

Japan's Energy Situation & Logistics:
Introducing Japan's 1st LPG-Diesel Dual Fuel Truck
2nd February 2015 at Ohji Driving School, Tokyo

Japan's LPG Situation

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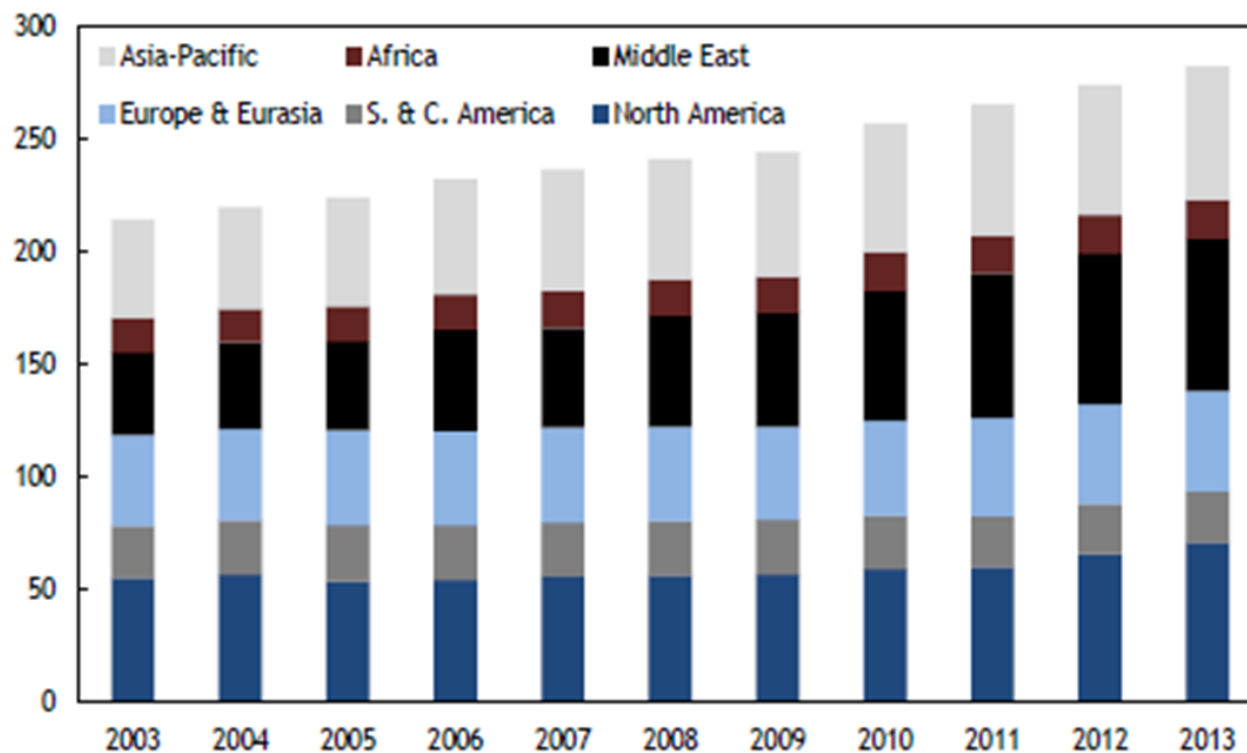
- LP Gas Supply & Demand Overview
- LP Gas Demand in Asia-Pacific
- LP Gas Supply & Demand in Japan
- The position LP Gas in Japan after 2011
- Conclusions

LP Gas Supply & Demand Overview



LP Gas production by region (2003 - 2013)

(Unit: million tons)



Total Production
2020 (Estimate)

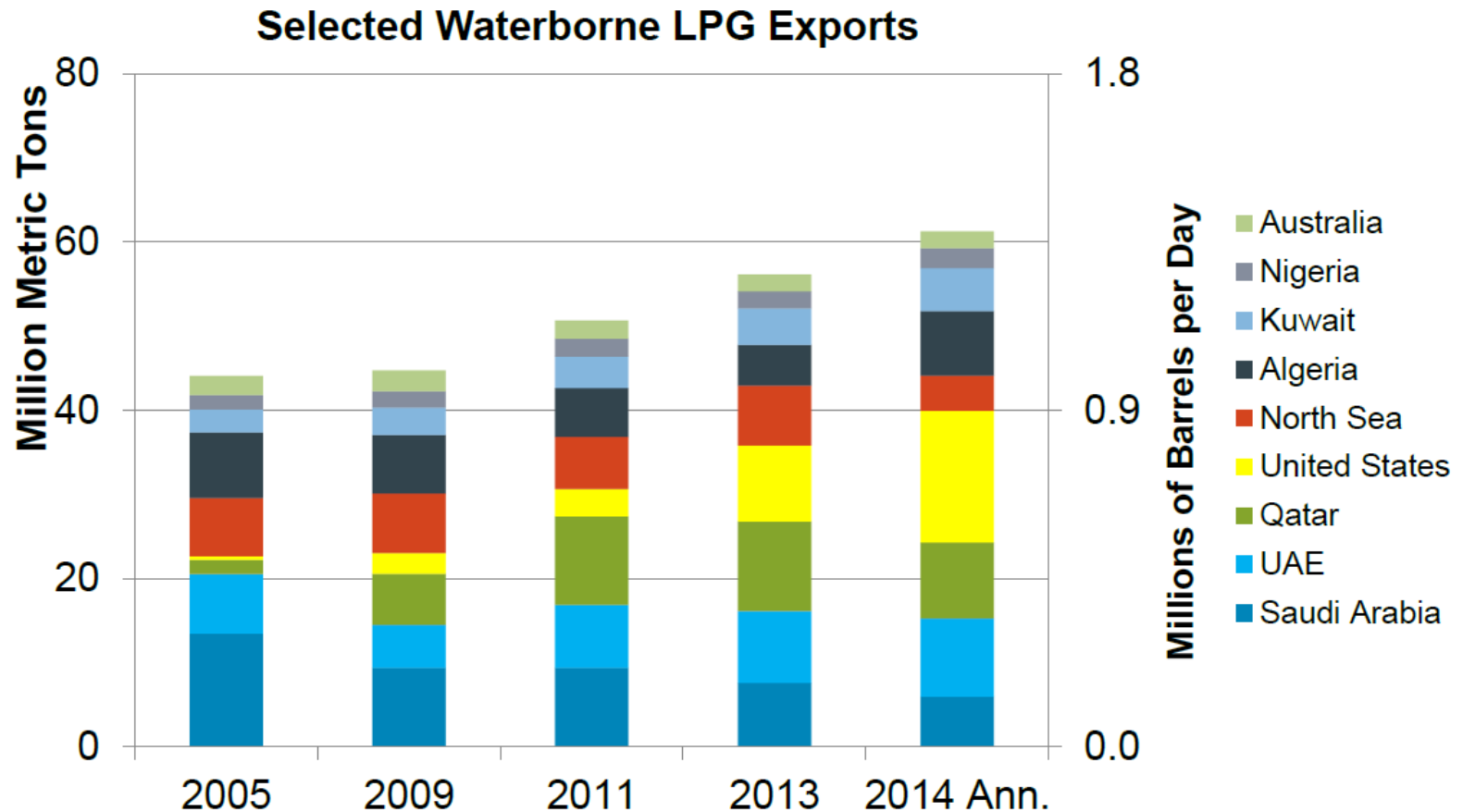
Asia-Pacific: 65
Middle East: 70
North America: 90
Other regions: 100
Total: 325
(unit: million tons)

2013:
280 million tons
2020:
325 million tons
(HIS, others)

Source: WLPGA statistics 2014

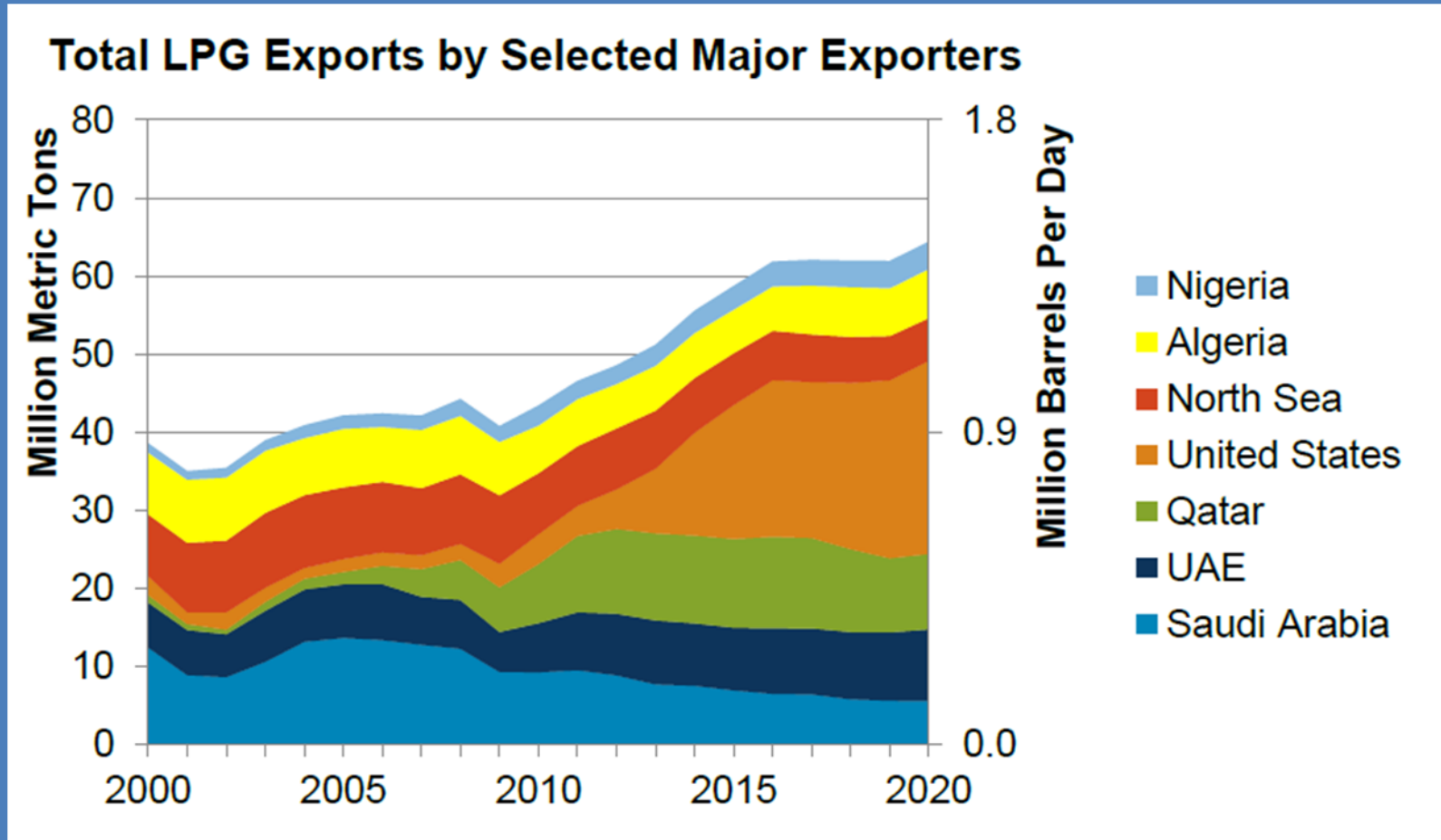
LP Gas Supply & Demand Overview

The United States now rivals the world's largest LPG Exporters



LP Gas Supply & Demand Overview

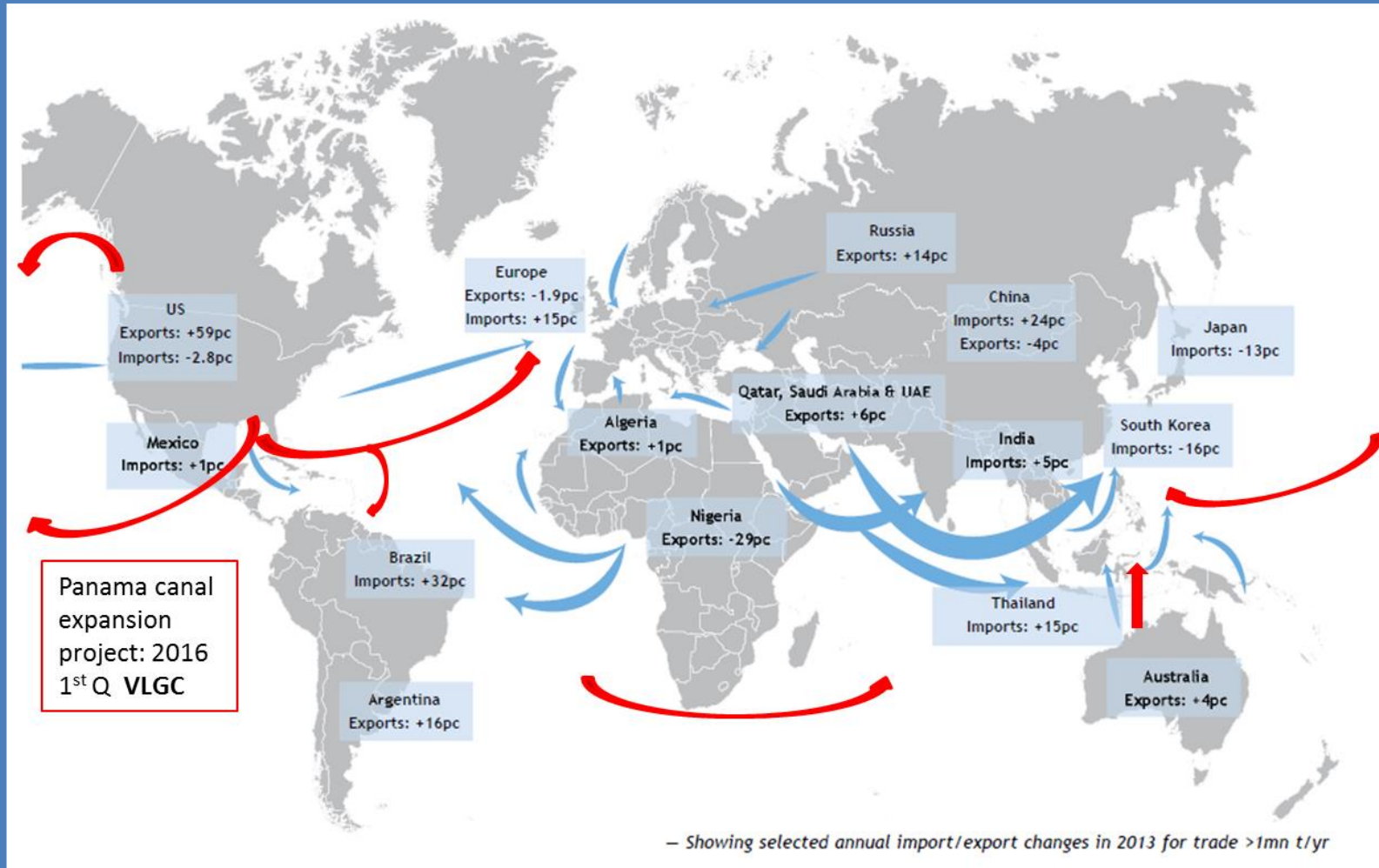
LP Gas export from U.S.A in 2030: almost 30million tons



Source: HIS 2014

LP Gas Supply & Demand Overview

Regional LP Gas Trade



Based on WLPGA statistics 2014

LP Gas Supply & Demand Overview

Total : 265 mt (by 2.8%)

LP Gas Consumption by region (2003 – 2013)

(Unit: million tons)

Asia-Pacific : 95 mt (5.2%)

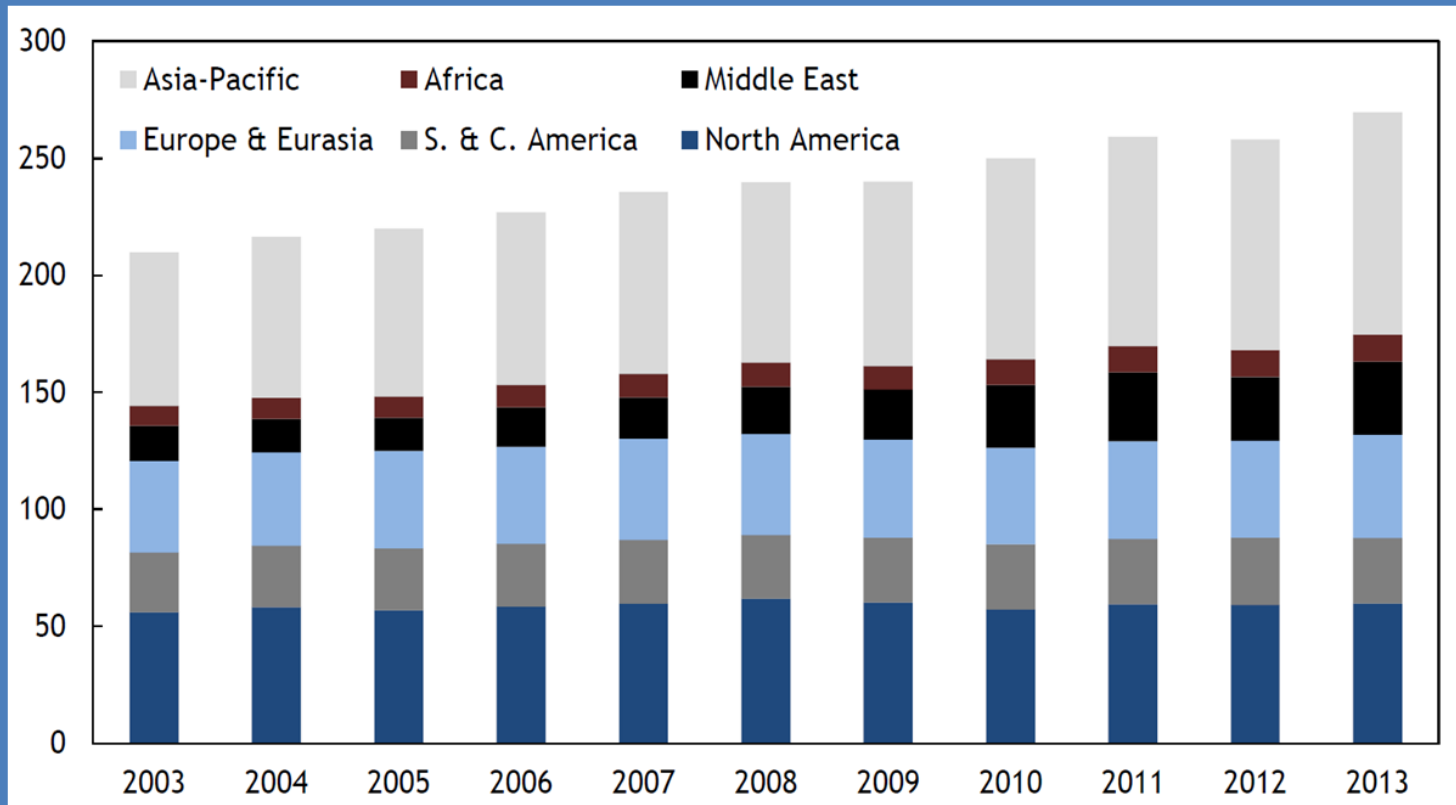
N. America: 60 mt (1.0%)

E. Eurasia: 43 mt (3.9%)

M. East: 28 mt (2.7%)

S. Central America: 28 mt

Africa: 12 million mt (2.3%)



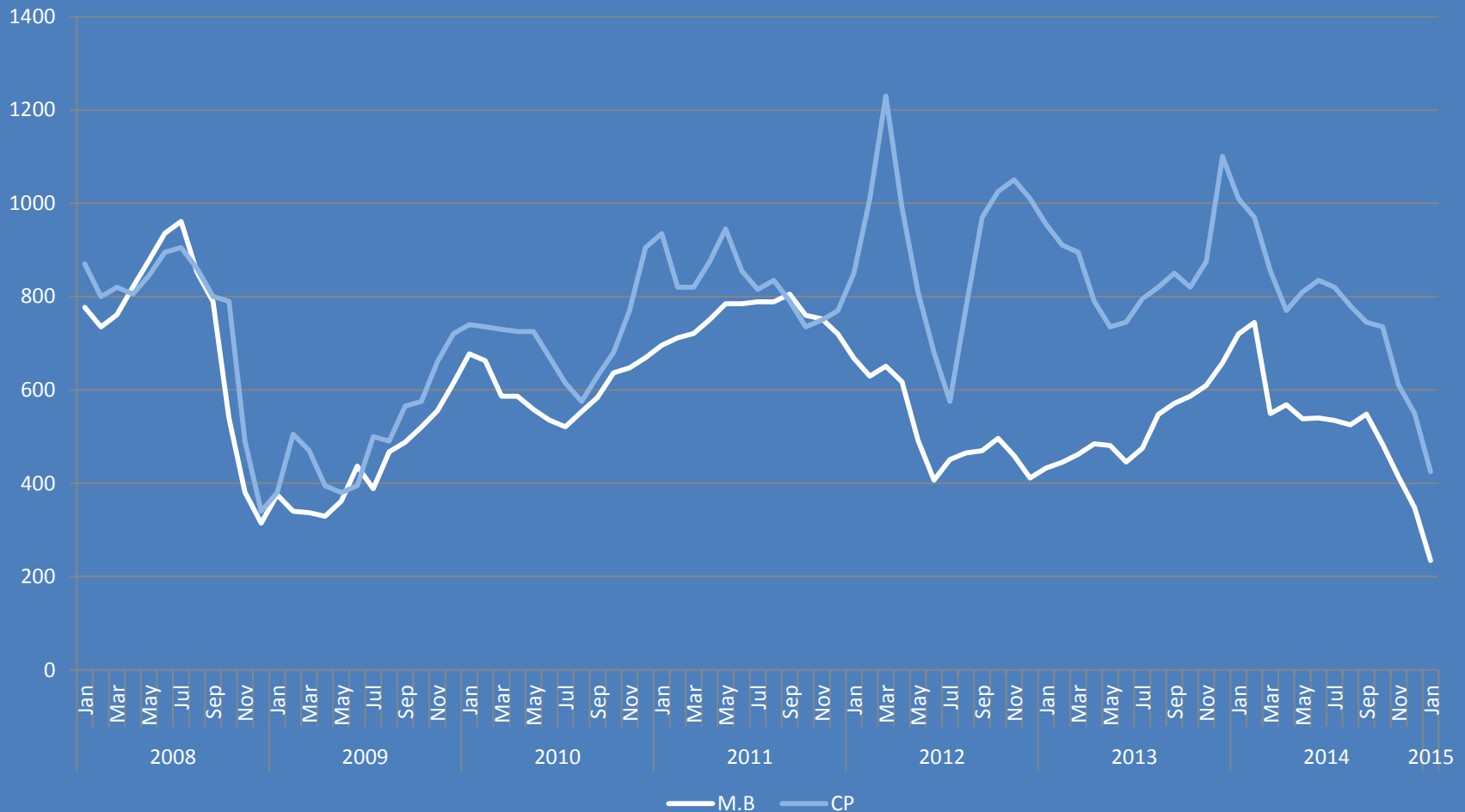
Source : WLPGA statistics 2014

LP Gas Supply & Demand Overview



Mont Belvieu Spot Price vs CP

Spread: USD about 200/mt recently

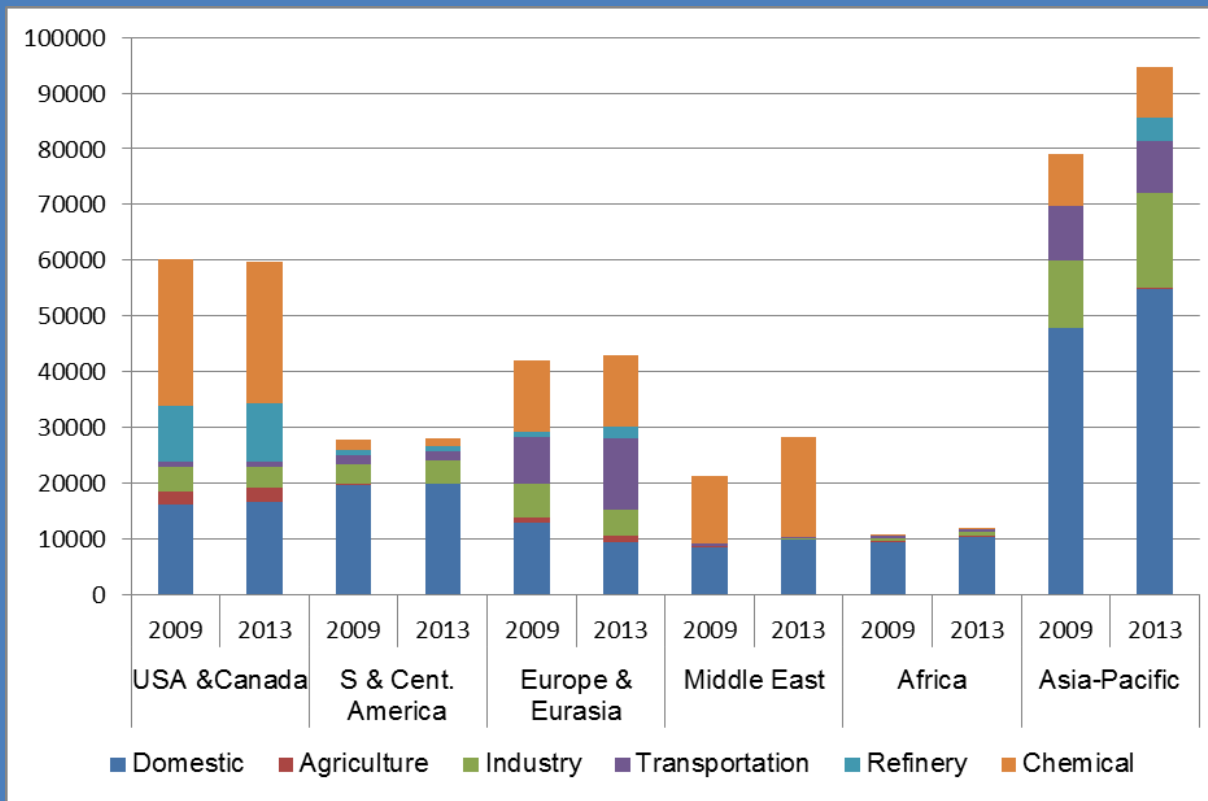


LP Gas Demand in Asia-Pacific



Asia-Pacific outpaces other regions

Domestic demand increase in Asia-Pacific



- LP Gas consumption (2013):
Global- 265 million tons
Asia-Pacific- 95 million tons
(36% of the world)
- LP Gas consumption in Asia-Pacific increased by 5.2% while the global average was 2.8%, from 2012 to 2013.

Based on WLPGA statistics

LP Gas Demand in Asia-Pacific

Autogas demand increases

Autogas:

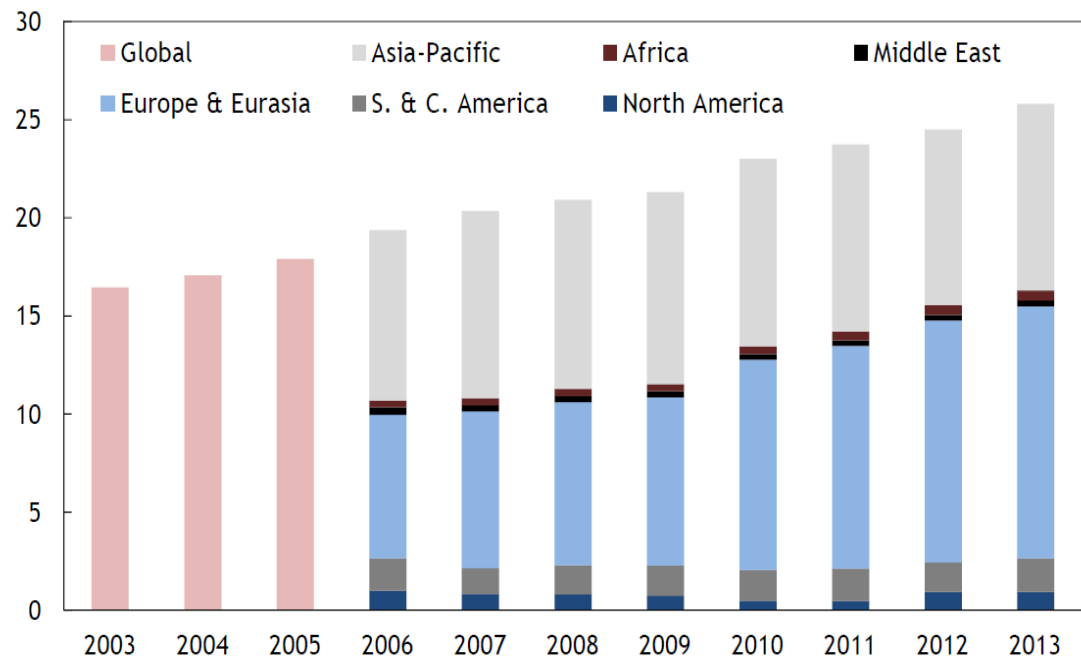
- 9% of total LP Gas demand
- Autogas vehicle increases by 1.4 millions annually

	2012	2013	Change
LP Gas	258,051	265,268	+2.8%
Autogas	24,508	25,802	+5.8%
Vehicle	23,513	24,911	+6%
Refilling	68,279	70,933	+3.9%

LP Gas/Autogas: 1,000 tons
Vehicle: 1,000

AUTOGAS DEMAND BY REGION

(mn t)

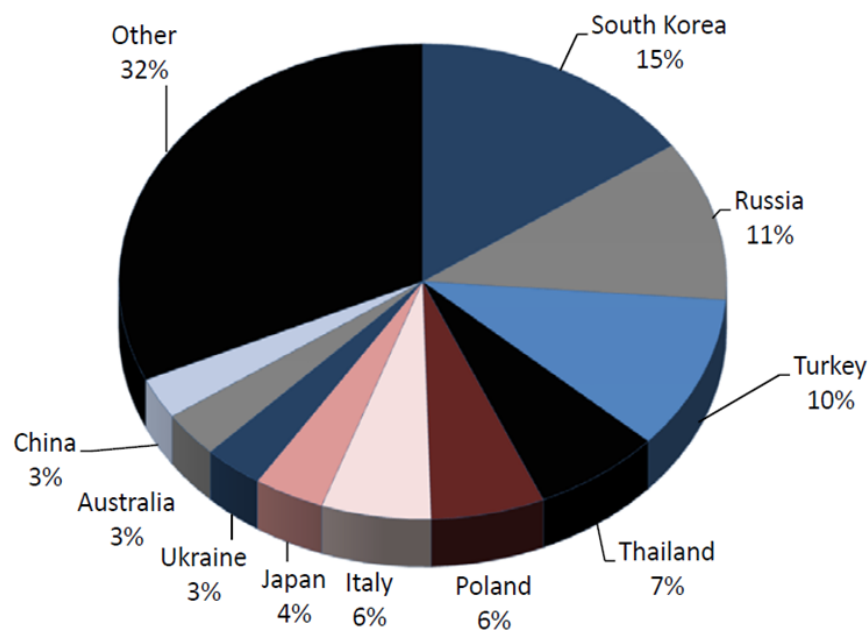


Source WLPGA Statistics 2014

LP Gas Demand in Asia-Pacific

	Country	2012	2013
1	S. Korea	4,103	3,987
2	Russia	2,650	2,850
3	Turkey	2,695	2,727
4	Thailand	1,061	1,775
5	Poland	1,600	1,575
6	Italy	1,352	1,520
7	Japan	1,053	980
8	Ukraine	724	821
9	Australia	947	813
10	China	631	730

AUTOGAS CONSUMPTION TOP 10



Source: WLPGA statistics 2013

LP Gas Supply & Demand in Japan



Importation: about 75% of total supply



Based on Japan LP Gas Association

LP Gas Supply & Demand in Japan

Top ten countries

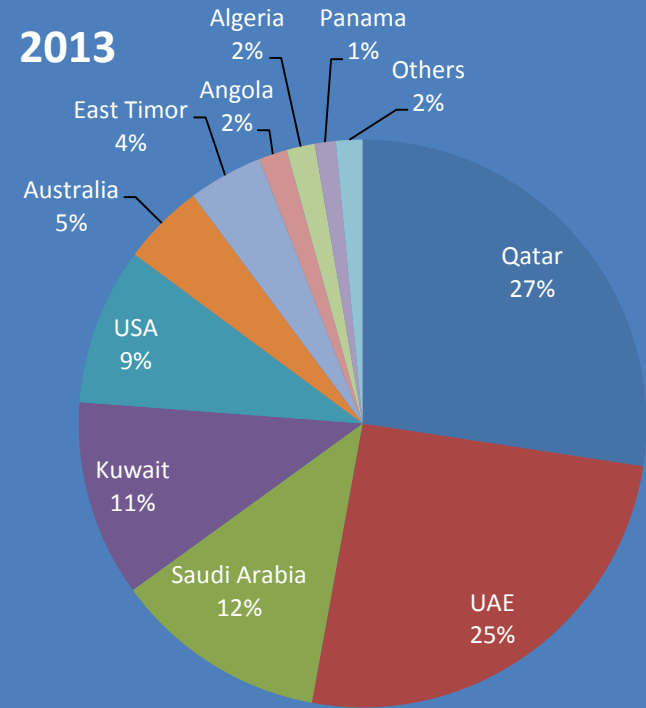
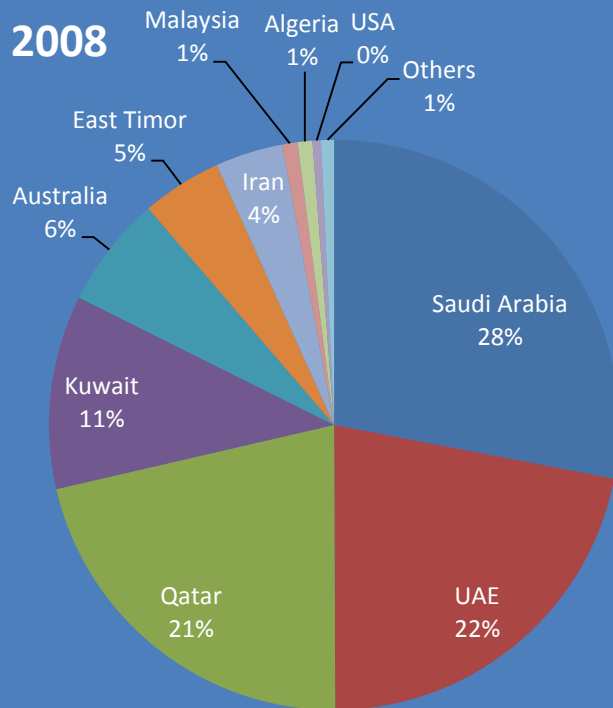
Unit : ton

2008			2013		
1	Saudi Arabia	3,677,805	1	Qatar	3,126,802
2	UAE	2,876,508	2	UAE	2,903,495
3	Qatar	2,815,151	3	Saudi Arabia	1,386,516
4	Kuwait	1,441,436	4	Kuwait	1,275,566
5	Australia	833,083	5	USA	1,021,760
6	East Timor	596,043	6	Australia	532,240
7	Iran	503,170	7	East Timor	485,030
8	Malaysia	113,363	8	Angola	184,256
9	Algeria	110,020	9	Algeria	183,225
10	USA	62,874	10	Panama	136,672
Top 10 Total		13,029,453	Top 10 Total		11,235,562
others		86,229	others		171,888
Import total		13,125,882	Import total		11,407,450

LP Gas Supply & Demand in Japan

Middle East: 86.2% (11.3 million tons) => 76.4%(8.7 million tons)

Diversification of supply source is in progress



LP Gas position in Japan after 2011



The Basic Energy Plan was released in April 2014:

Diversification of LP Gas supply sources:

Stable supply:

- The strategic stockpile by the Japanese LP Gas importers and the Japanese government.

Environmentally friendly source of energy:

- Less impact on the environment comparing with other fossil fuels.

Fuel for generating electricity:

Distributed source of energy:

- Portable, easily transportable

Role in natural disasters:

- Last resort

LP Gas position in Japan after 2011



The Basic Energy Plane was released in April 2014:

Policy:

- LP Gas supply chain needs to be strengthened further and more resilient
- LP Gas prices need to be transparent in the Japanese market.
- LP Gas needs to play more important role as a land transportation fuel.

LP Gas position in Japan after 2011

Name	Capacity (Tons)
Nanao	250,000
Fukushima	200,000
Kamisu	200,000
Namikata	450,000
Kurashiki	400,000
Total	1,500,000

Fukushima National
Stockpile Terminal,
Nagasaki Pre.

National Stockpile:
abt. 50days equivalent
Importer: 50days equivalent



LP Gas position in Japan after 2011

Improving emergency responsiveness of LP Gas supply chain

□ Core LP Gas filling facility

Improving the facility (2011~2013)

- Standby-generator fueled by LP Gas
- LP Gas vehicles for delivering LP Gas cylinders and checking safety
- Autogas dispenser
- Communication system for emergency

Grant: Total 9 billion yen (in approx.)

Number of the core filling stations=> 344

□ Securing land transportation in disaster (2012~2014)

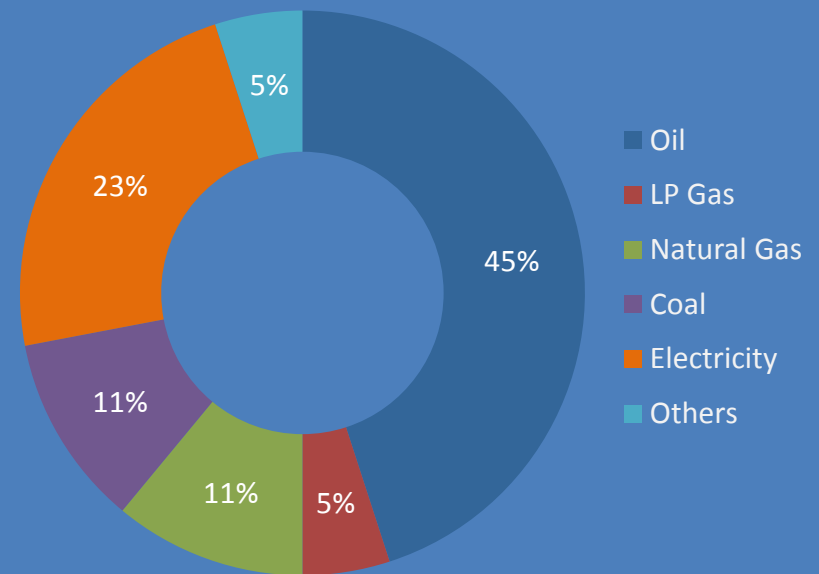
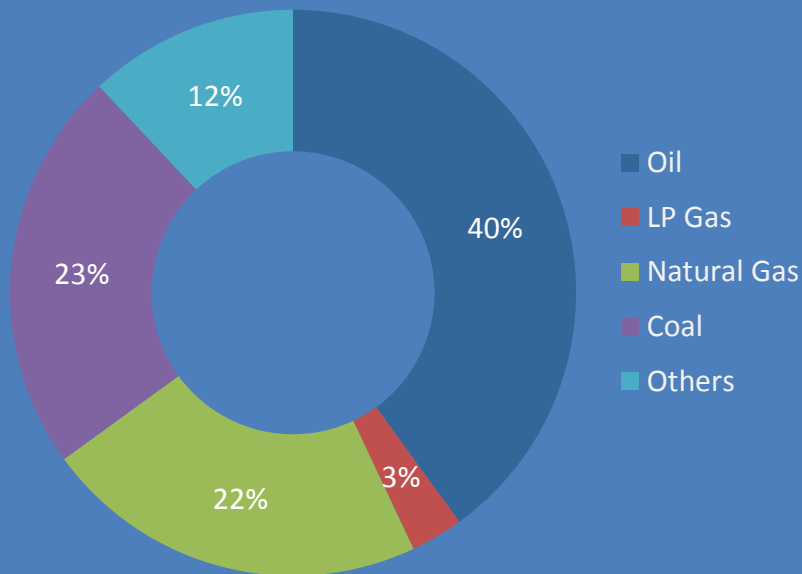
Conversion of petrol vehicles to LP Gas vehicles or introduction of new LP Gas vehicles

Grant: 1.2 billion yen (in approx.) (250 x 1,000 yen \geq 1/2 of conversion cost)



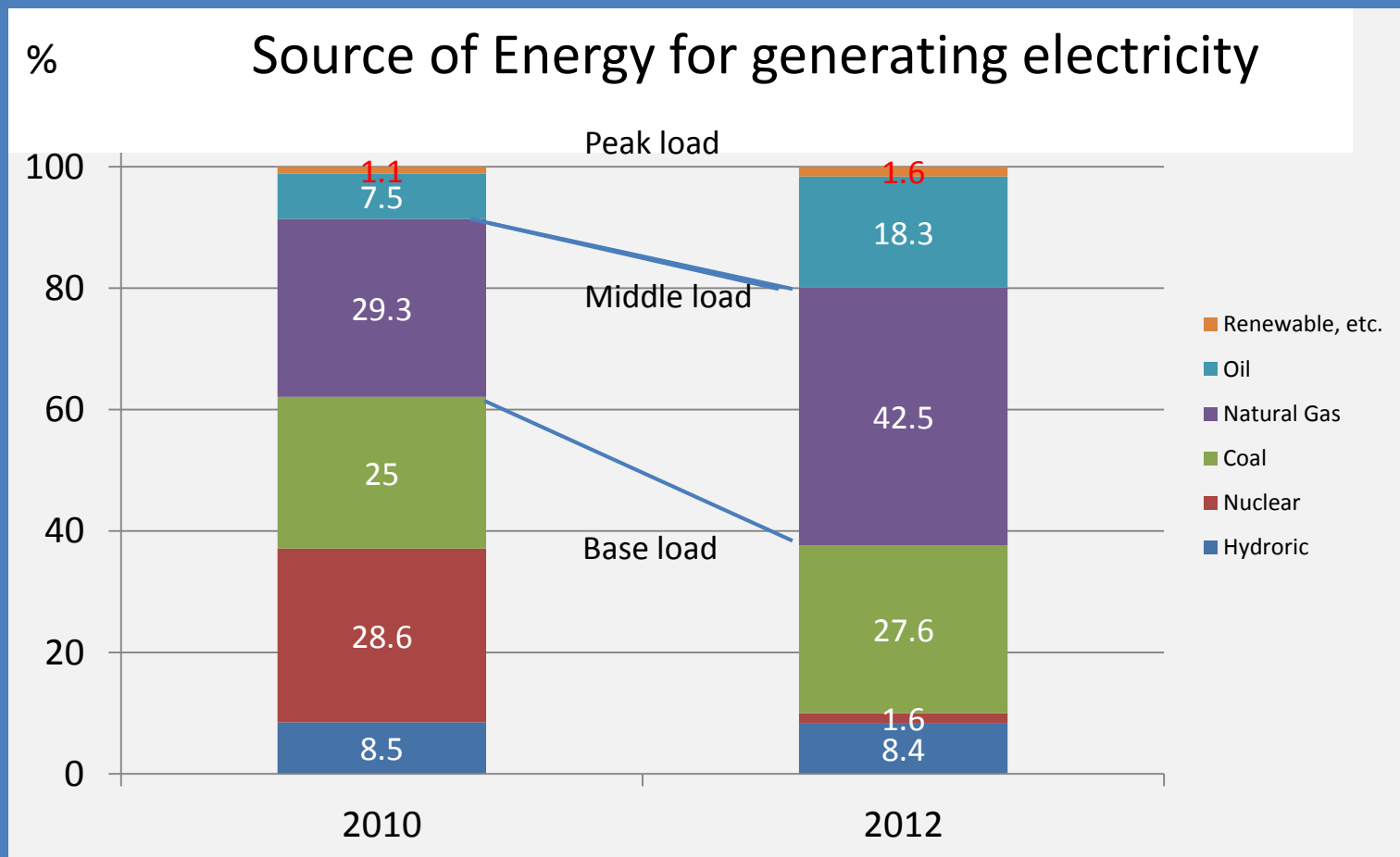
LP Gas position in Japan after 2011

LP Gas : 3% of the prime energy consumption , 5% of the secondary energy consumption (2011)



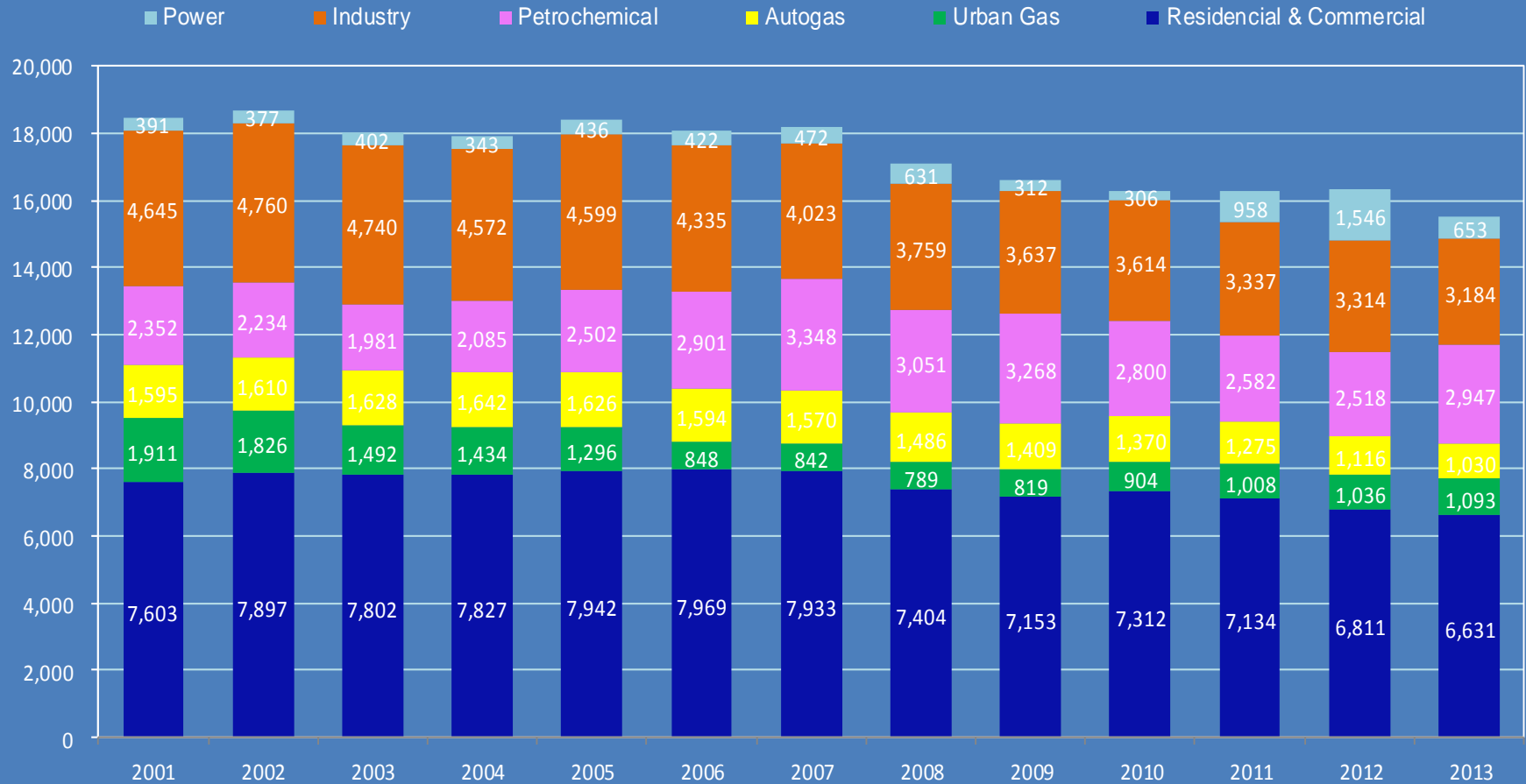
LP Gas position in Japan after 2011

Source of energy for generating electricity (2010 and 2012): LP Gas is expected to be a part of energy sources for the middle load electricity

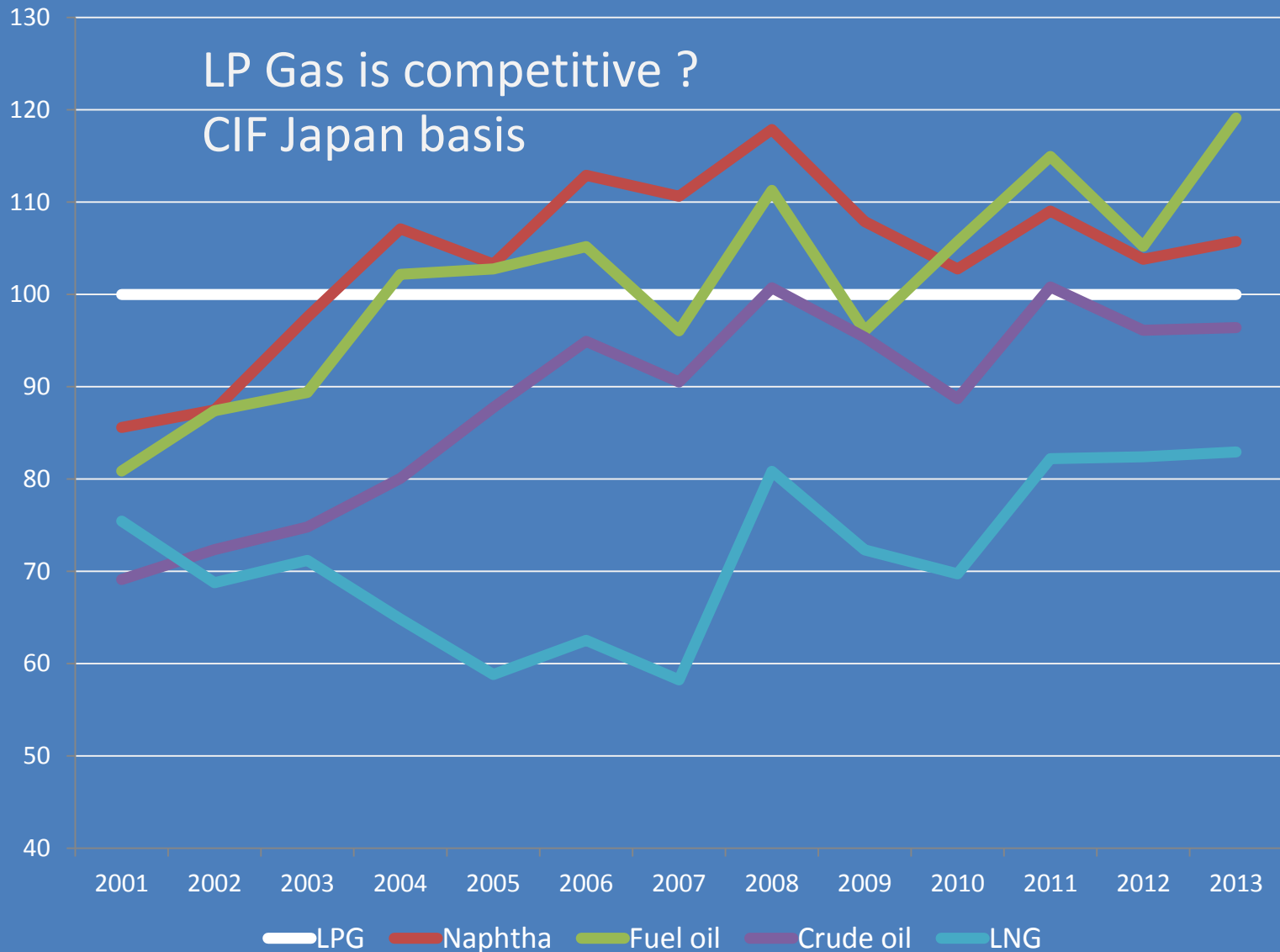


LP Gas position in Japan after 2011

- Demand of LP Gas is forecasted to be sustained at around the current level till 2018



LP Gas position in Japan after 2011



LP Gas position in Japan after 2011

LP Gas Demand in 2013 :15.6 million tons



Delivery van



Taxi



Steel



Ceramic industry



Fuel Cell
(ENE-FARM)



SI センサーコンロ



Boiler



GHP



CHP for commercial use



Boiler using
latent heat



GHPXAIR



Water boiler for
commercial use



Potable
generator

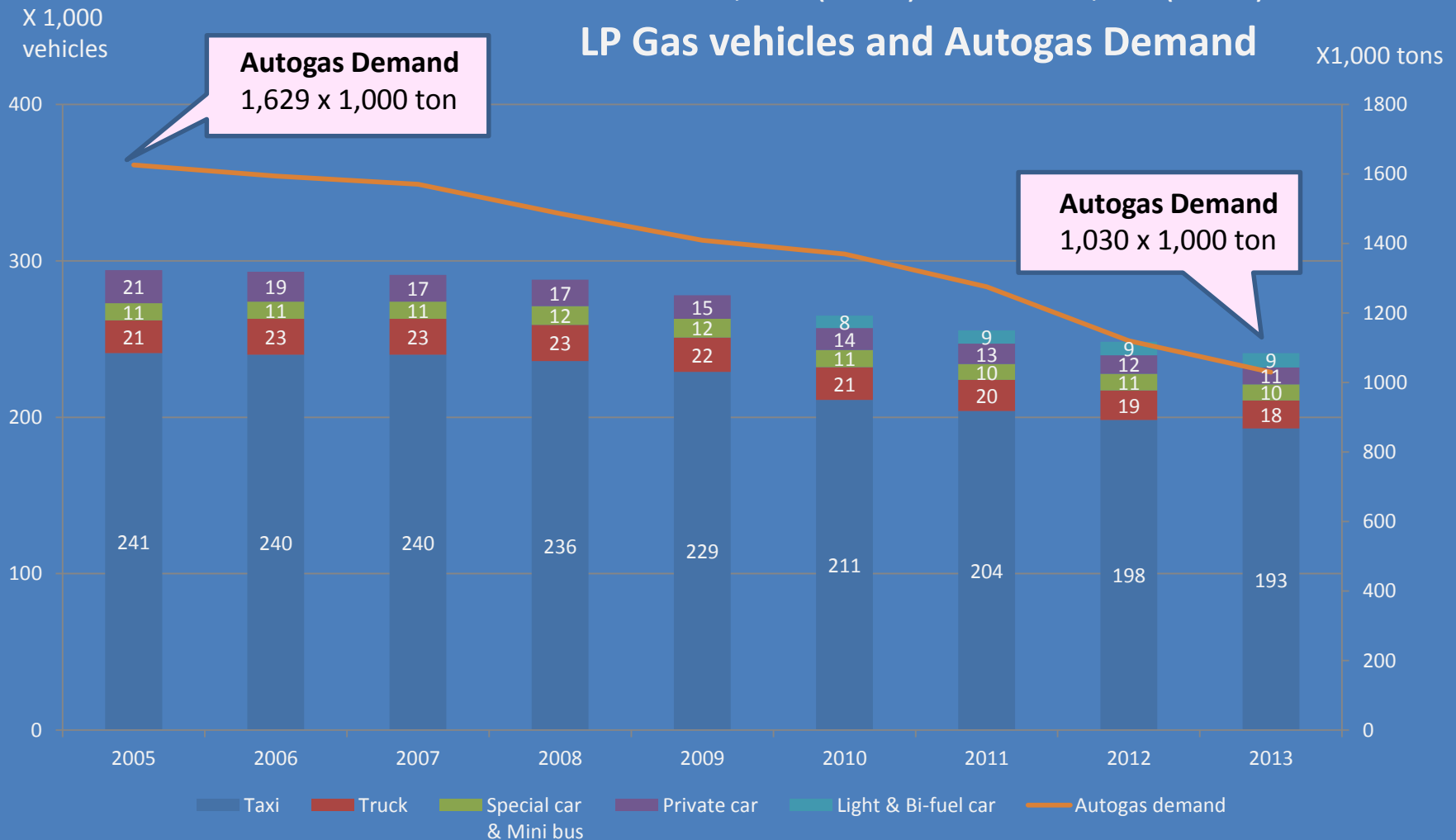
Sector	Demand	%
Residential & Commercial	6,631	43
Industrial	3,184	21
Petrochemical	2,947	18
Urban Gas	1,093	7
Autogas	1,030	7
Power	653	4
Total	15,538	100

LP Gas position in Japan after 2011

- The number of LP Gas vehicles has been decreasing

294 X 1,000 (2005) => 241 X 1,000 (2013)

The number of LP Gas taxis : 241 x 1,000 (2005) => 193 x 1,000(2013)



LP Gas position in Japan after 2011

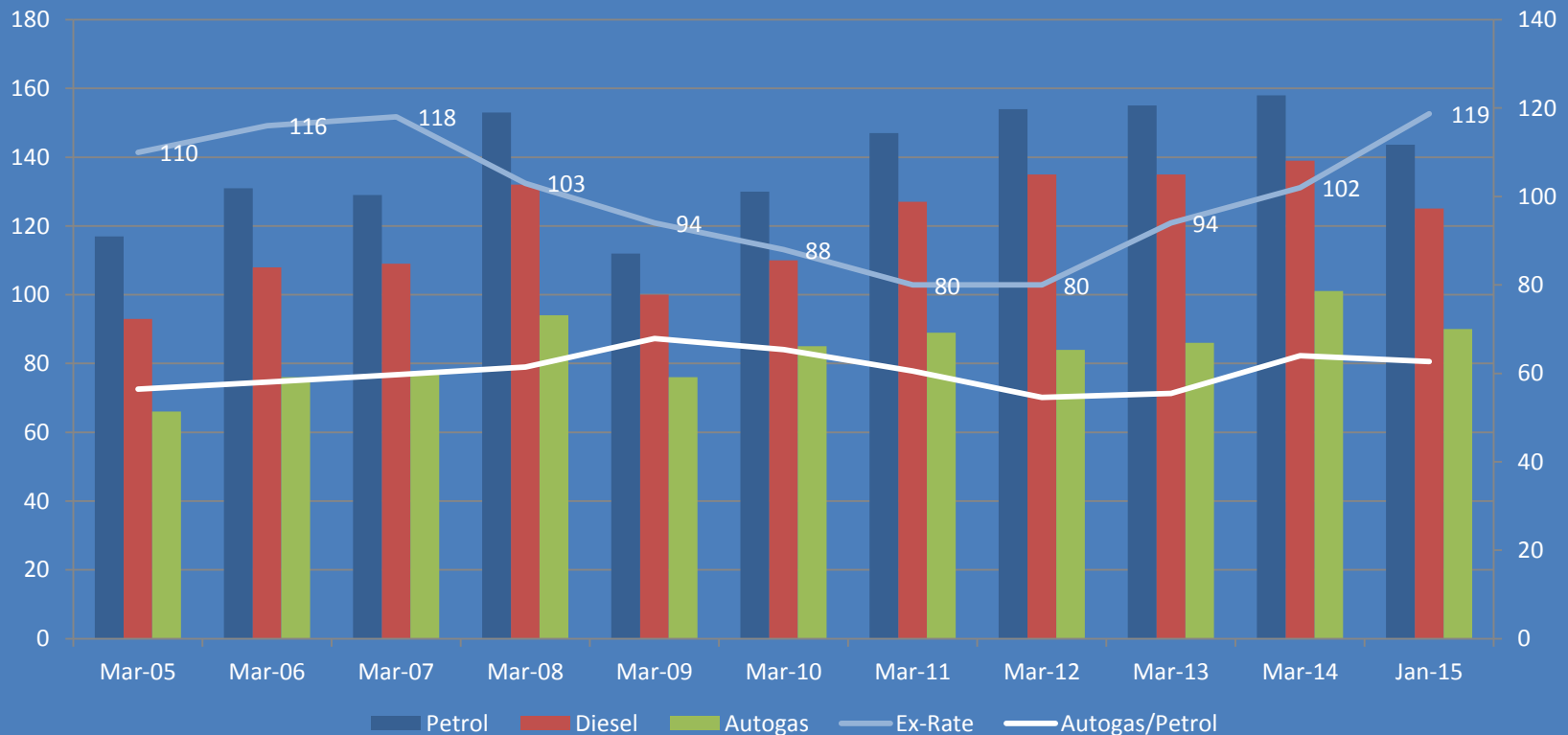
□ Autogas price is approx. 60% of Petrol price and 70% of Diesel price

Yen/l **Fuel prices in Japan**

Fuel tax on
Autogas is
advantageous

Fuel Tax
Autogas : 9.8yen/l
Diesel : 32.1yen/l
Petrol : 53.8yen/l

%



Conclusions



- LP Gas waterborne supply from North America is a key driver for LP Gas market growth
- Supply and demand will eventually be balanced. LP Gas from North America can make LP Gas prices stable and competitive?
- The growth of the market is most eminently observed in Asia-Pacific region
- The increase of Autogas demand is most significant globally

Thank you

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