Natural Gas Industry in Korea and the Role of KOGAS

IGU Joint Committee Meeting

Seoul, Korea

11 March 2014

Korea Gas Corporation

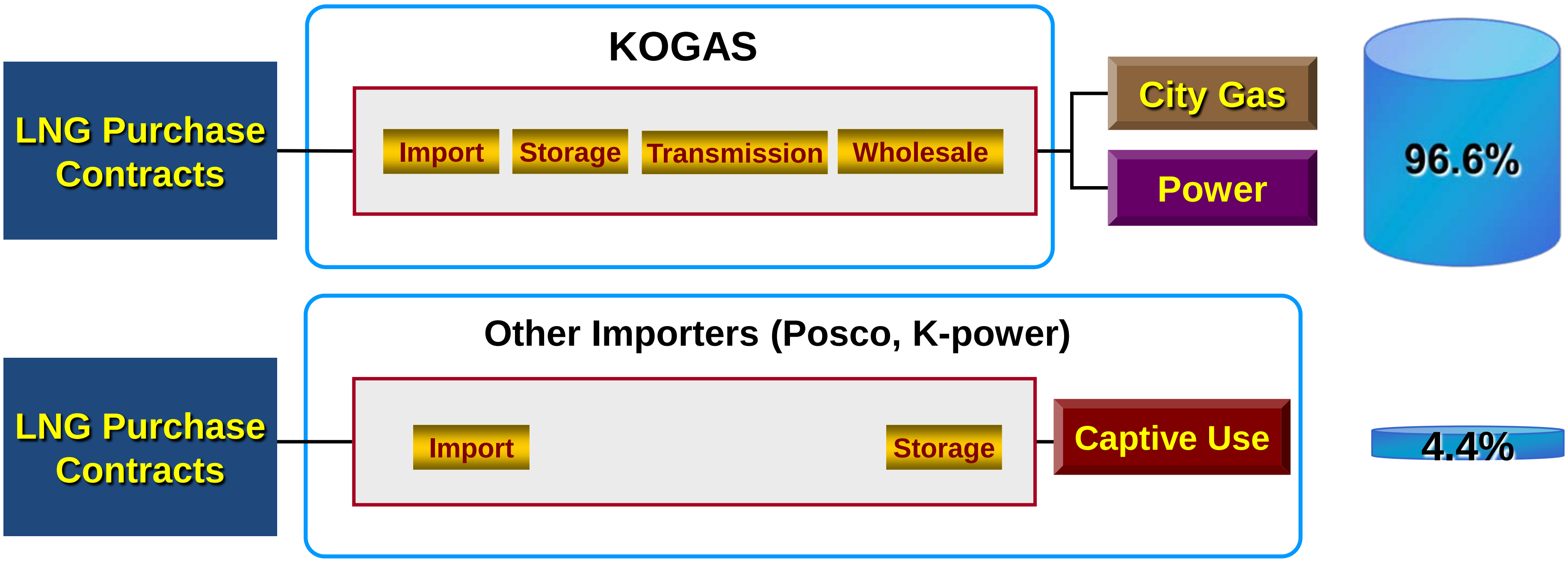
Contents

1. Korea Natural Gas Industry (Importers)

- Korea imported 40.7MT of LNG in 2013
  - KOGAS : 39.3MT, Private companies : 1.4MT.

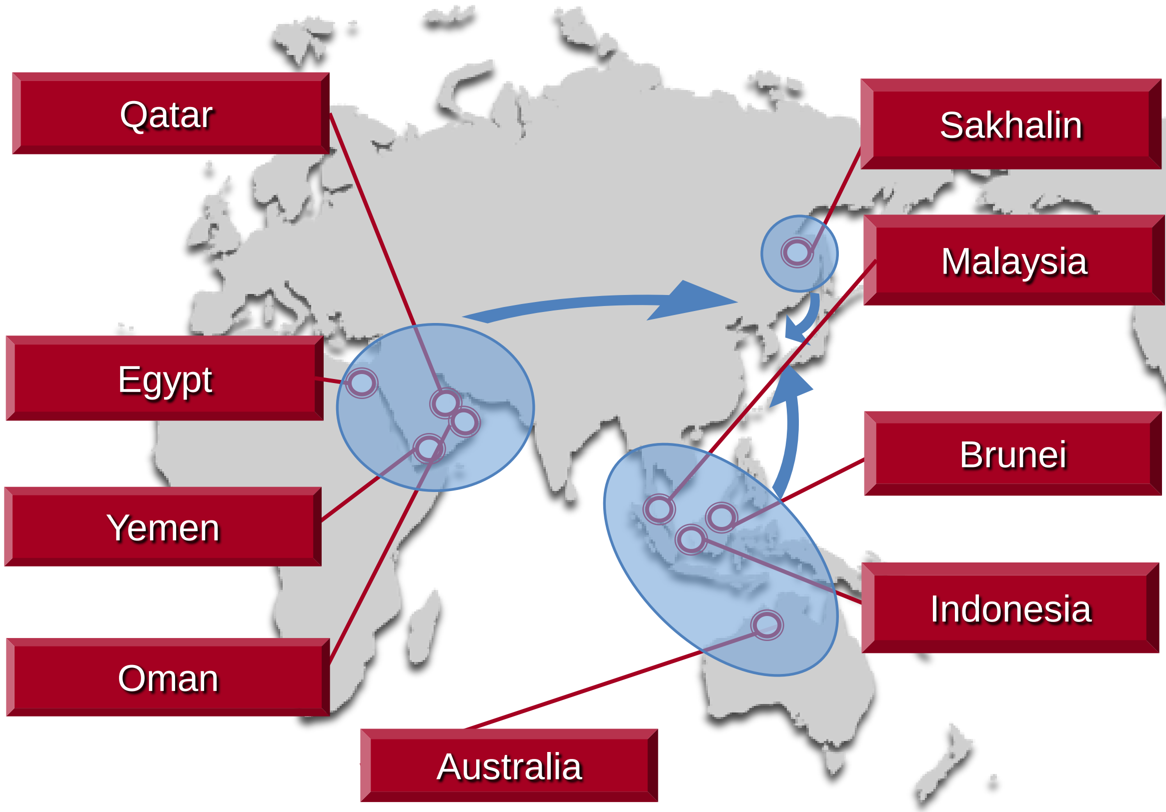
KOGAS

- **World's largest LNG Buyer as single company**
- **Sole natural gas wholesaler in Korea**



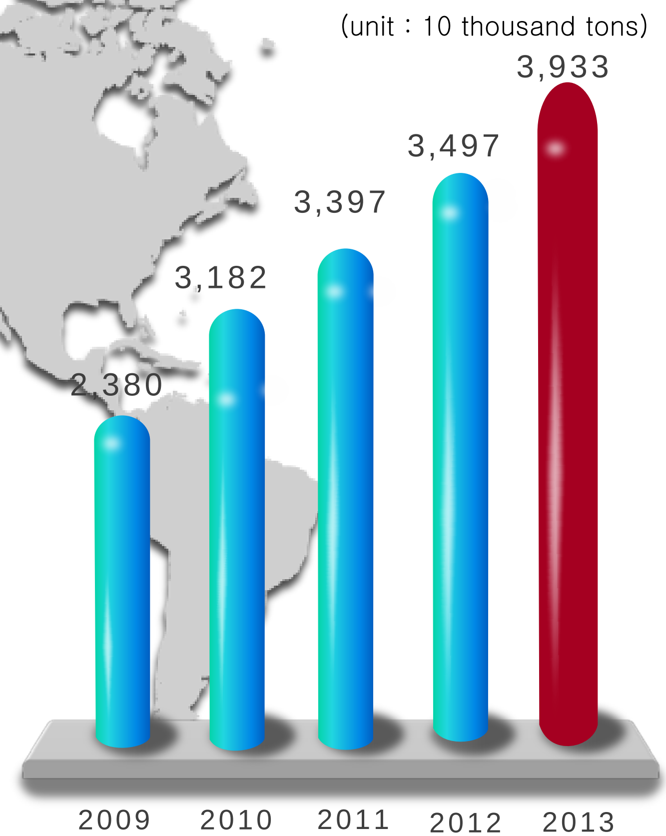
1. Korea Natural Gas Industry (Import Portfolio)

- **16** Long term and **3** Mid-term contracts in **10** countries over the world



Sabine Pass (USA) : 2.8mn tons/yr

LNG Import



1. Korea Natural Gas Industry (Storage Tanks)

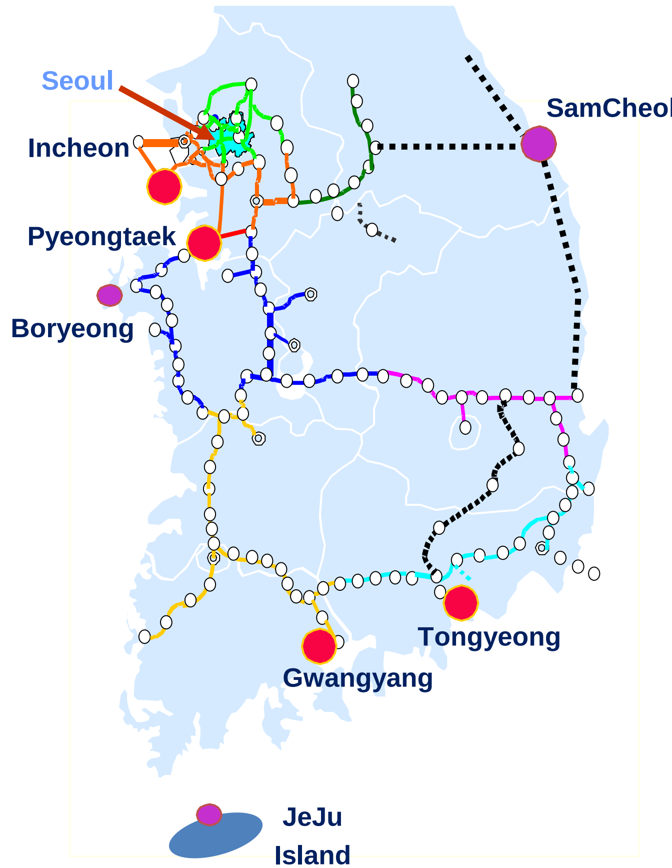
<KOGAS>

Receiving Terminal	No. Tanks	Capacity(M^3)/Tank	Sub-Total Capacity(M^3)	Remark
Pyeongtaek (23)	10	100,000	1,000,000	
	4	140,000	560,000	
	9	200,000	1,800,000	
Incheon (20)	10	100,000	1,000,000	
	2	140,000	280,000	
	8	200,000	1,600,000	
Tongyeong (17)	13	140,000	1,820,000	
	4	200,000	800,000	
Samcheok (12) (4th Terminal)	*3*	*200,000*	*600,000*	*by '14*
	4	*200,000*	*800,000*	*by '15*
	2	*200,000*	*400,000*	*by '16*
	3	*270,000*	*810,000*	*by '17*
Total Capacity	**60 + 12**	**8,860,000 (4.0 MMton) + 2,610,000 (1.1 MMton)**		

* Small size terminal in JeJu Island targeting Dec 2017 : 1 Tank(25,000M^3)

<POSCO>

Receiving Terminal	No. Tanks	Capacity(M^3)/Tank	Sub-Total Capacity(M^3)	Remark
Gwangyang (3)	2	100,000	200,000	
	1	165,000	165,000	
	1	*165,000*	*165,000*	
Total Capacity	**3 + 1**	**365,000(0.17MMton) + 165,000(0.7MMton)**		

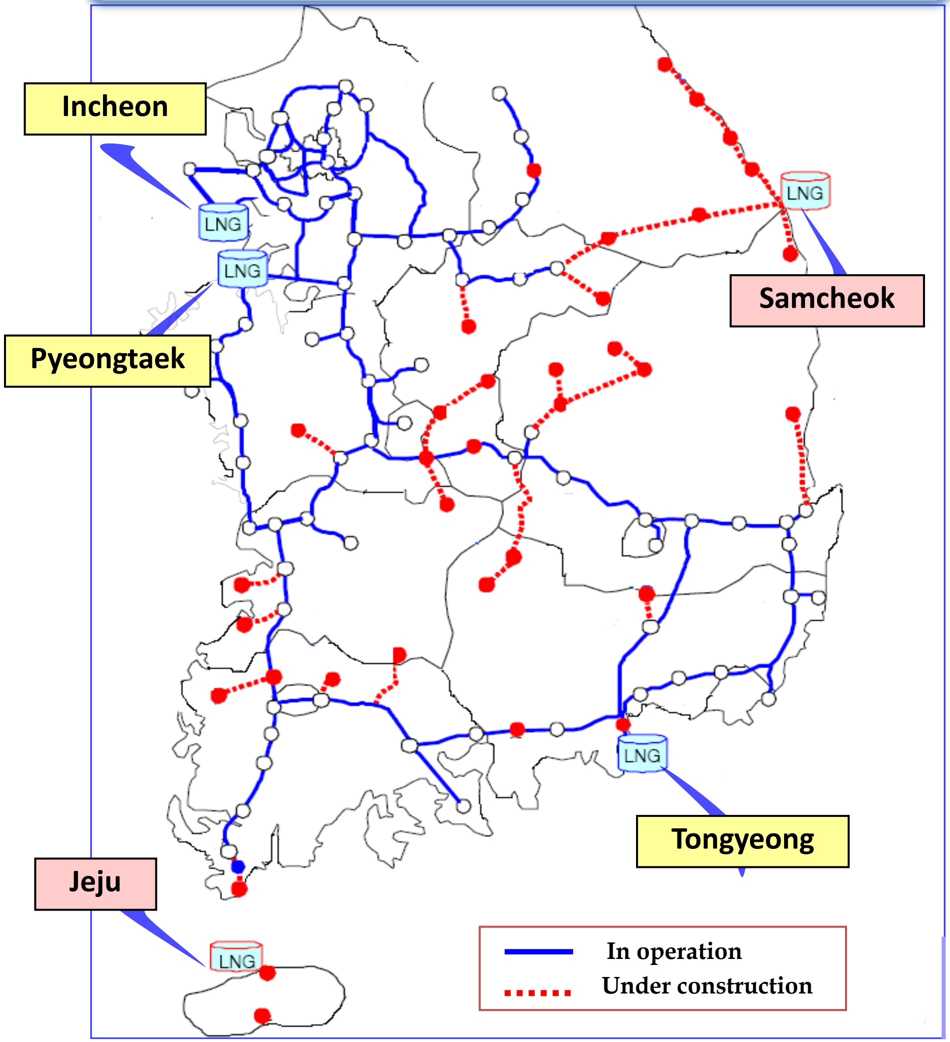


<GS Caltex & SK E&S>

Plan to build 3 Storage Tanks(20KM^3) in Boryeong

1. Korea Natural Gas Industry (Trunkline)

Ring-shaped nationwide pipeline network



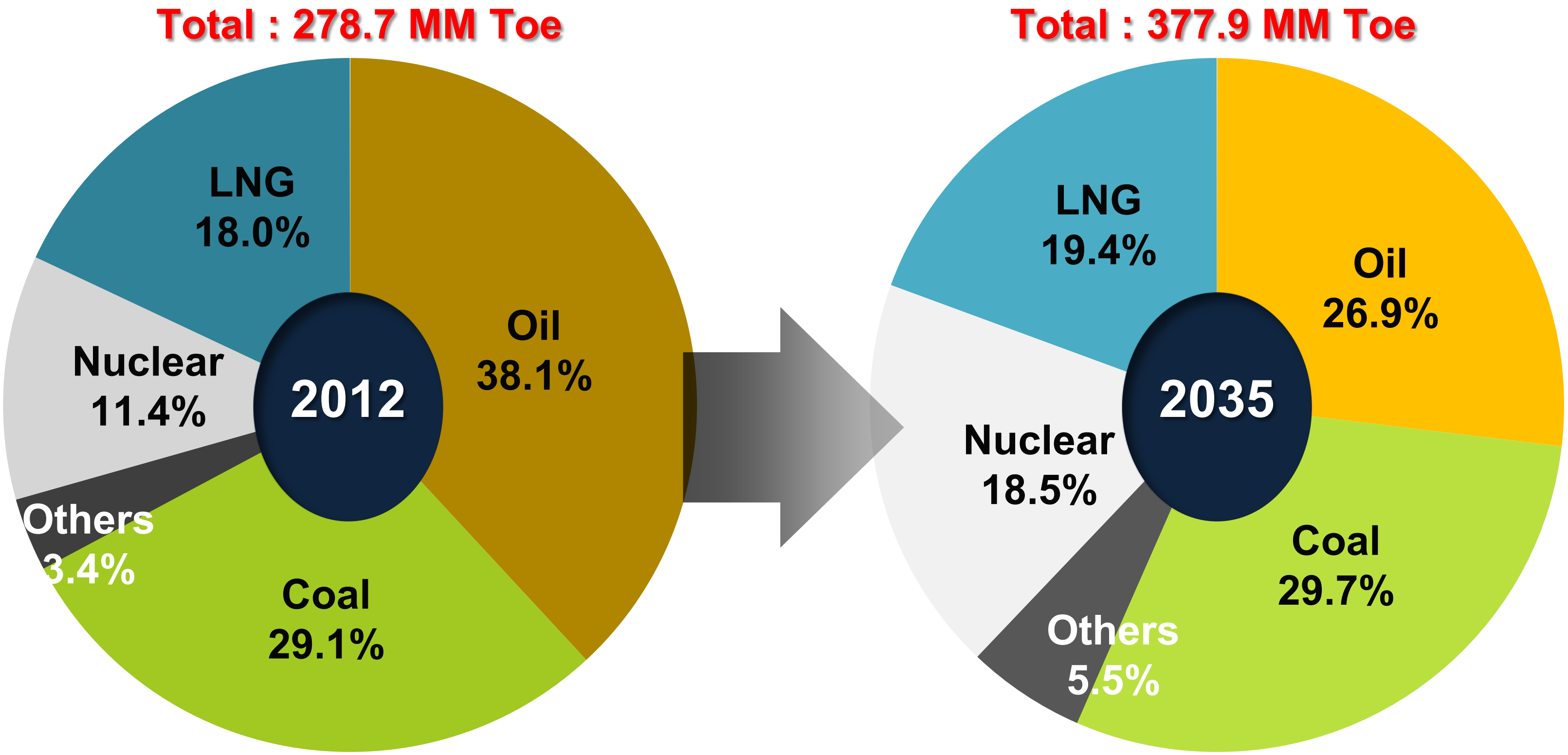
- Ring-shaped pipeline for stable and safe supply.

- **Main pipeline : 4,065km**
- **Under construction : 879km**

→ Total **4,944** km by 2017

2. Korea LNG Demand (Primary Energy Mix)

Primary Energy Mix (Fuel)



Oil : 38.1% → 26.9% ⬇

Coal : 29.1% → 29.7% ⬆

LNG : 18.0% → 19.4% ⬆

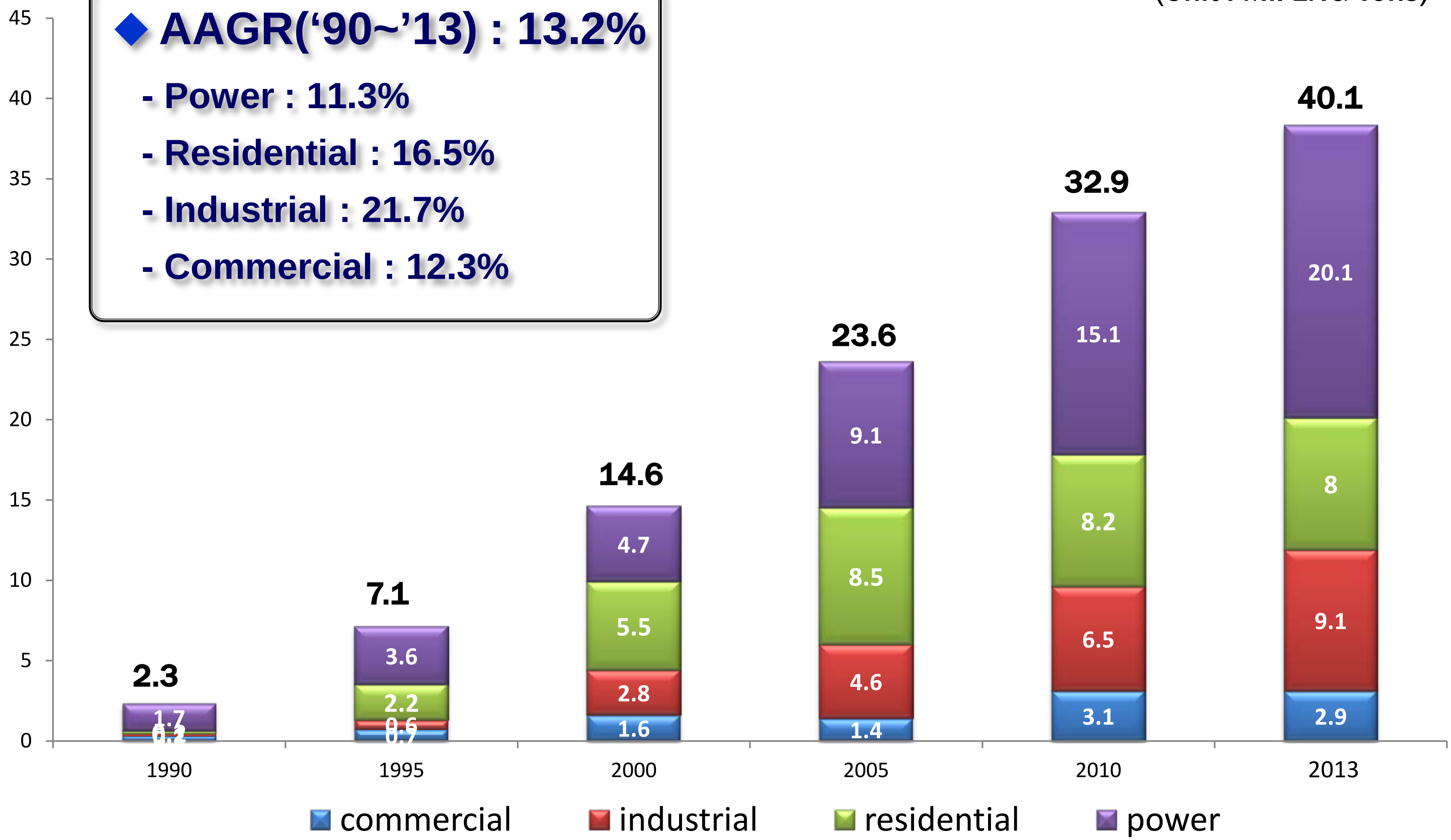
Nuclear : 11.4% → 18.5% ⬆

2. Korea LNG Demand (Per Detailed Use)

(Unit : Mil LNG Tons)

◆ **AAGR('90~'13) : 13.2%**

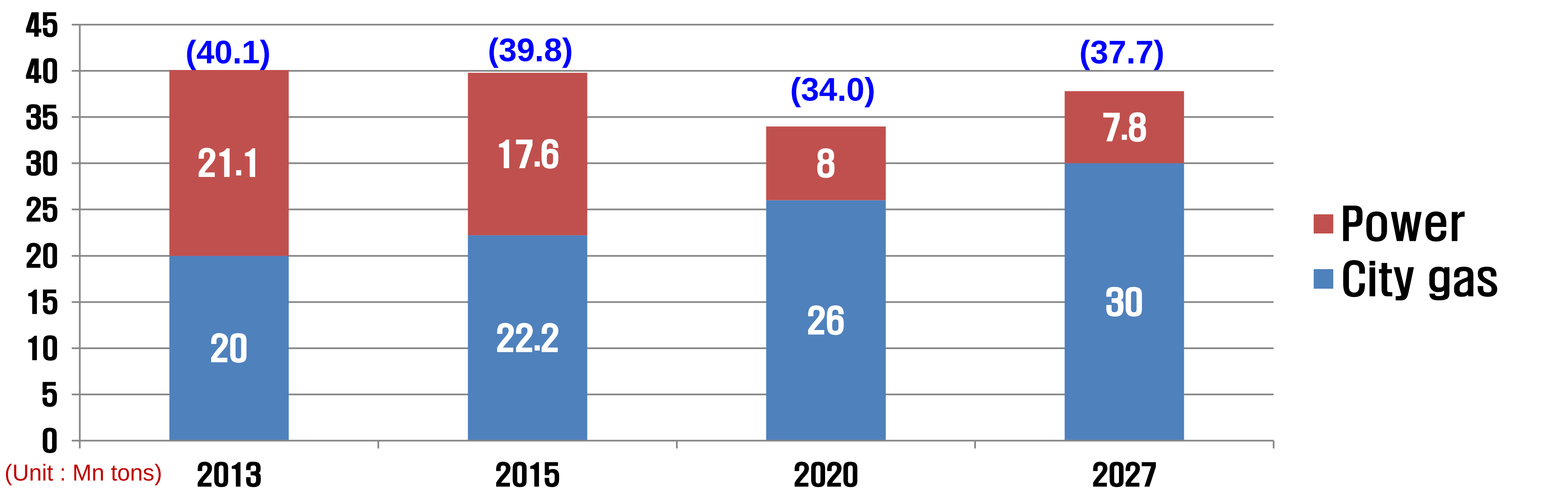
- **Power : 11.3%**
- **Residential : 16.5%**
- **Industrial : 21.7%**
- **Commercial : 12.3%**



Source: KOGAS Internal Report 2013

2. Korea LNG Demand (Latest Long Term Forecast)

- **Overall Natural Gas demand** in Korea is expected to decrease from 2013 to 2027 by **0.4%** annually.
- **City gas demand** will **increase** by **3%** per annum during that period.
- **Power demand** would be **drastically decreased** from 2013 to 2027 by annual average of **6.8%** due to Nuclear and Coal power generations growth for base-load.
- **Natural Gas Demand will be modified in early 2014** In line with the 2nd National Primary Energy Plan(January 2014), which contains CO_2 emission target, Nuclear power plant, and New Renewable Energy etc.



(Source : 11th Long-term Natural gas Demand-Supply Forecast by MOTIE)

3. National Energy Basic Plan (2^{nd})

- **Overview**

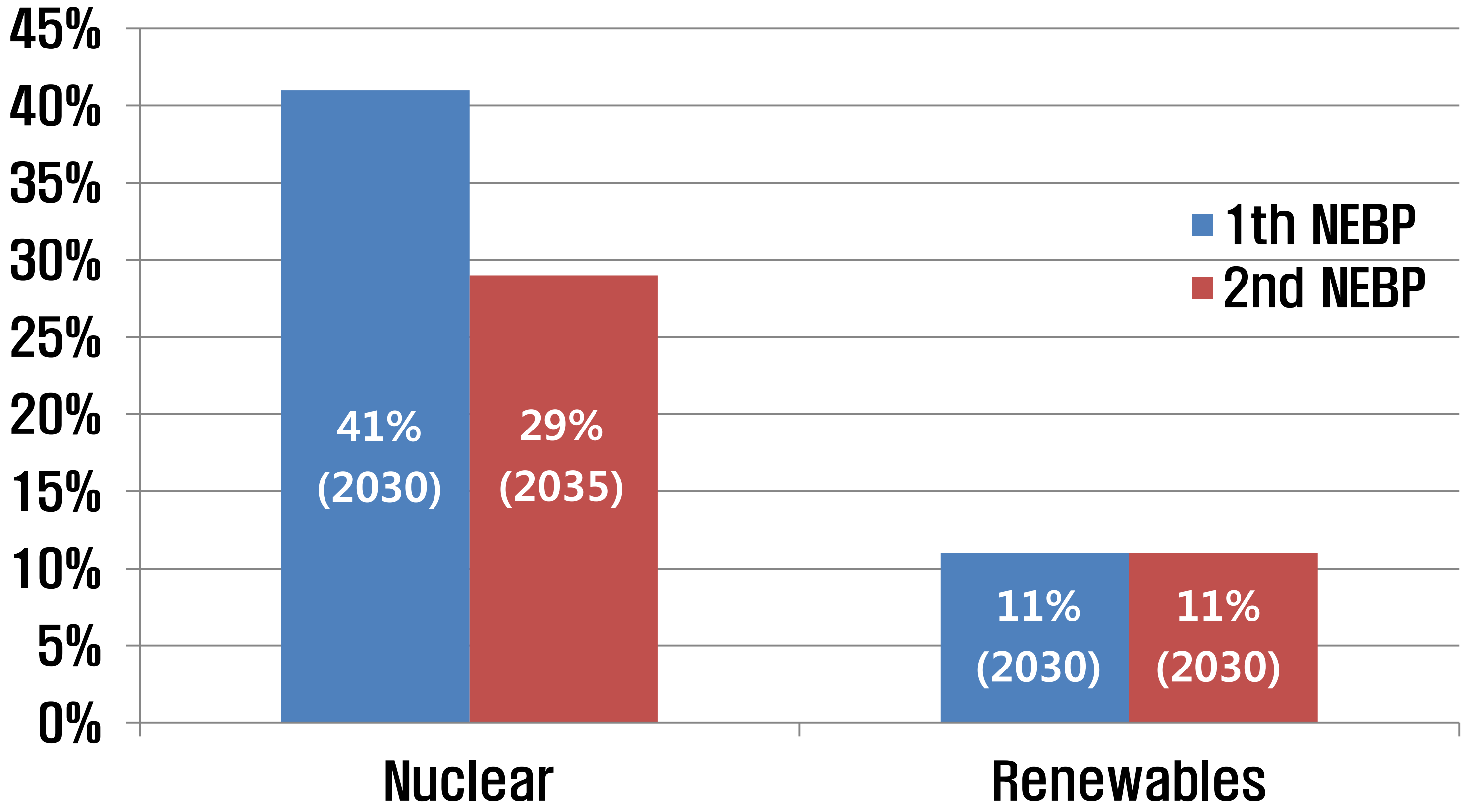
- Term : 2014~2035
- Drafted by Private and Public Joint Working Group

- **6 Main Objectives**

- (Demand Management) 15% Reduction in Power Demand
- (Distributed Power Grid) 15% of Power Demand
- (Environment, Safety) Reduction of Green-house Gas Emission
- (Energy Security) Expansion of Renewable Energy
- (Energy Portfolio) Refinement of Sources of Energy
- (Energy Welfare) Energy Voucher (2015)

3. National Energy Basic Plan (2nd)

- **Energy Mix**



3. National Energy Basic Plan (2^{nd})

- **Natural Gas Consumption Ratio in the Future is uncertain due to the Gov't Policy for Demand Control and Electricity Mix**

① Demand Control : Final Energy 13.3%, Power 15%

② Electricity Mix

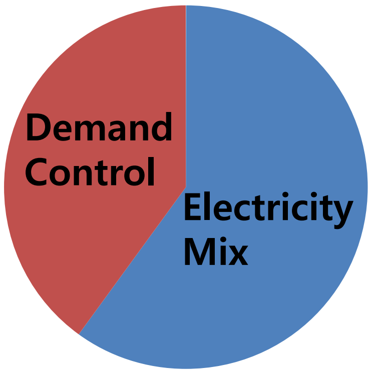
- **(Nuclear Power)** decrease to the level of 29%(2035), from 41%(2030) in the 1^{st} NEBP
- **(Renewables)** maintain the level of 11%(2035), 11%(2030) in the 1^{st} NEBP

LNG Demand Forecast in 2^{nd} NEBP

- Increase in City Gas Demand
- Increase in Power Demand & Decrease in Nuclear Power Ratio

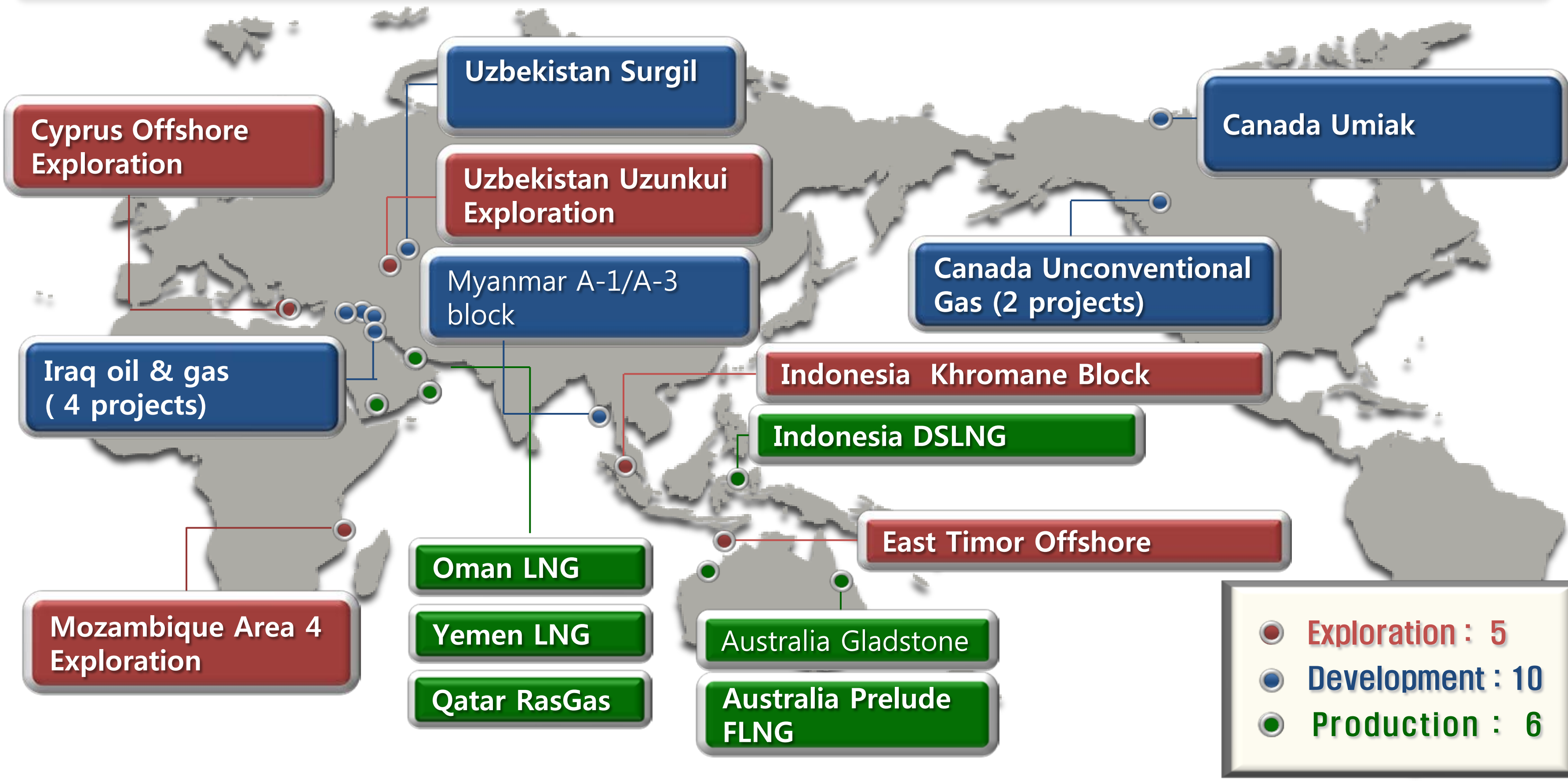
☞ <u>**Natural Gas Demand is expected to Rise**</u>

<Uncertainty>



4. KOGAS E & P Activities

- 21 projects in 12 countries (Exploration 5, Development10, Production 6)
  - 9 projects for both development and production



5. Korean LNG Procurement Strategy

Diversification of LNG Procurement Sources

To lessen dependence on the Middle-East region through procurement from North America, East Africa, Russia etc.

Procurement with Self-developed Projects

To give priority to Self-developed projects if it is economically viable.

Enhancing LNG Marketing Activities

To smoothly cope with the uncertainty of demand & the changes in global LNG market

Thank you !