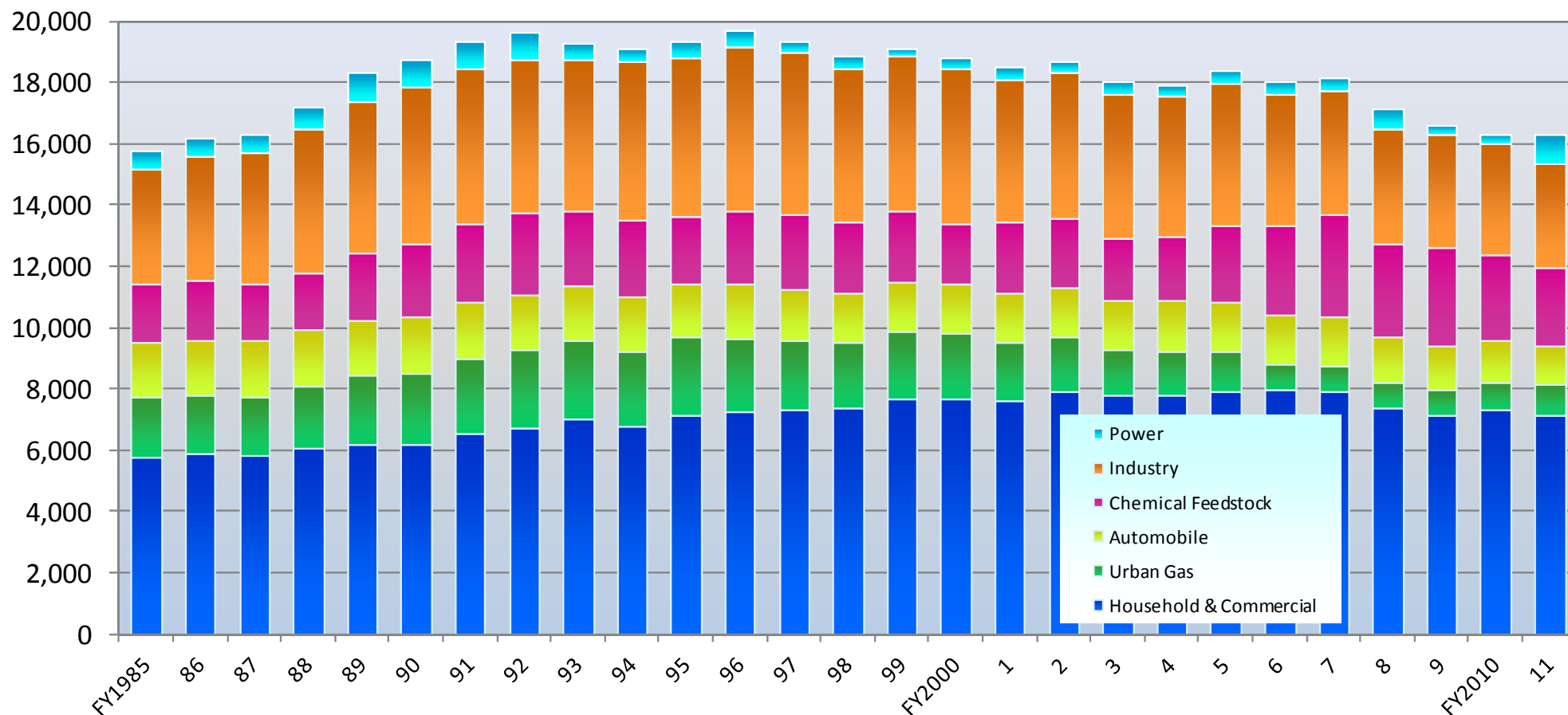


# Trend of LP Gas Demand by Sector

LP Gas demand in Japan is decreasing as a whole.  
However, its demand for electricity is on the rise.

## LP Gas Demand (FY1985-2011)

[Unit: 1,000 tons]



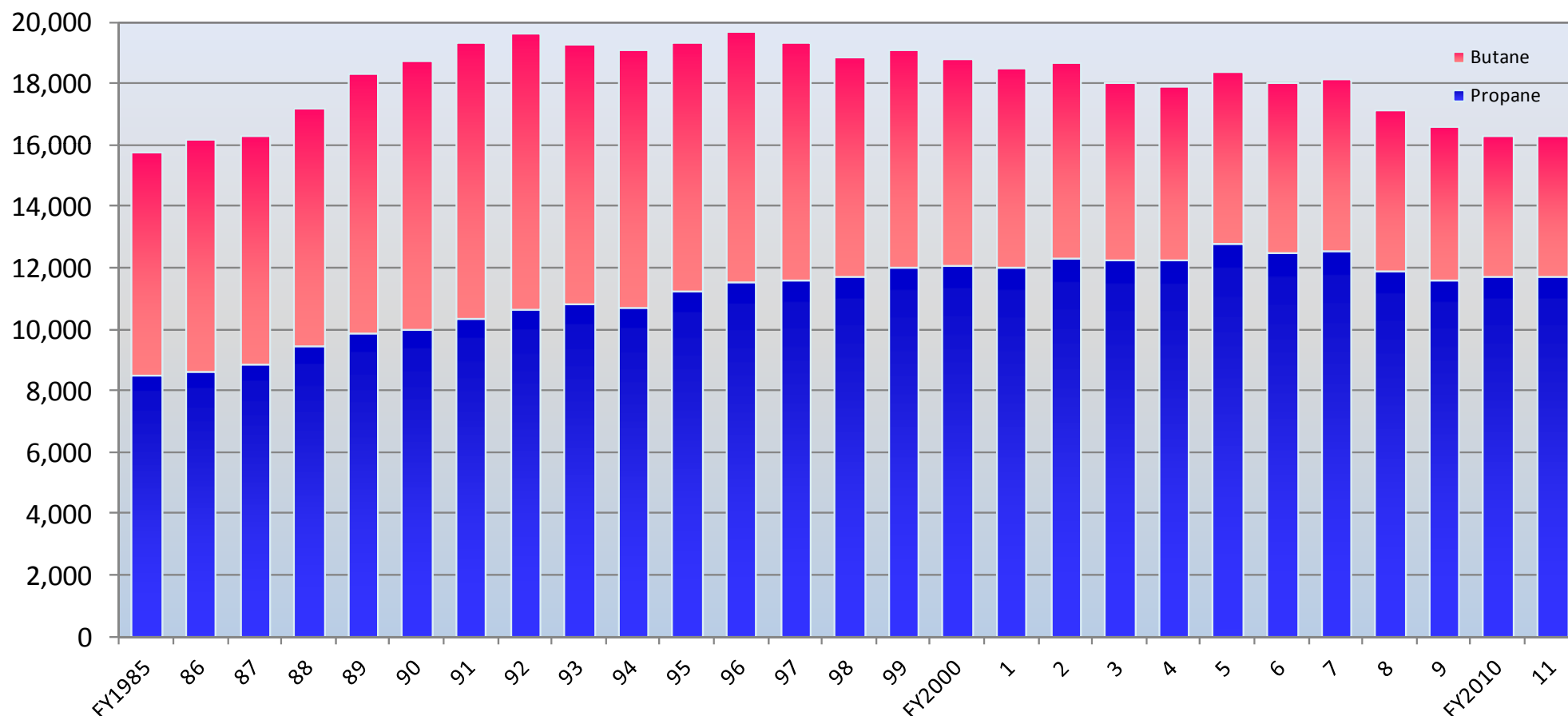
Source: Ministry of Economy, Trade, and Industry Petroleum Demand Forecast Committee Liquefied Petroleum Gas WG "LP Gas Demand Forecast"

# Trend of LP Gas Demand by Propane/Butane

After 1996, LP Gas demand is decreasing. However, demand for Propane remains almost unchanged in recent years.

## LP Gas Demand (FY1985-2011)

[Unit: 1,000 tons]

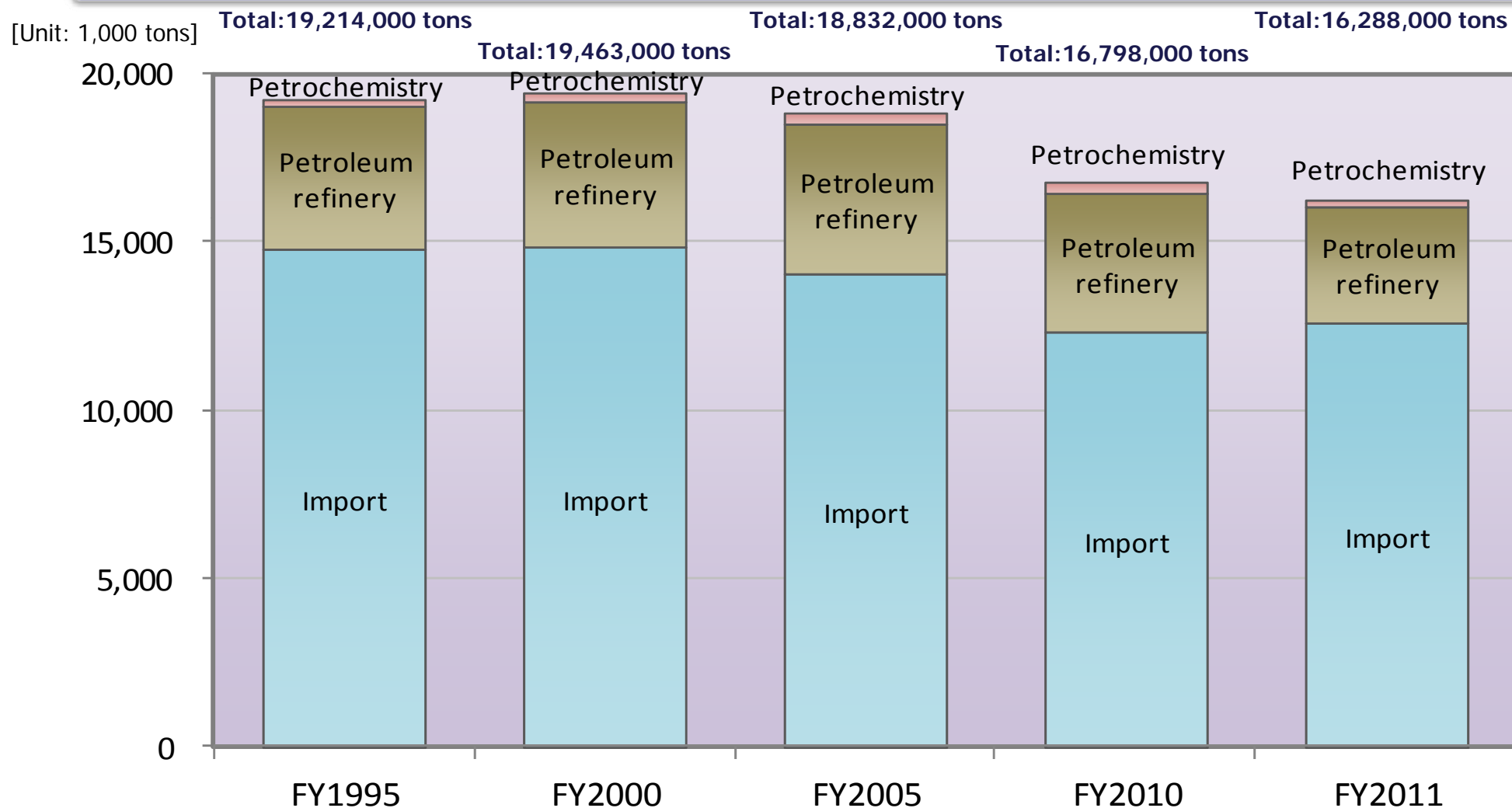


Source: Created from the Ministry of Economy, Trade, and Industry Petroleum Demand Forecast Committee Liquefied Petroleum Gas WG "LP Gas Demand Forecast" and Japan LP Association "Monthly Report on Supply and Demand"

# Change in LP Gas Supply in Japan

Both the LP Gas supplied by domestic refineries and imports are decreasing in line with the decrease in LP Gas demand

## LP Gas Supply (FY1995-2011)

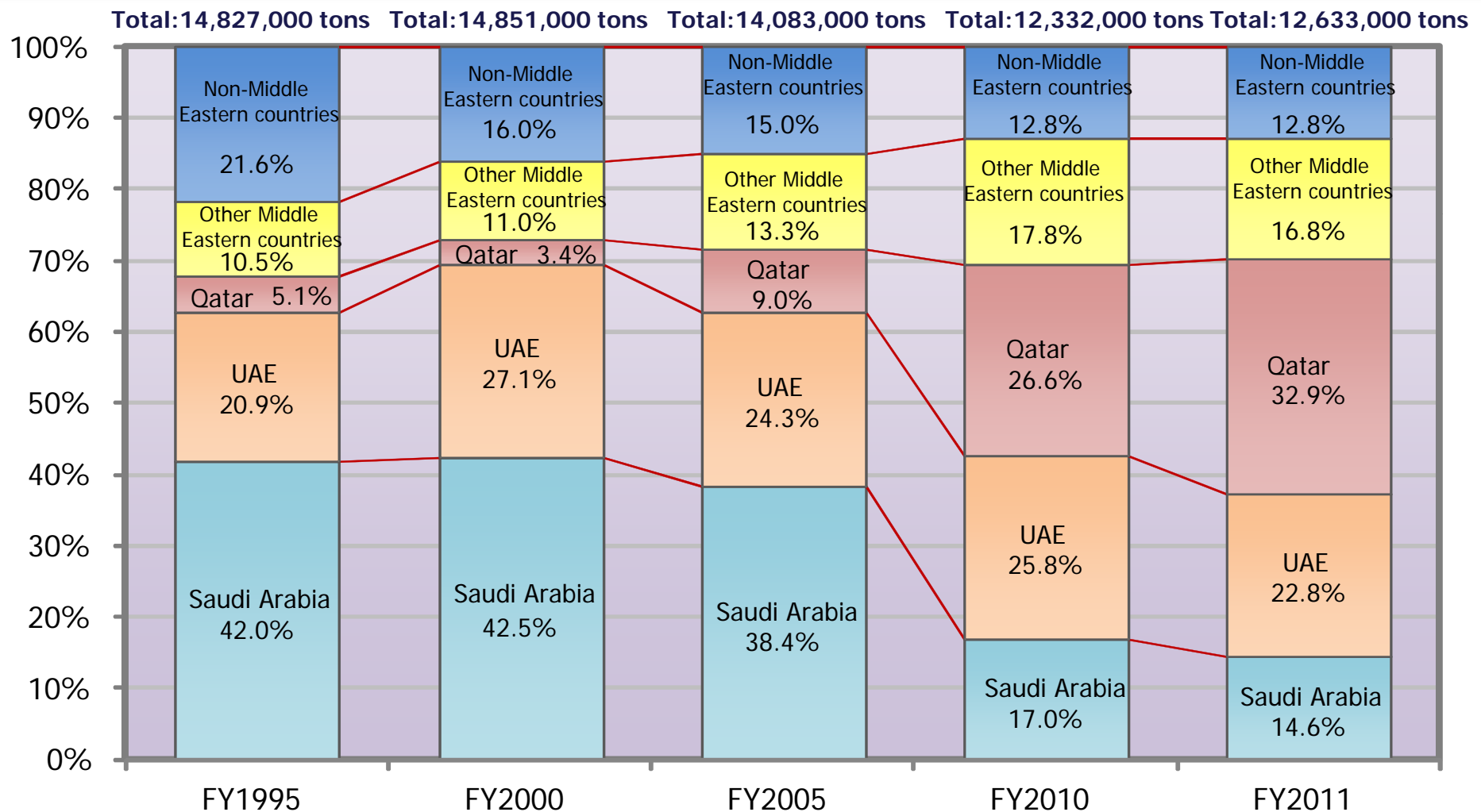


Source: Ministry of Economy, Trade, and Industry Petroleum Demand Forecast Committee Liquefied Petroleum Gas WG "LP Gas Demand Forecast"

# Trend of main LP Gas supplying countries to Japan

Currently Qatar is Japan's largest exporter, and the Middle East countries remain as the main suppliers for Japan

## LP Gas Imports (FY1995-2011)



Source: Japan LP Gas Association Monthly Report on Supply and Demand



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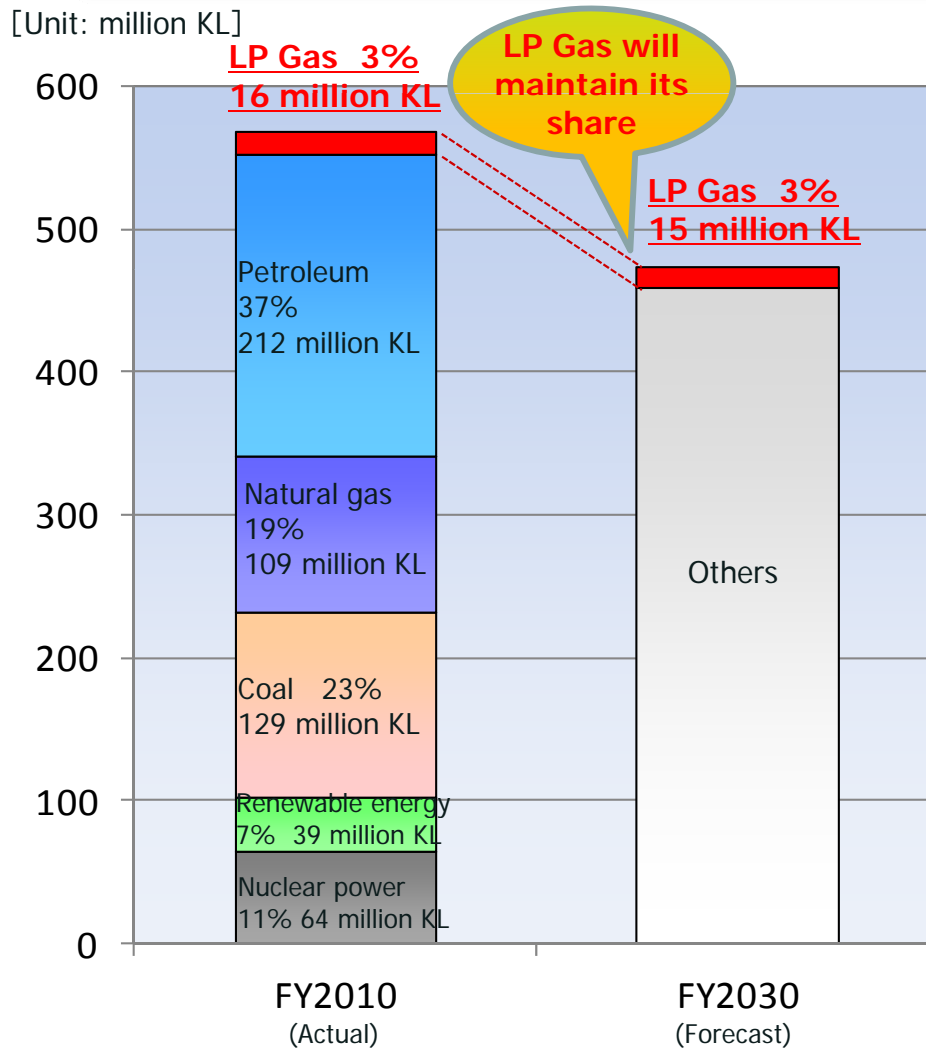
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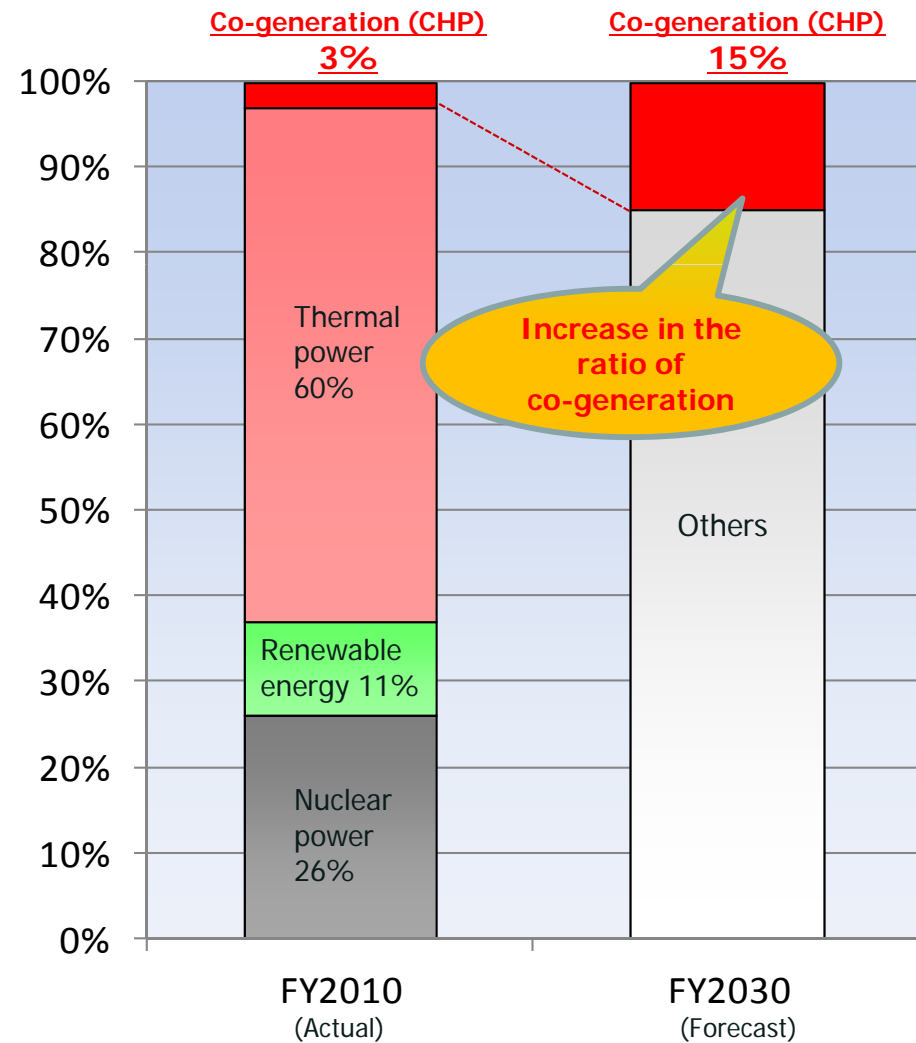
# Position of LP Gas in Japan's Primary Energy Supply scheme

LP Gas is expected to play a certain role in the long run, although its share is not a major one

Primary energy forecast by source for 2030



Electricity supply forecast by source for 2030



Source: Japan LP Gas Association

# Role of LP Gas : Challenges to Increase Demand (1)

Promote applications fueled by LP Gas as back-up for peak cut of electricity and for renewable energy

## ■ Promoting co-generation

Reducing carbon dioxide emissions and cutting peak power demand for electricity by promoting LP Gas applications as distributed electricity supply units .



Fuel Cell for household use



Gas Engine type for household use



Gas Engine type for industrial use

## ■ Efficient use with renewable energies

Utilizing renewable energy more efficiently and stably with high-performance LP Gas application



Fuel Cell for household use



Photovoltaic electricity generation



High-efficiency water heater



Solar water heater



# Role of LP Gas : Challenges to Increase Demand (2)

Promote innovated LP Gas applications to save energy and to create low-carbon society

## Role-sharing of electricity and gas

Use electricity where it can only be achieved with electricity, while promoting the use of highly efficient and safe gas equipment where it can be achieved with gas

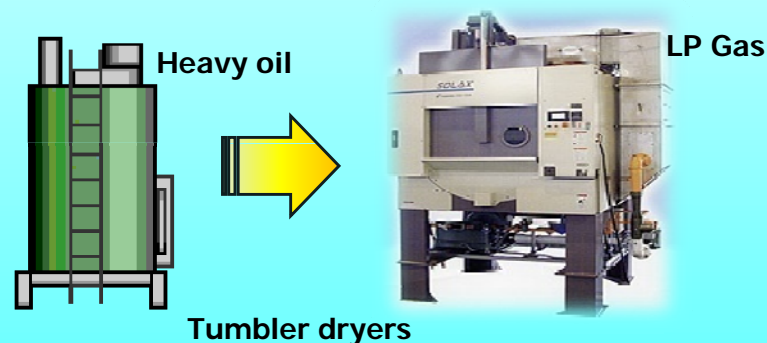


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## Promotion of fuel conversion

Reducing CO<sub>2</sub> by switching oil fuel to LP Gas



## Promotion of GHP

Use GHP (gas heat pump) for heating / cooling to smooth out electrical load and decrease CO<sub>2</sub> emissions



## Promote LP Gas vehicles

Promote fuel injection type LP Gas vehicles for private motorists



Axela (Mazda)



Mini-Cab  
(Mitsubishi)

# Role of LP Gas : Challenges to Increase Demand (3)

Promote diversified energy source to reinforce continuous energy supply, aiming at realizing a society robust against natural disaster

## Install disaster-bulk system in evacuation centers, etc.

Install disaster-bulk system in pre-designated evacuation centers like schools, city halls, etc.



The pre-designated evacuation centers are equipped with disaster-bulk system as well as LP Gas fueled generator



## Stand alone operation of co-generation at blackout

Develop gas engine co-generation that uses batteries



## Diversification of fuel for car use

Diversify vehicle fuel by increasing the number of LP Gas vehicles



# Role of LP Gas : Reinforcement of Disaster Response Abilities (1)

Further development of national stockpile terminals in order to enhance emergency response abilities

## Completion of National Stockpile Terminals

Secure the supply of LP Gas to cover the local need at emergency caused by natural disaster and supply disruption.  
After completion of underground tanks, total storage capacity comes to 1.5 million tons this spring.

### Development of national stockpile terminals





## Role of LP Gas : Reinforcement of Disaster Response Abilities (2)

National Stockpile Act was revised to allow the release of LP Gas from national stockpile terminals during disaster

Revision of the petroleum stockpiling law to allow national stock to be released at disaster

National Stockpile of LP Gas



Release!



*Occurrence of Disaster*



- In addition to the existing condition of “during supply disruptions,” the release of the national stockpile of LP Gas is now also allowed “during disasters”.
- In order to secure stable supply of LP Gas, the revised law requires the importers (primary distributor), wholesalers, and retailers to work together to draw up the “Supply Cooperation Schedule”.

# Role of LP Gas : Reinforcement of Disaster Response Abilities (3)

Ensure stable supply during disaster by reinforcing the distribution functions for import terminals and central filling stations

## Reinforcing functions of LP Gas import terminals

Generator Trucks will be strategically deployed at four terminals and sent to other terminals.



- The other terminals (in black color) can also secure electricity with Generator Trucks when the grid electricity supply to the terminal is lost.
- Seven terminals shown in the map are installed with units for receiving electricity from the Generator Trucks.

## Reinforcing functions of central filling stations



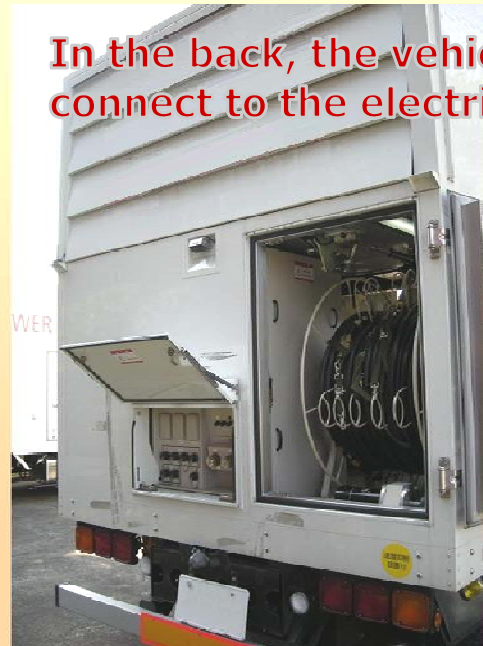
- More than 400 filling stations will be designated as the "Central Filling Station" nationwide.
- Reinforce the functions for "central filling stations" with;
  - stand-by LP Gas generators
  - Autogas dispensers
  - LP Gas vehicles and delivery trucks
  - satellite communications equipment

# Role of LP Gas : Reinforcement of Disaster Response Abilities (4)

Generator Trucks with specifications will be deployed to the four terminals



Appearance of the Generator truck



In the back, the vehicle is equipped with a cable to connect to the electricity receiving unit at the terminal

Generator specifications	
Power output	1,000KVA
Generated voltage	6,600/3,300V (switch-type)
Frequency	50/60Hz (switch-type)



Generator mounted in the vehicle



Total length: approx. 10m



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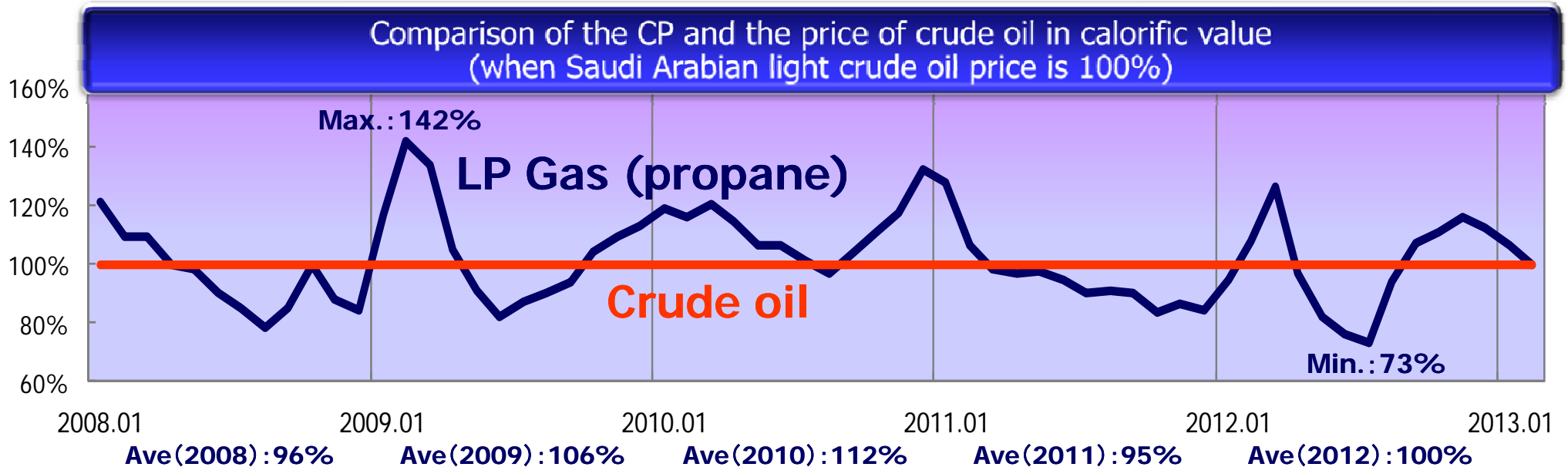
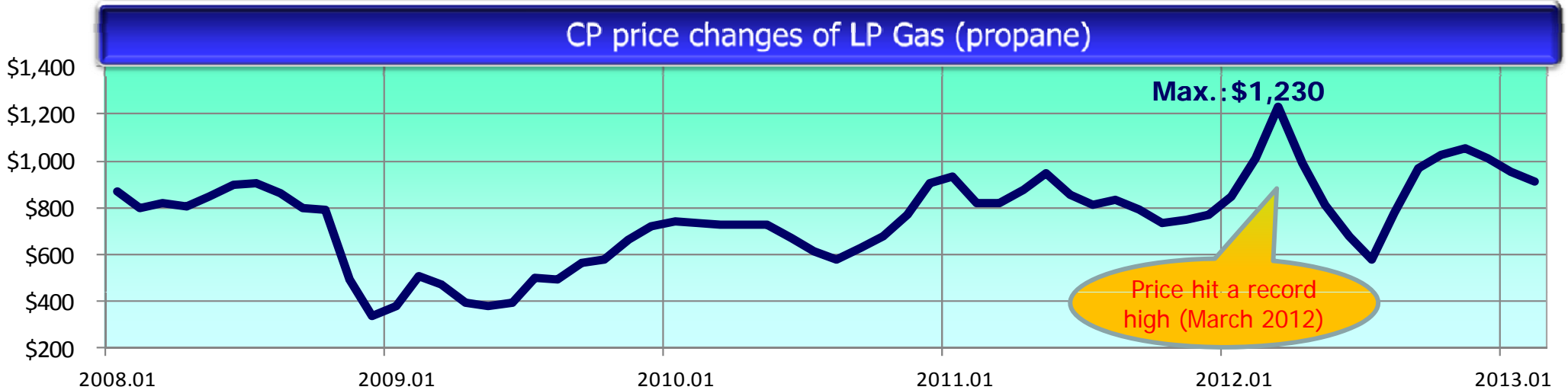
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# Transition of CP and Comparison with Crude Oil Prices

Although the average CP was approximately equal to the price of crude oil in terms of calorie value in 2012, the price fluctuated wildly when compared on a monthly basis



Source: Japan LP Gas Association

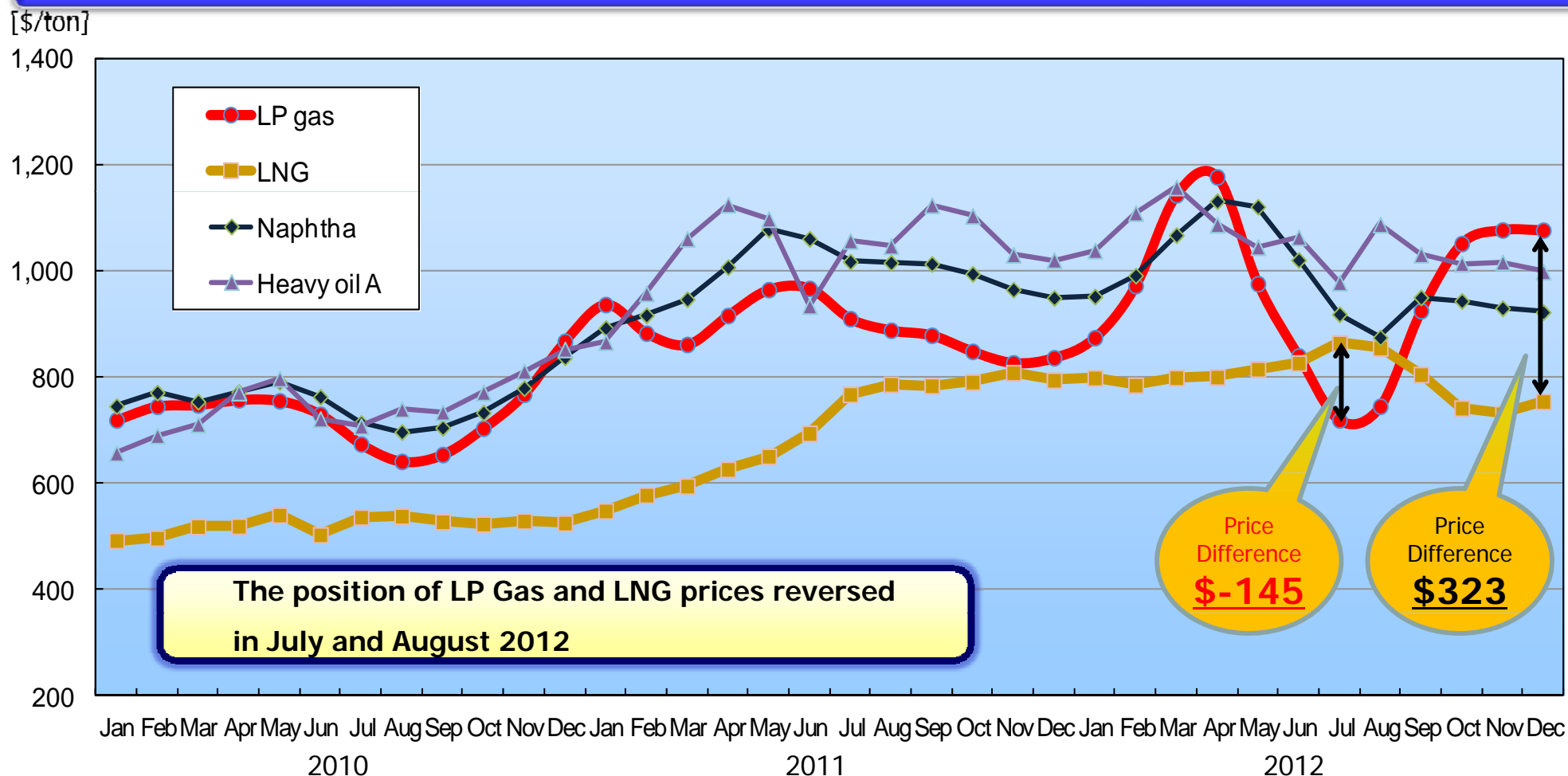


Japan LP Gas Association

# Transition of CIF Prices by Source

Although the price of LNG surpassed that of LP Gas for a period of time, LNG price is still more competitive

CIF price comparison of LP Gas, LNG, and crude oil  
(CIF price comparison by converting LNG, naphtha, and heavy oil A to the calorific value of LP Gas)



Source: Created using the "foreign trade statistics" of the Ministry of Finance as reference



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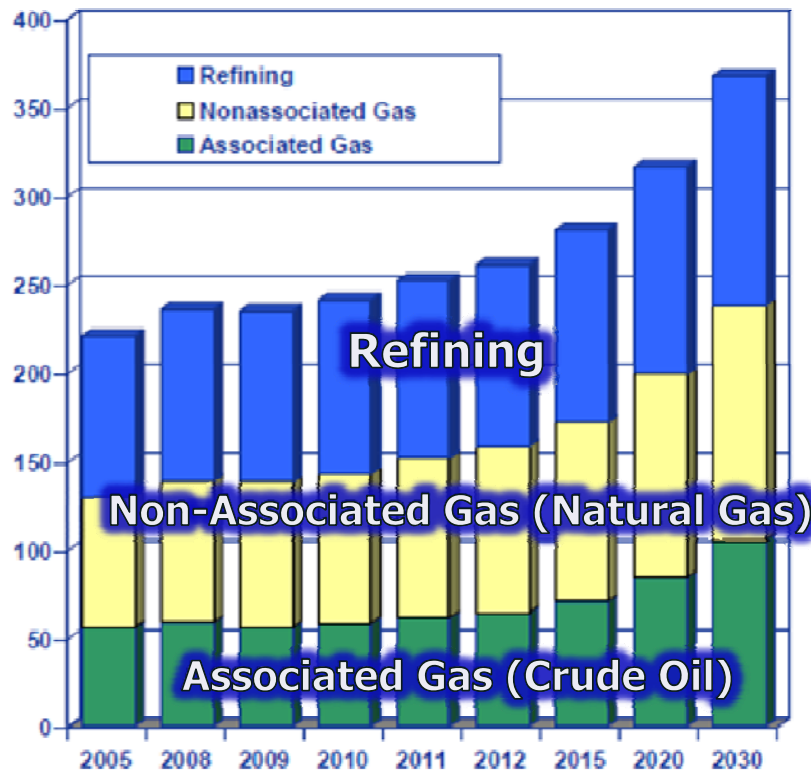
# Increased LP Gas availability supplied from Non-associated Gas

In the U.S., natural gas and crude oil production will continue to rise significantly with the development of shale gas and shale oil

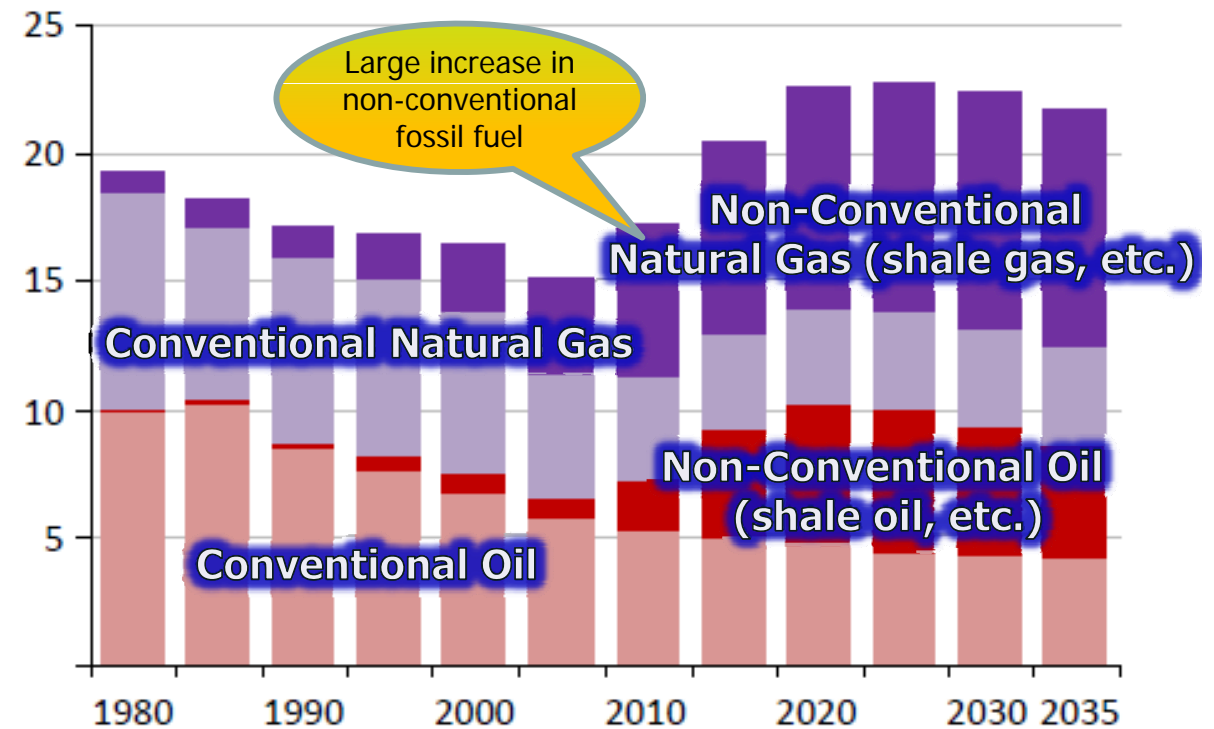
Actual figures and forecast of the LP Gas supply (2005-2030)

U.S. production of petroleum and natural gas (1980-2035)

[million tons]



[million barrels (petroleum conversion)/day]



Source: Purvin & Gertz

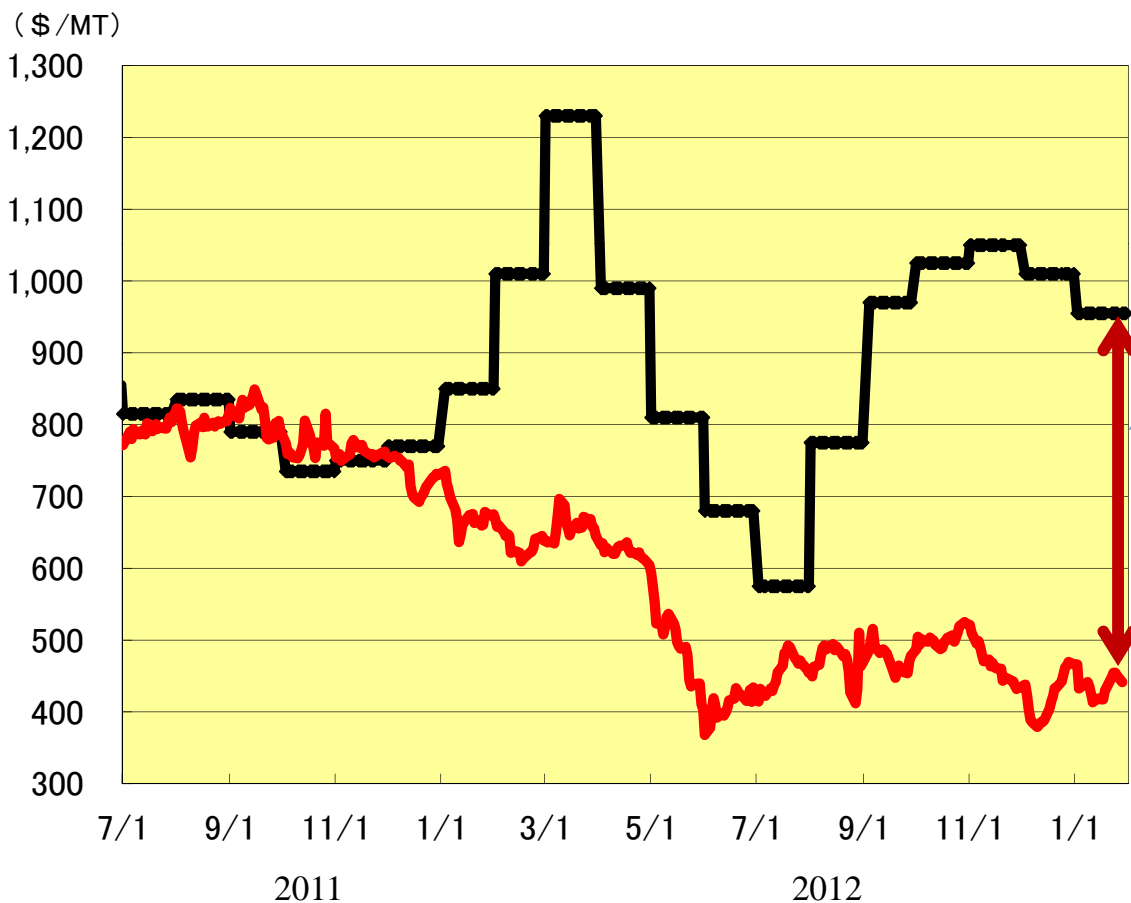
Source: IEA, "World Energy Outlook 2012"

LP Gas supply is expected to increase greatly in the future

# Propane Market Prices in CP and the U.S

Propane prices in the U.S. Gulf have been competitive in comparison with CP since 2011

## Comparison of Propane prices between the two



January 2013 (average)

CP: \$955/ton

United States: \$435/ton

**Difference:**  
**\$520/ton**

Volume of imports from the United States

*Approximately  
10 fold increase!*

42,000 tons

416,000 tons

CY2011

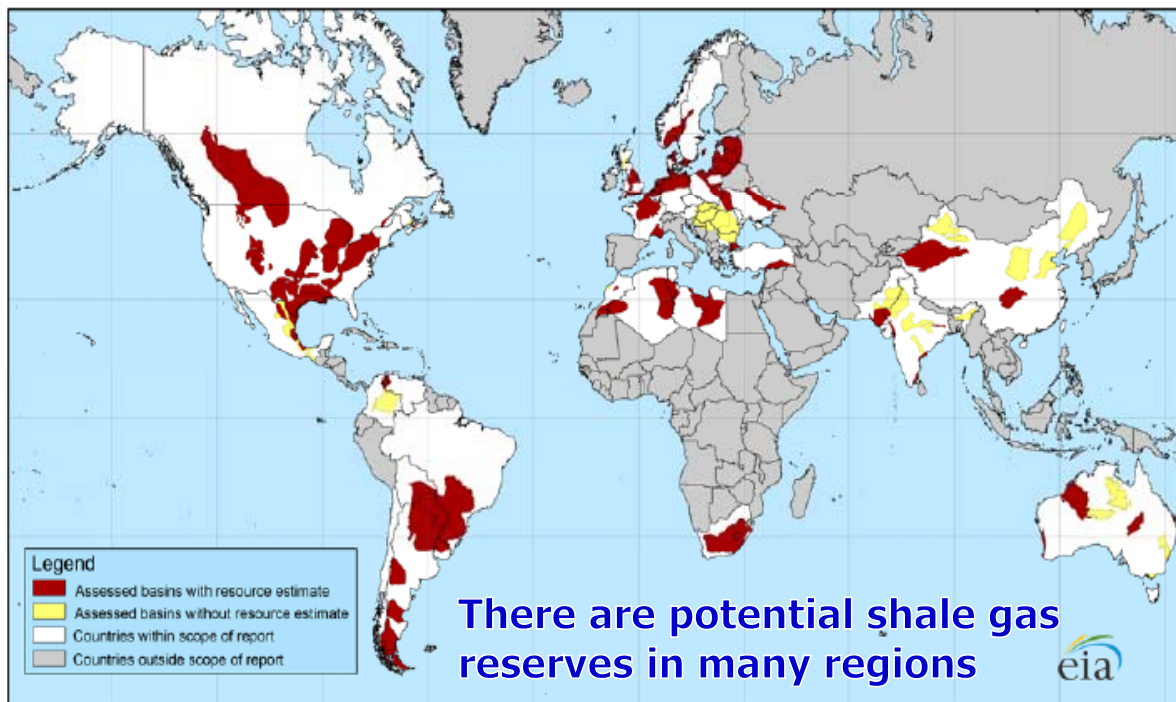
CY2012

Japan's volume of imports from the United States drastically increased in one year

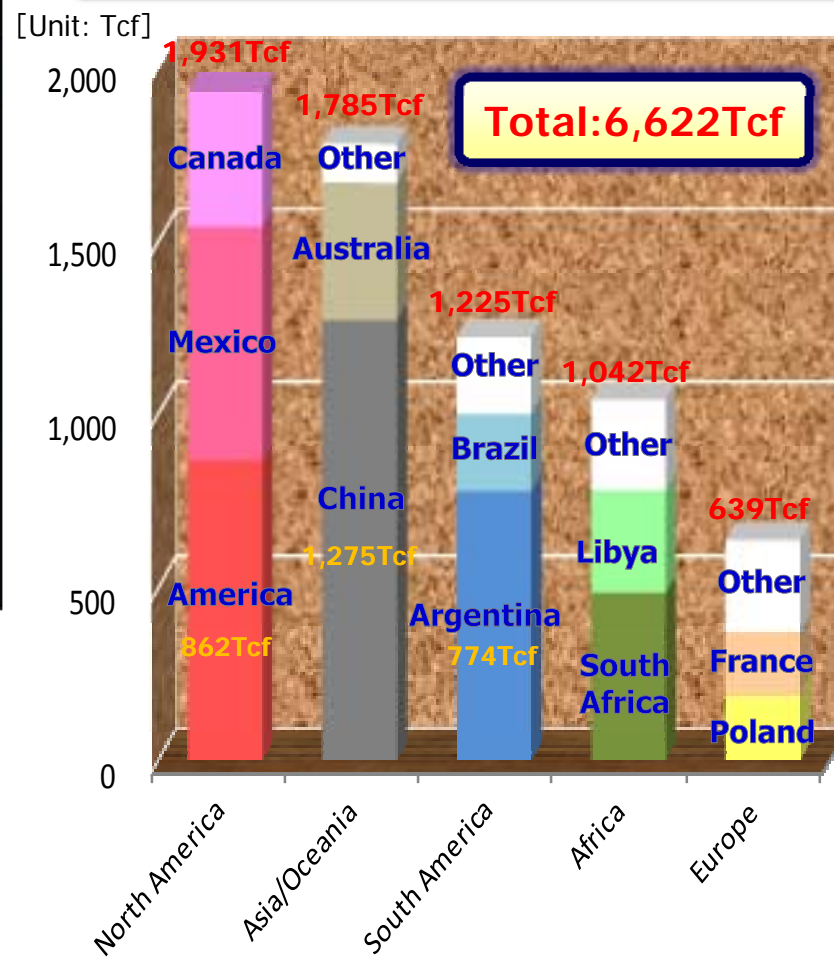


# Global Shale Gas Reserves and Potential

The shale gas revolution will cause a major change in the global energy supply structure



Amount of global shale gas reserves



The export of LP Gas associated with shale gas is expected to impact on the global market.

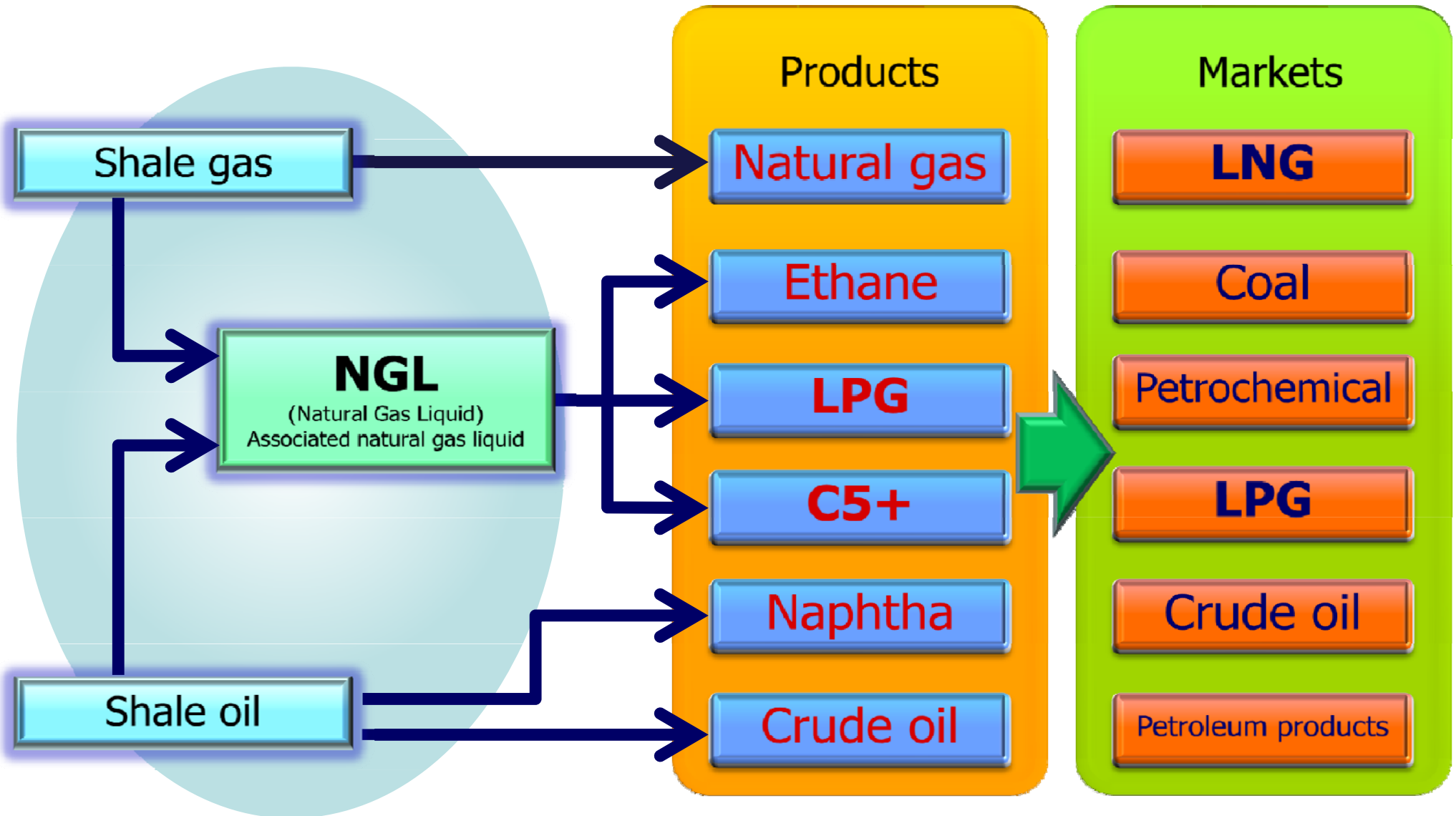


Source: the EIA and JOGMEC

Natural gas consumption worldwide (2009)  
**106.7Tcf**  
 Source: EIA, "Analysis & Projections"

# Impact on the Markets by Shale Gas and Shale Oil

Shale gas, shale oil, and associated natural gas liquid (NGL) will impact on the various markets





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# Conclusion

- JLPGA and its member companies will continue working hard to develop further LP Gas demands such as by strongly promoting co-generation (CHP) and boosting its market share in the total electric power generation.
- In addition, JLPGA will work on strengthening our disaster response capabilities further by taking advantage of the competitiveness of LP Gas as a potent distributed gas energy with strong support from the Japanese government.
- In the wake of the shale gas revolution in the U.S., global LP Gas export volume is expected to grow significantly. JLPGA would like to ask the gas producing countries to provide a stable supply as well as to set a competitive price in comparison with other energy sources for the progress of the LP Gas industry.





**ご清聴ありがとうございました**

**Thank you for your kind attention.**

**50<sup>th</sup>**

**日本LPガス協会**

**Japan LP Gas Association**

<http://www.j-LPgas.gr.jp>