

# Update on ROK Energy Sector and Energy policies

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### **II** Energy Policies and Projections

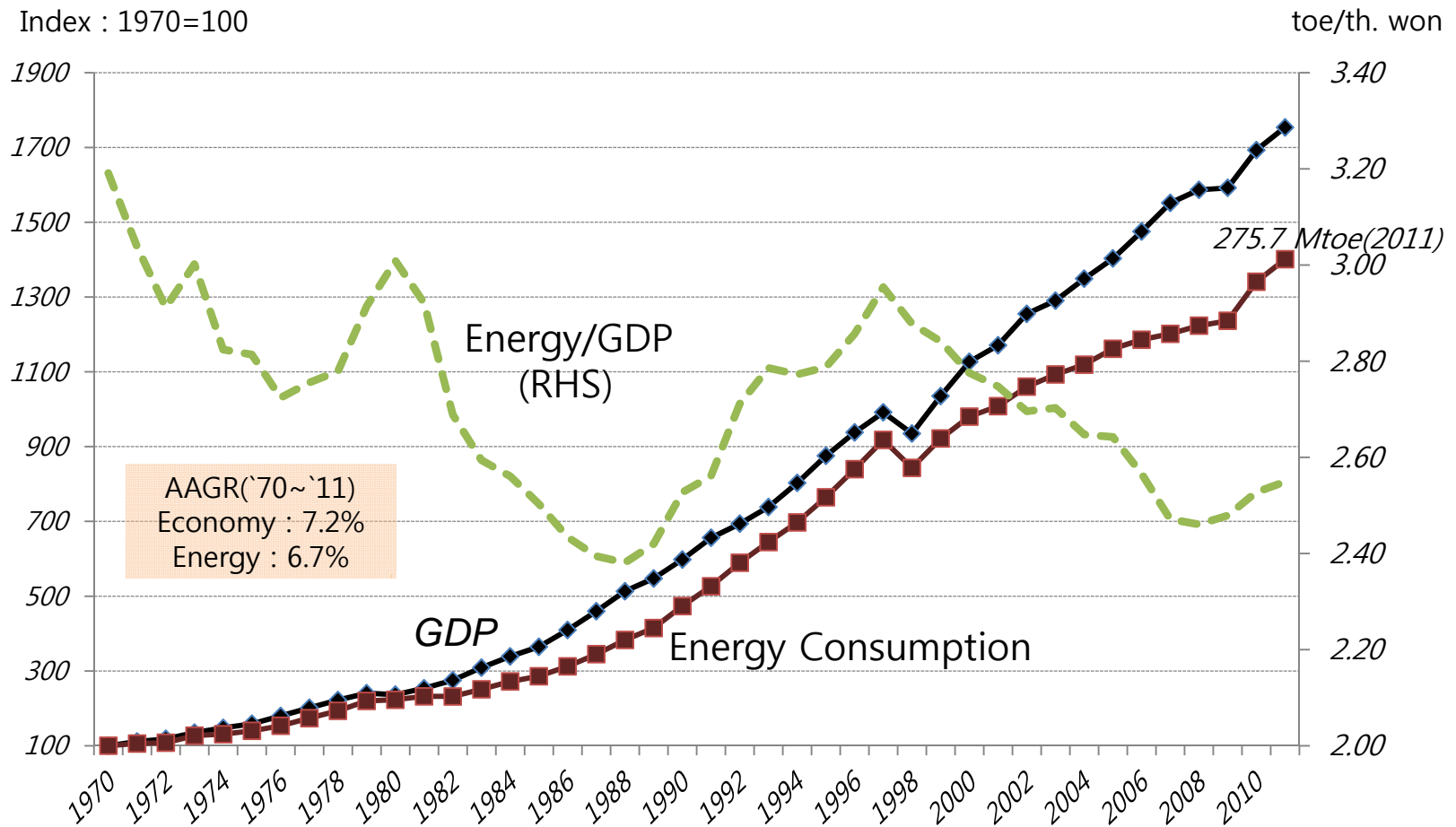
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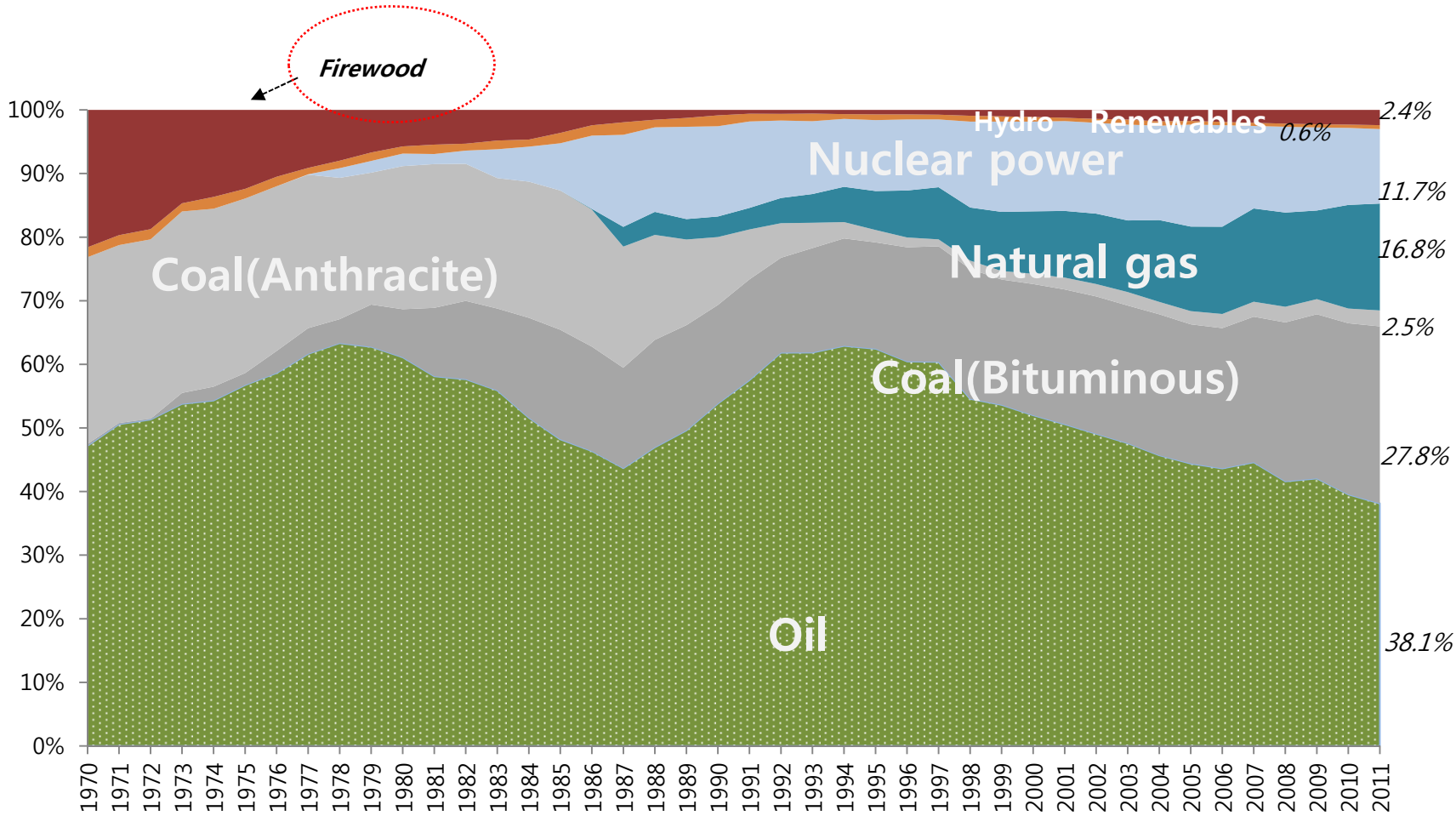
# I Energy Situation and Challenges in Korea

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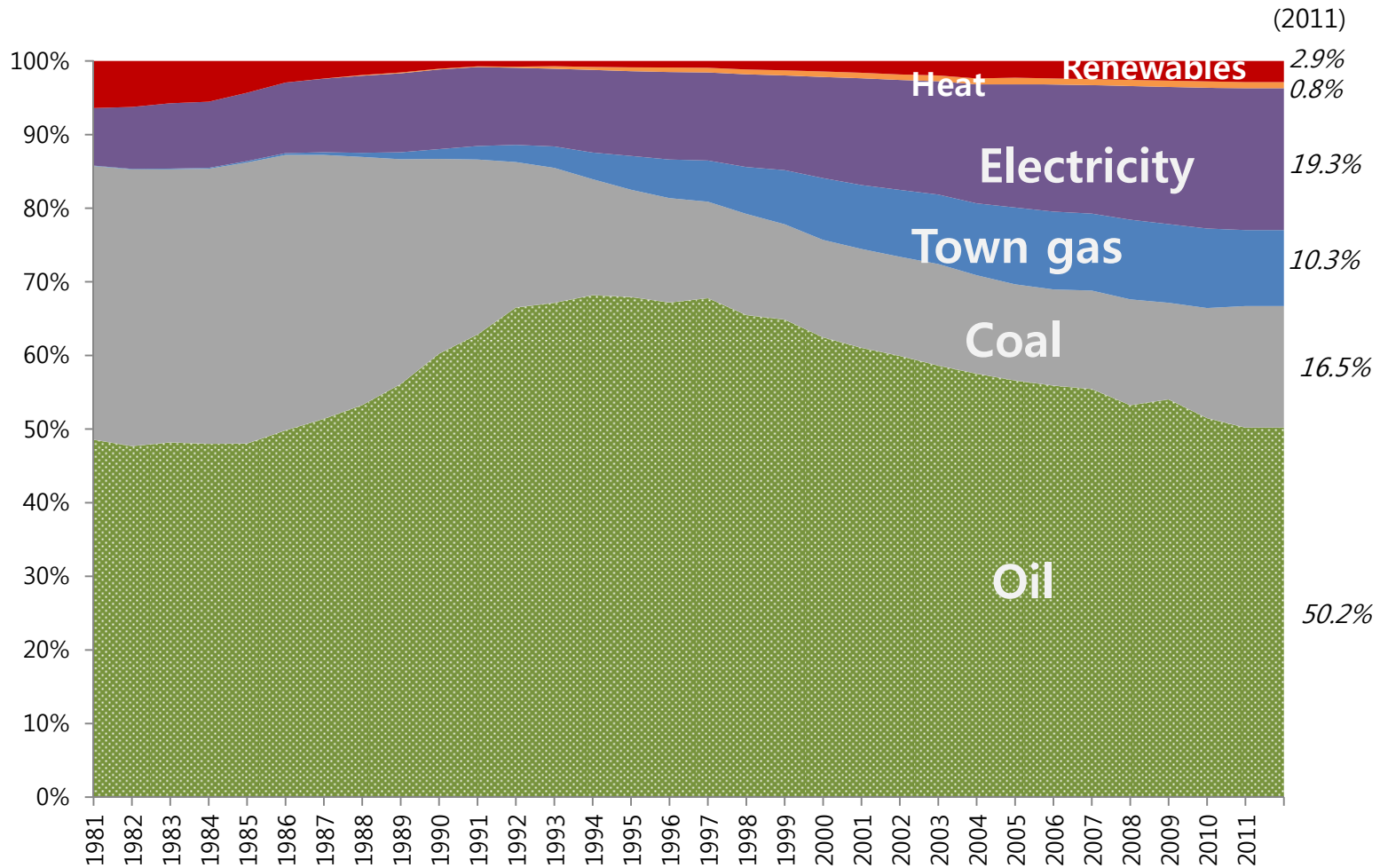
# Economic and energy growth



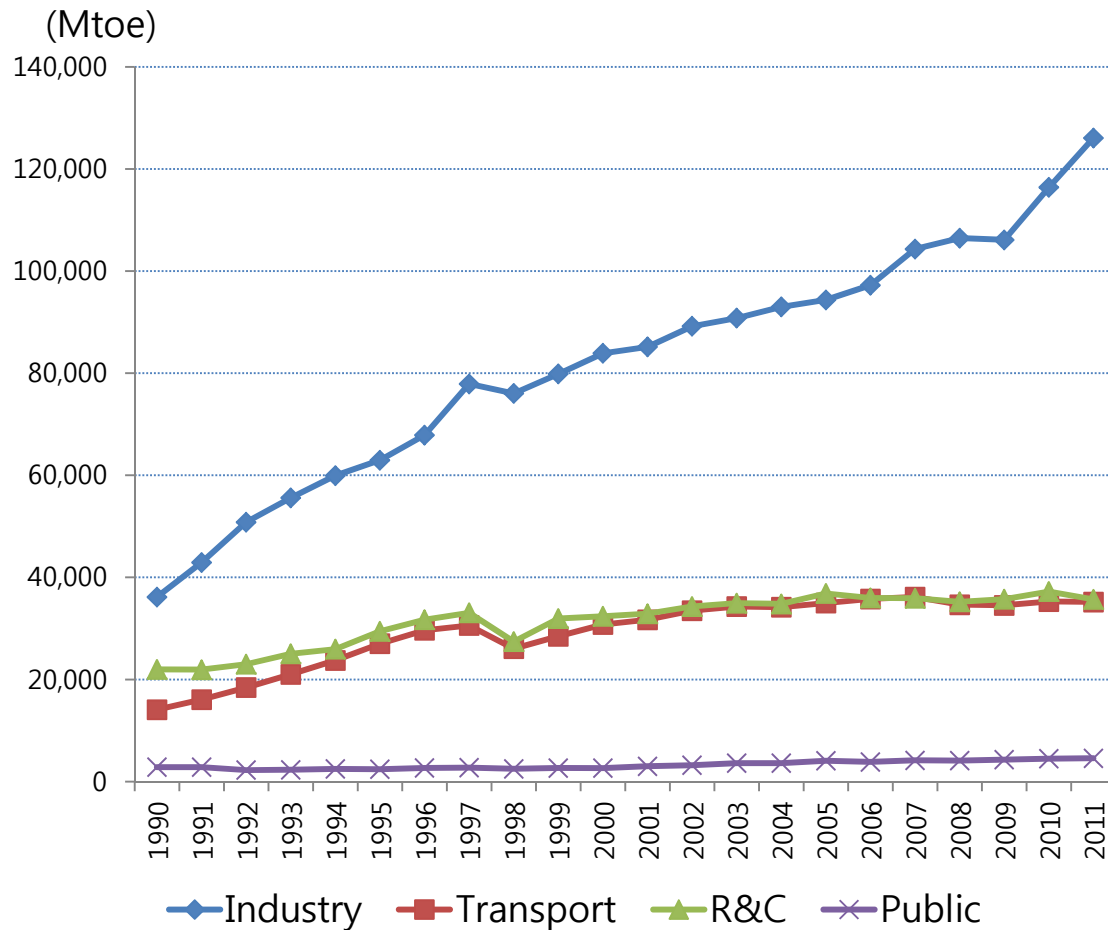
# Primary energy shares by sources



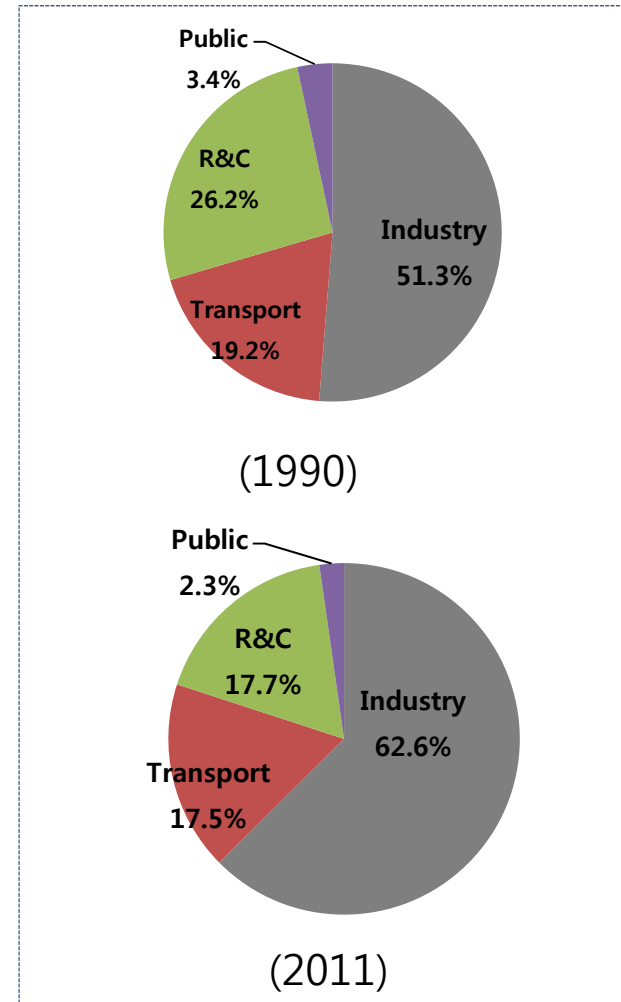
# Final energy shares by sources



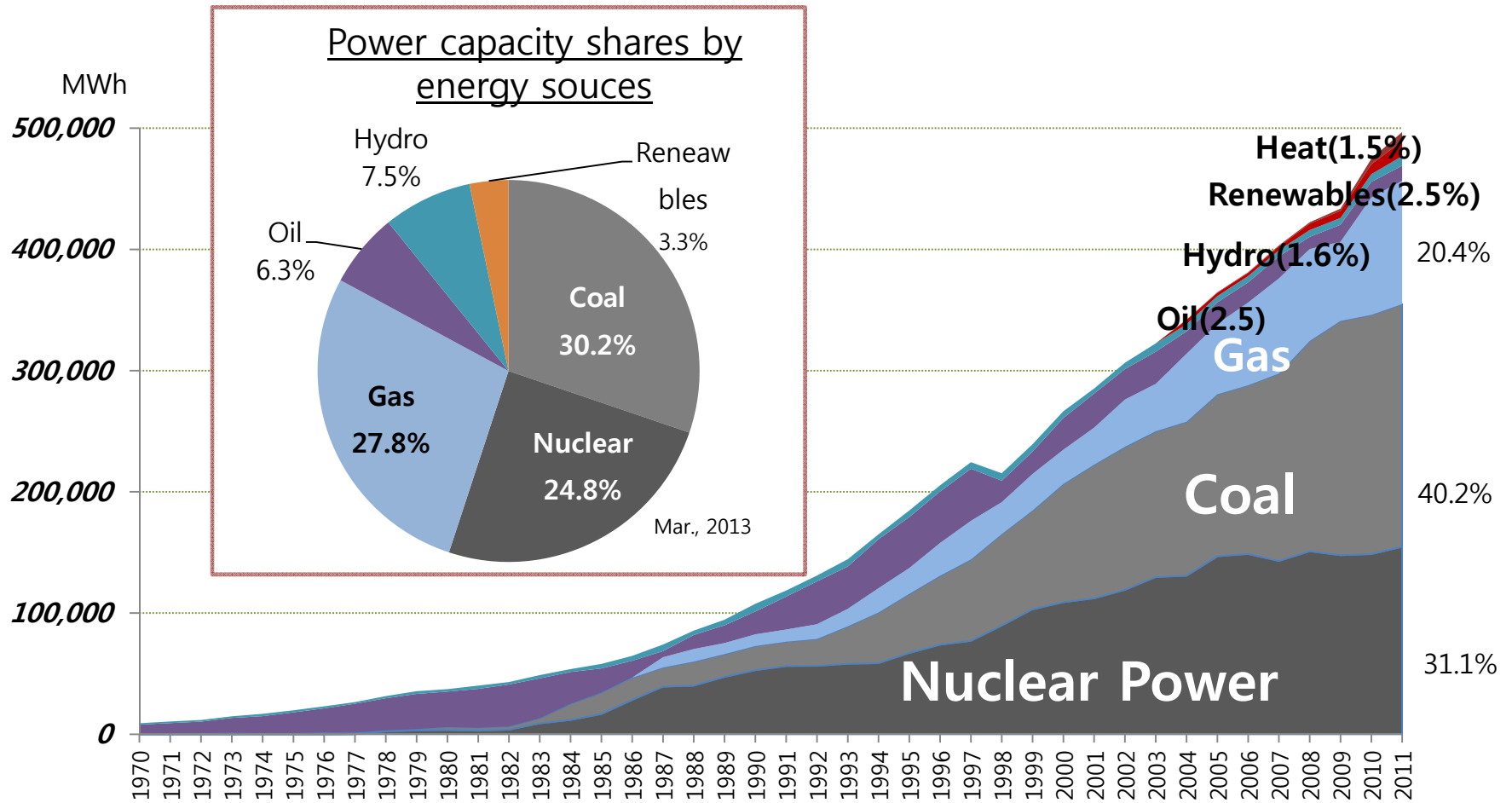
# Final energy shares by sectors



\* R&C: Residential & Commerce

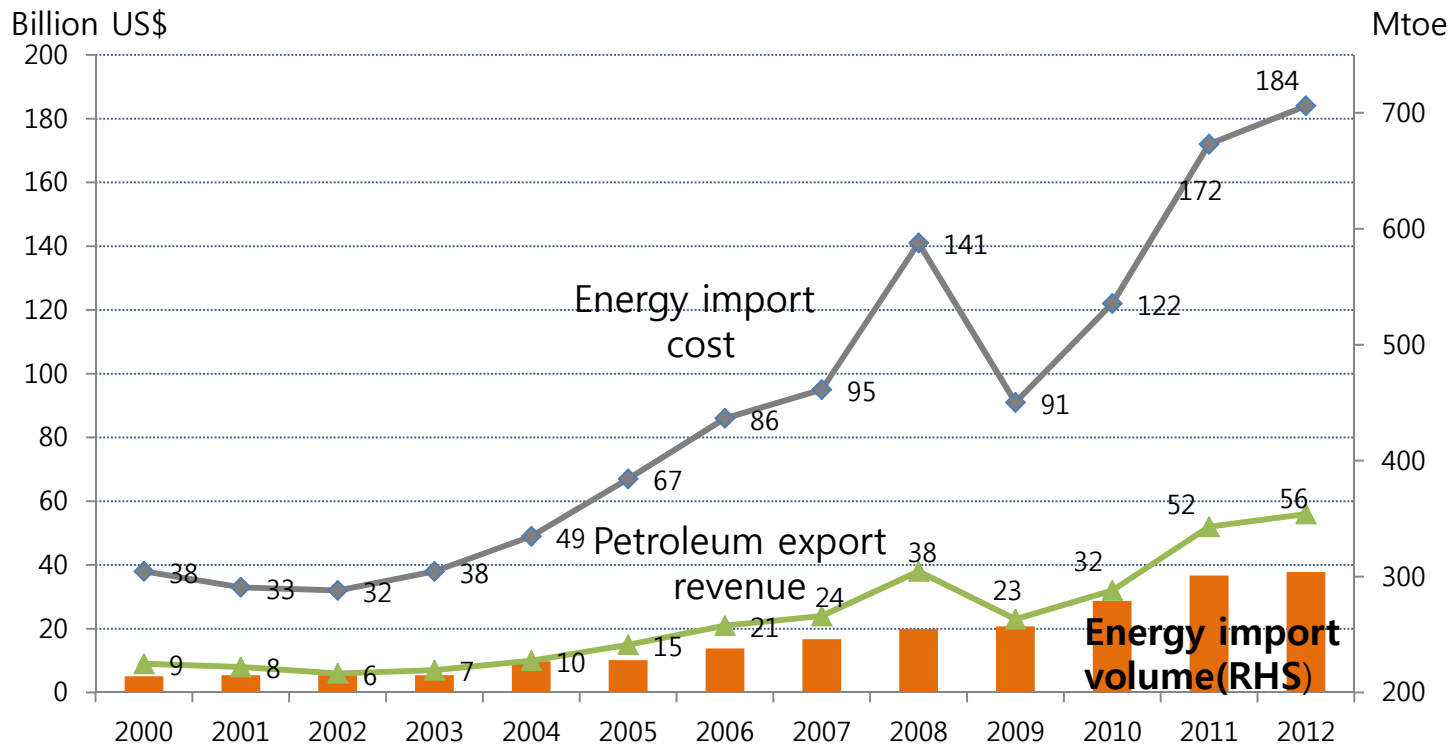


# Generation by energy sources



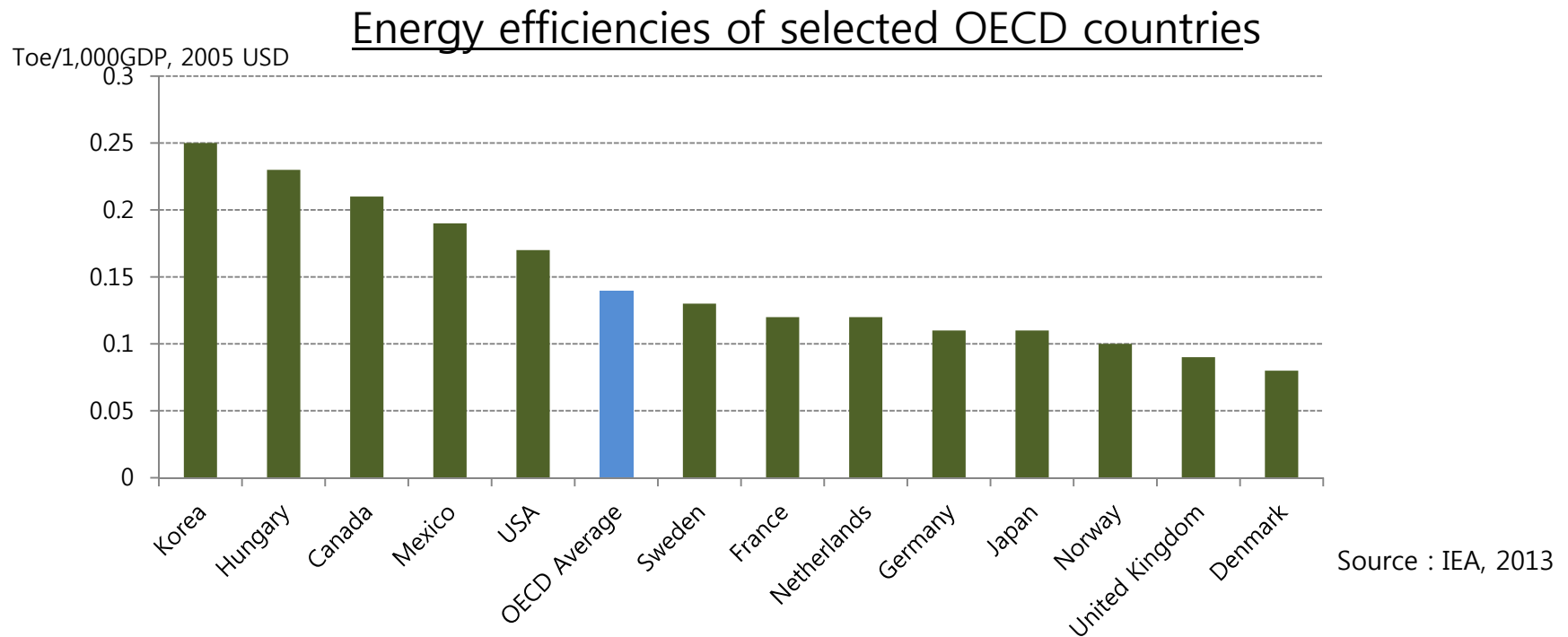


# Energy imports



Overseas dependency : 96.3%, Middle Eastern oil dependency : 87%  
 Energy import : \$184 billion, Energy import/Total import : 32.8%

# Energy efficiency



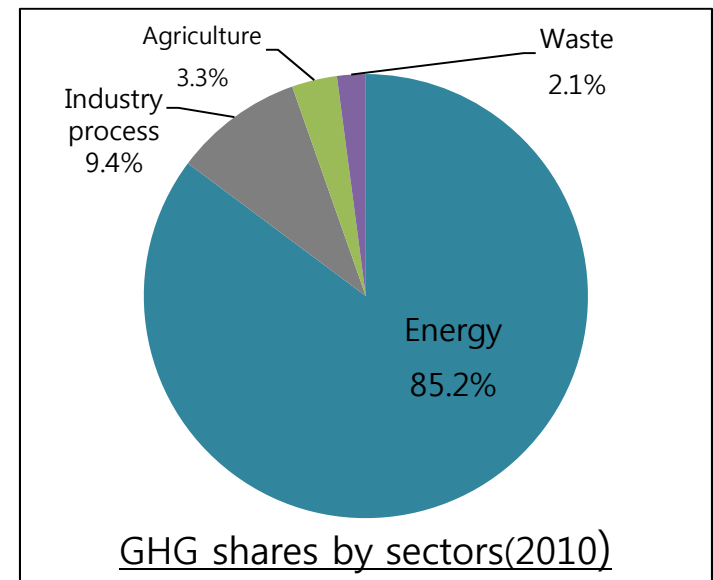
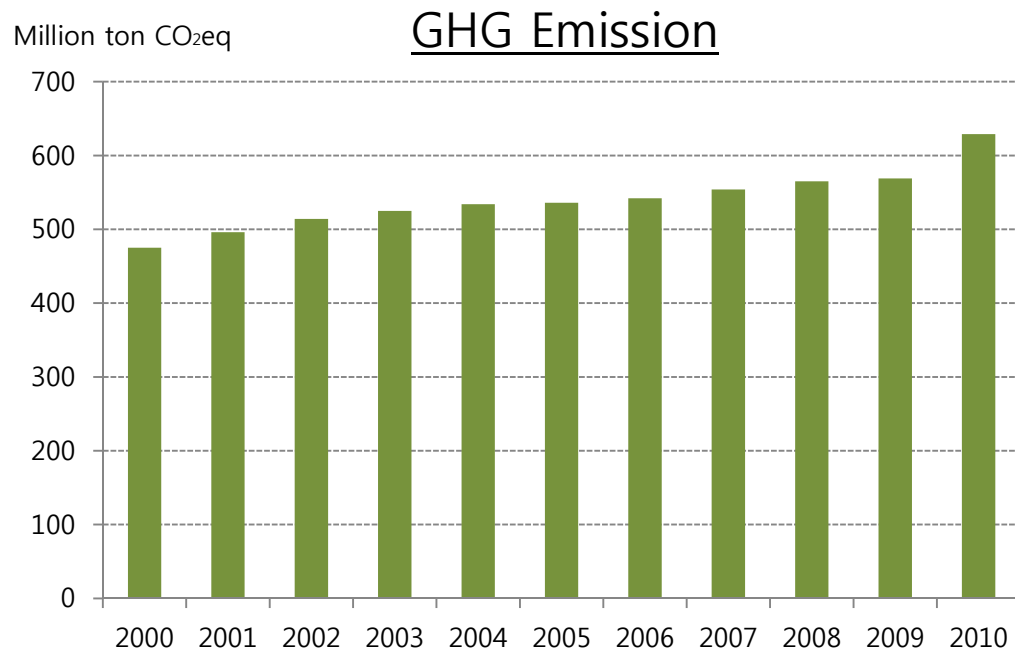
\* The higher share of manufacturing industry in GDP

- Share of service industry : ROK 40.1%, Japan 68.2%, USA 76.5%

\* The higher share of heavy energy consuming industries in manufacturing

- Share of Cement and Steel, Petrochemical in total energy : ROK 45%, OECD 22%

# Greenhouse Gas Emission



\* Korea is the World 9<sup>th</sup> largest GHG emission country

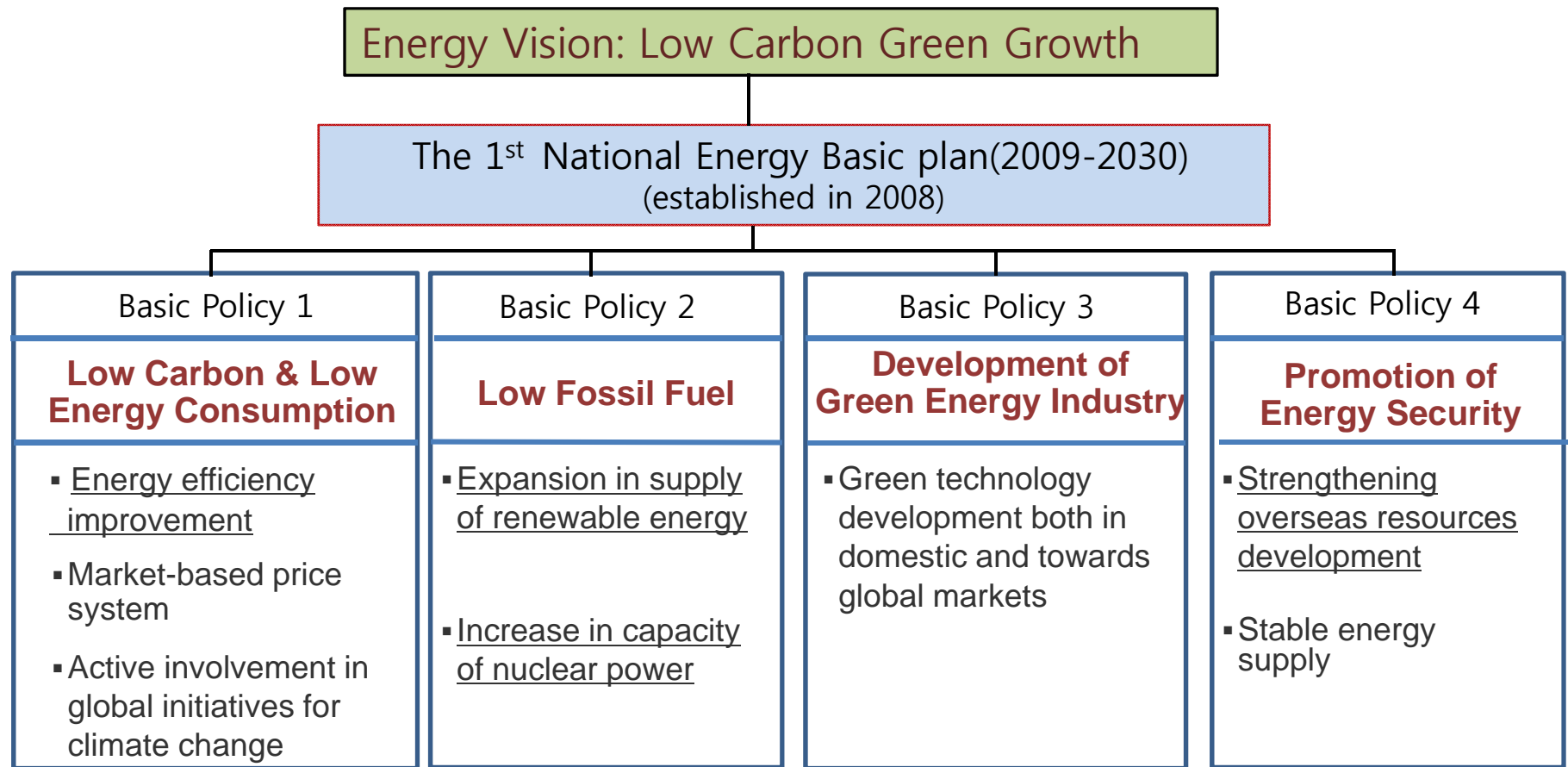
\* In 2008, the Korean Government announced a GHG reduction goal of 30% below the BAU level by 2020

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## **II** Energy Policies and Projections

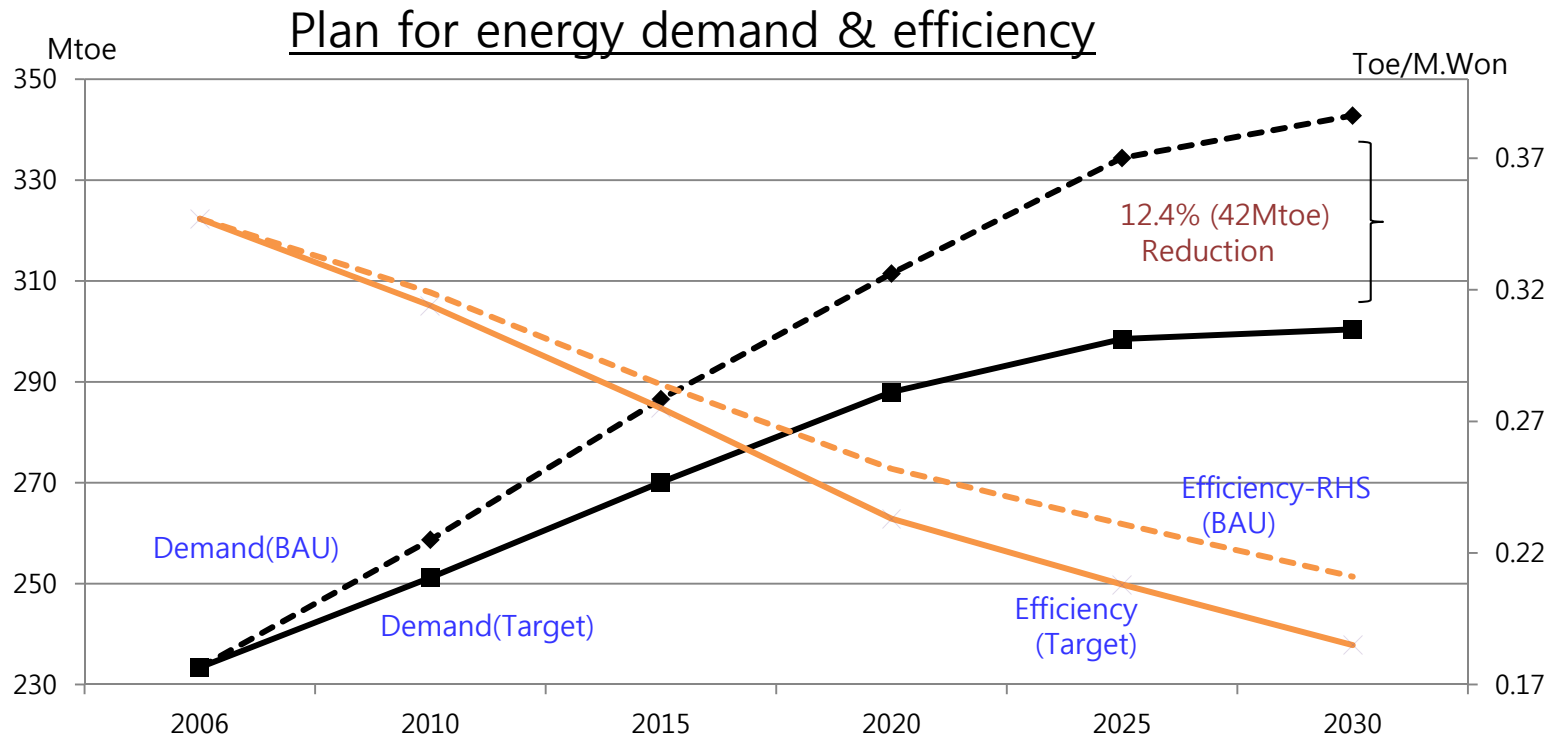
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# Energy policy direction



\* The national energy basic plan should be revised every 5 year over a period of 20 years by law

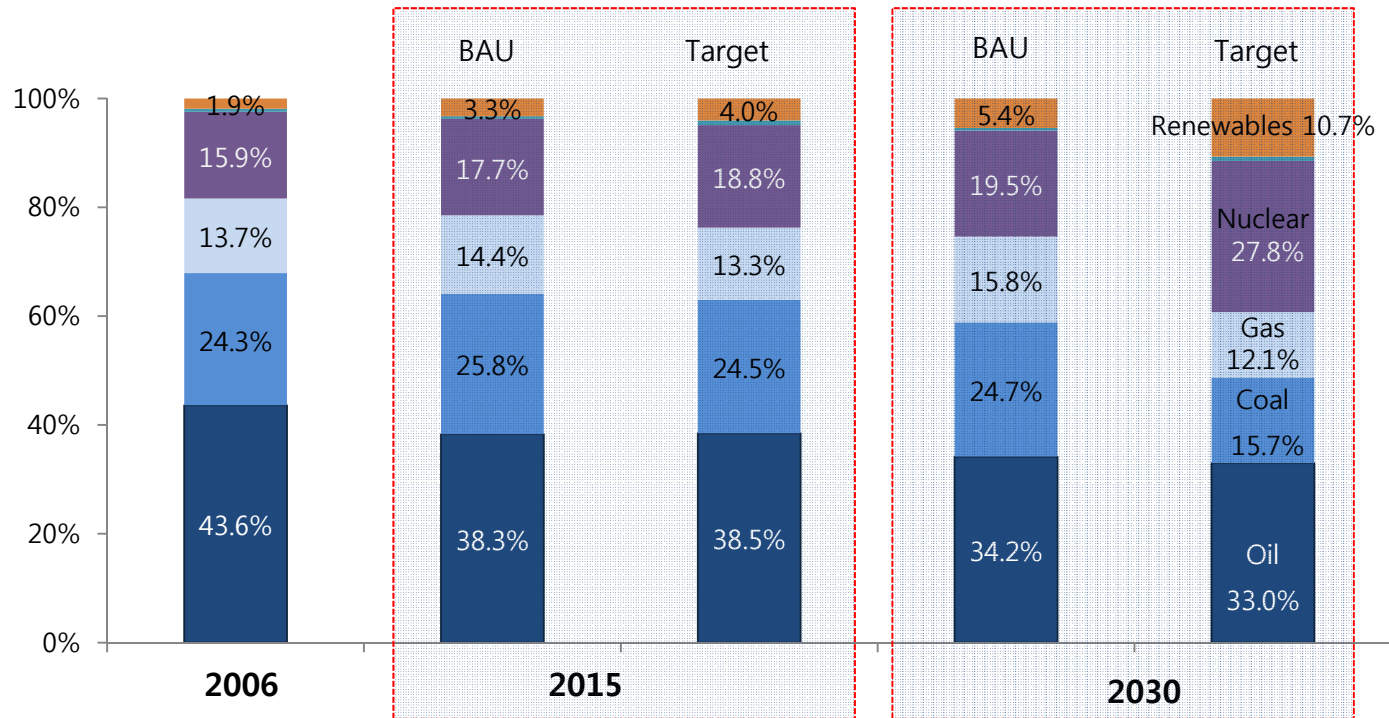
# Energy demand projection and policy targets



- BAU Scenario : Business as usual(improving energy efficiency at a same speed as in the past
- Target Scenario : Aggressive policies for improving energy efficiency - **National plan**

# Projection and policy for energy mix

## Projection of energy mix



- BAU Scenario : Increasing nuclear power and renewable energy as usual
- Target Scenario : Aggressive policies to expand nuclear power and renewable energy and decrease fossil fuels - **National plan**

## Key factors to affect energy situation after the 1<sup>st</sup> planning

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### Factors

### Impacts

**Policy failure for market value electricity price**

→ Electricity consumption encouraged and energy efficiency deteriorated

**Fukushima nuclear power accident in 2011**

→ Anti-nuclear movements spread across the nation

**Shale gas revolution and decreasing gas price**

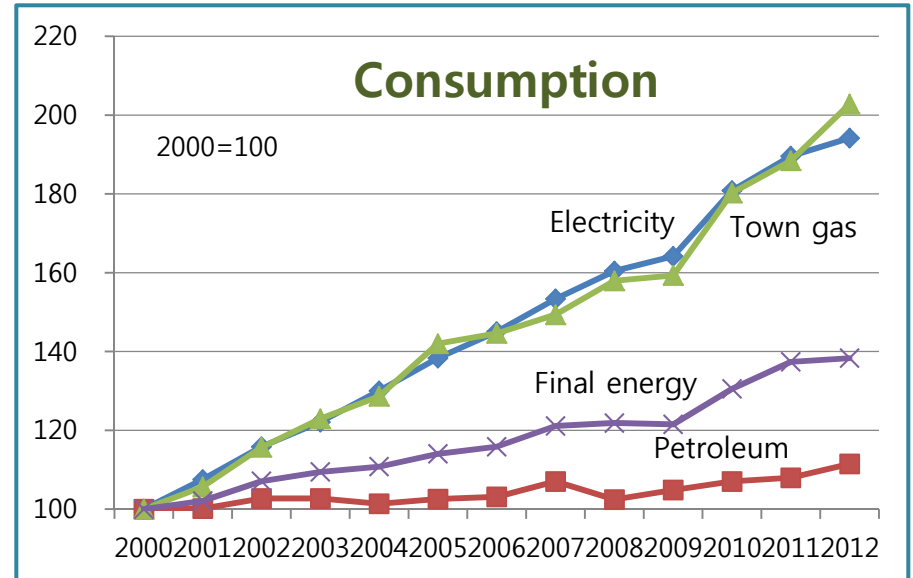
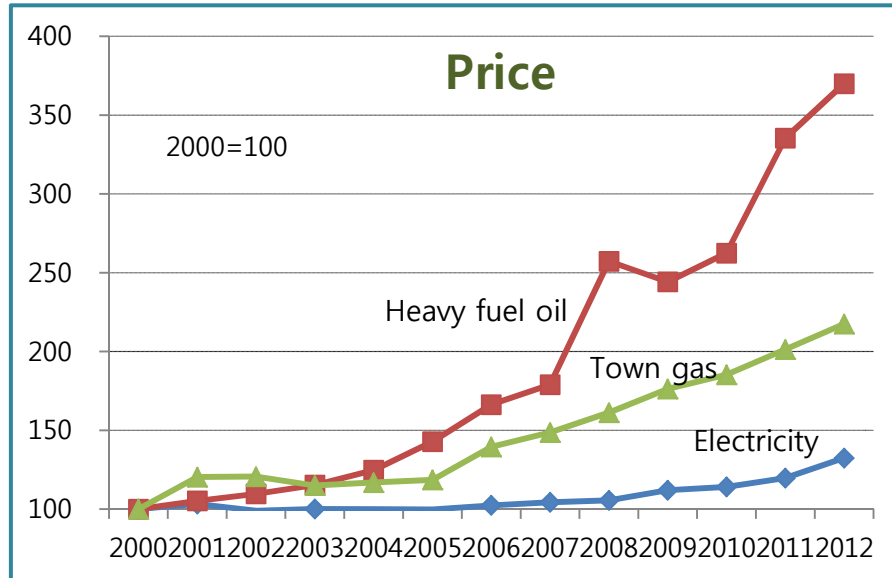
→ Change(?) the economics of coal and renewable, nuclear power over gas

**New government and policy review**

→ Less emphasis(?) on "Low Carbon Green Growth"



# Energy Prices Policy and Its impacts

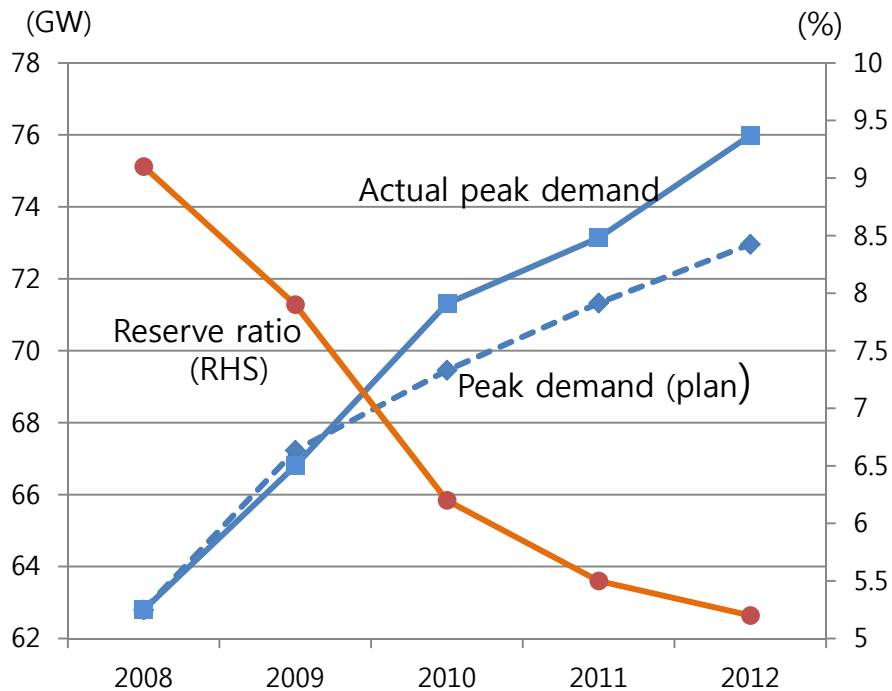


## Actual/National plan

- GDP in 2012 : (Plan ) 1,209 t.won, (Actual) 1,104 t.won **8.7% ↓**
- Energy demand in 2012 : (Plan ) 268.Mtoe, (Actual) 277.6Mtoe **3.4% ↑**
- Energy efficiency(Toe/GDP) in 2012 : (Plan ) 0.222, (Actual) 0.251 **13.6% ↓**

# Unstable power supply

## Peak Electricity Demand & Reserve Ratio



### Highlight

- The rolling power outage blacked out 3.2 million households and many plants across the country on Sept. 15, 2011
- Since 2009, peak demands occurred in winter time due to increasing consumption for electric heating
- Constructions of transmission lines have been delayed, due to the resident's strong oppositions
- Power production cost surpasses the electricity tariff

## Measures for unstable power supply

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### ■ Measures for tight supply of electricity

- Reducing peak demand with focus on big consumers (more than 1,000kW, 4,000 consumers) through incentives
- Strengthening demand management, shifting from regulatory measures to incentives
- Completing new power plants early, delaying the abolishment of existing power plants, and arranging repair work schedules

### ■ Challenge

- Introducing an electricity tariff system which induces energy conservation

“ The Korean government announced in June, 2009 to introduce an electricity pricing system that changes in line with international energy, but it has been suspended until now ”

# Challenges in nuclear power

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## ■ Fukushima challenge



## ■ Other challenges in nuclear power

### • **Setting the policy direction for high level radioactive waste**

- Full capacity of temporary storage facilities in 2016, but no securing of interim storage
- Negotiations on enriching uranium and recycling of spent fuel with US Gov. who is reluctant to accept Korea's demand

### • **Deciding whether to expand the life of nuclear powers**

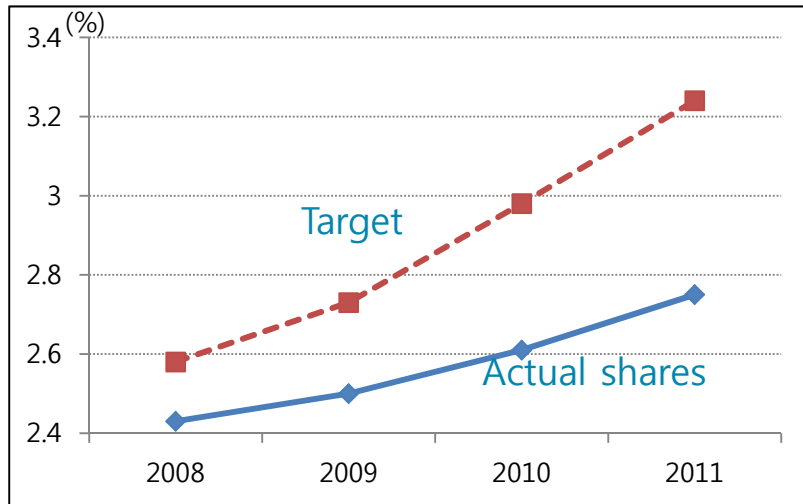
- Delaying a decision to expand the life of two aging reactors due to resident and NGO's strong protests, though IAEA confirmed safety on them

### • **Securing the sites for new nuclear power plants**

- Two places are candidates, but the final decision is uncertain due to anti-nuclear movements

# Challenges in renewable energy industry

## <Renewable energy shares for primary energy>



## Highlight

- Failure in reaching a target, though rapid growth of renewable industries

→ *Too aggressive target(?)*

### The growth of renewable industry (2007-2011)

- The number of company : 2.2 times ↑
- The number of employees : 4.0 times ↑
- Company revenues : 8.2 times ↑
- Export of materials and appliances : 8 times ↑

- Shrinking renewable markets from domestic and global recession
- Introducing RPS system in 2012, replacing FIT scheme

→ *success in inducing investments on renewable energy (?)*

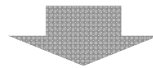
\***RPS(Renewable Portfolio Standard)** is the scheme to force power producers to supply a certain amount of their power generation portfolio from NRS

\***FIT(Feed-In Tariff)** is the scheme of the government to compensate producers for the differences between the cost of electricity generated from NRS and thermal generation

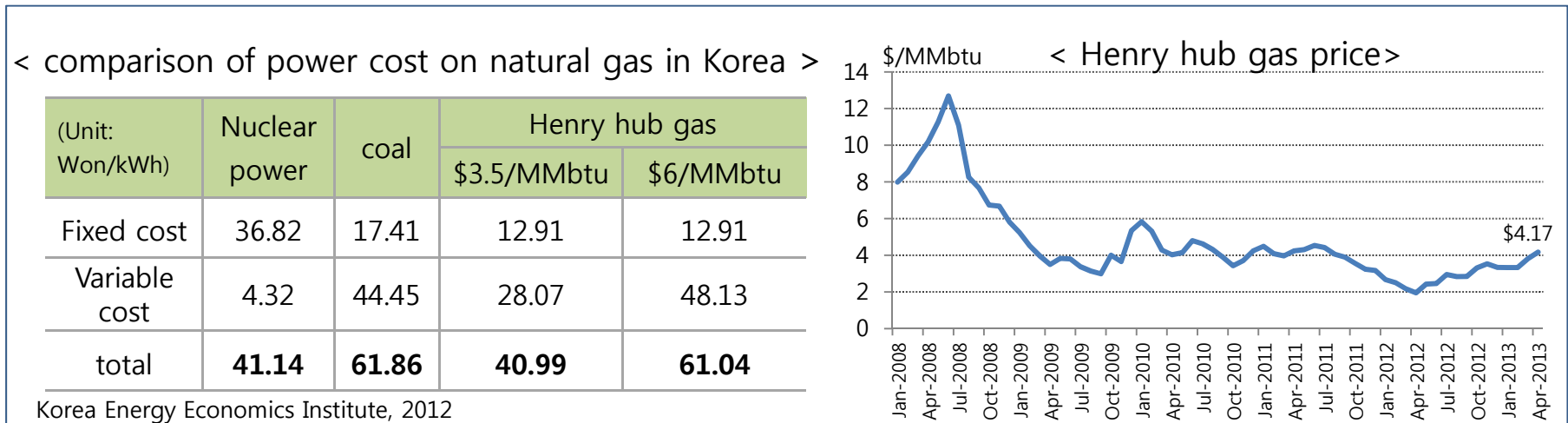
# Impacts of oil and gas prices driven by unconventional energy

**Oil and gas have all experienced a “Supply Shock” driven by tight oil and shale gas and US gas prices being decoupled from the oil price**

- Korea has made a long-term contract with the US to import gas starting delivery in 2017
- Imported gas price from the US is \$ 3-5/mmbtu cheaper than Korea’s importing prices from other places on the basis of current prices
- But there are many uncertain factors in predicting gas prices and volume from the US in the future



“More gas, less nuclear or coal in energy mix(?)”



## Energy policy of new government

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- The new government in Korea will follow the previous government's energy policies, but with different weights on policies
- The details of the policies have not been set yet

### Energy policies of new government

- Strengthening the safety management and supervision of energy facilities including nuclear power
- Encouraging more competitive markets and market value prices in energy industries
- Establishing a society system of resource circulation
- Prompting energy cooperation with Northeast Asian countries through grid networks and energy trading
- Enriching energy supports for low income-households

## The 2<sup>nd</sup> national energy basic plan

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- The long-term plan(2014-2035) will be established later this year
- The government launched a working group in which different interest groups ,including NGOs, will discuss on the energy mix of the 2<sup>nd</sup> Plan

### Key issues in working group

Work areas by groups	Major issues for discussing
Energy mix WG	Setting energy mix, based on each working group's discussion
Energy demand WG	Energy projection, energy demand management, energy price policies
Electricity WG	Reducing GHG emission, expanding transmission lines, forming policies for prompting distributed generation
Nuclear power WG	Revising share of nuclear power, nuclear safety, economics of nuclear power, policies for nuclear power
Renewable WG	Revising share of renewable energy, improving policies for expanding renewable energy



## The projection of energy mix in the 2<sup>nd</sup> national plan

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- There is a likelihood that the share of nuclear energy down in energy mix of the 2<sup>nd</sup> national plan
- Then, the shares of fossil fuels like coal or gas would rise, which create conflicts with low carbon policies
- It isn't expected that the share of renewable energy rises in the 2<sup>nd</sup> plan. The share could rather down

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*Thank you for your attention !*