

Energy Policies of Korea

Ministry of Commerce,
Industry and Energy
Republic of Korea



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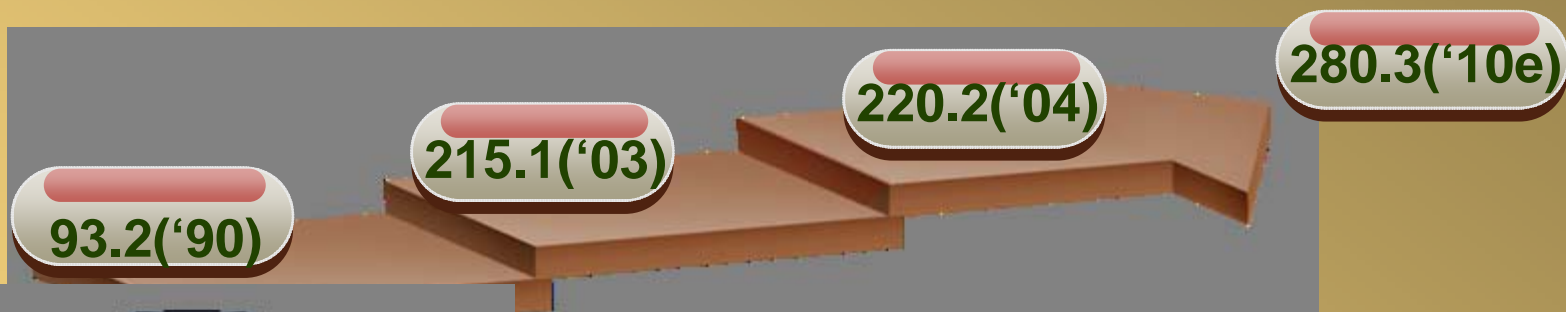
IV. Conclusion

I. Overview : Energy Demand & Supply (1)

Demand Side

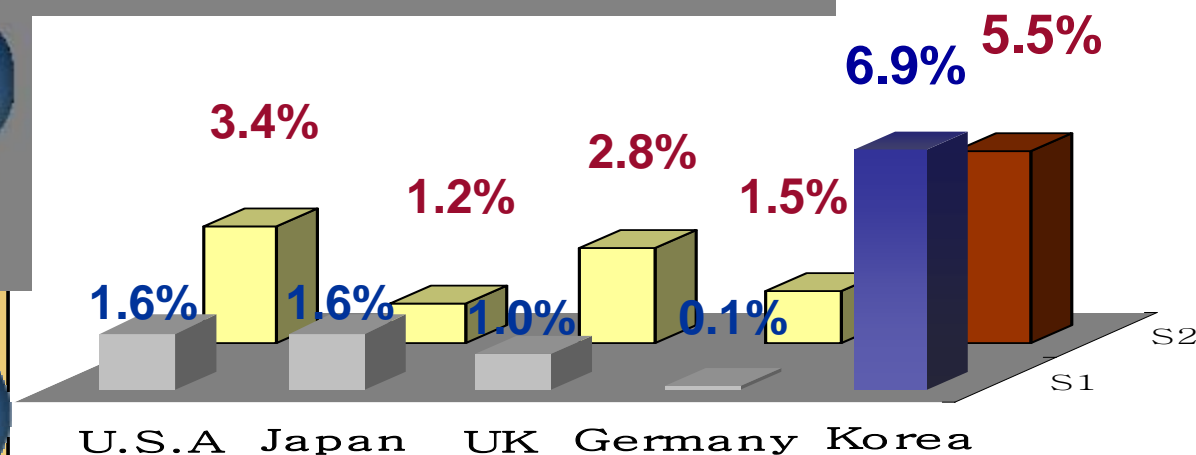
Continuous Increase in Energy Consumption

(unit : million TOE)



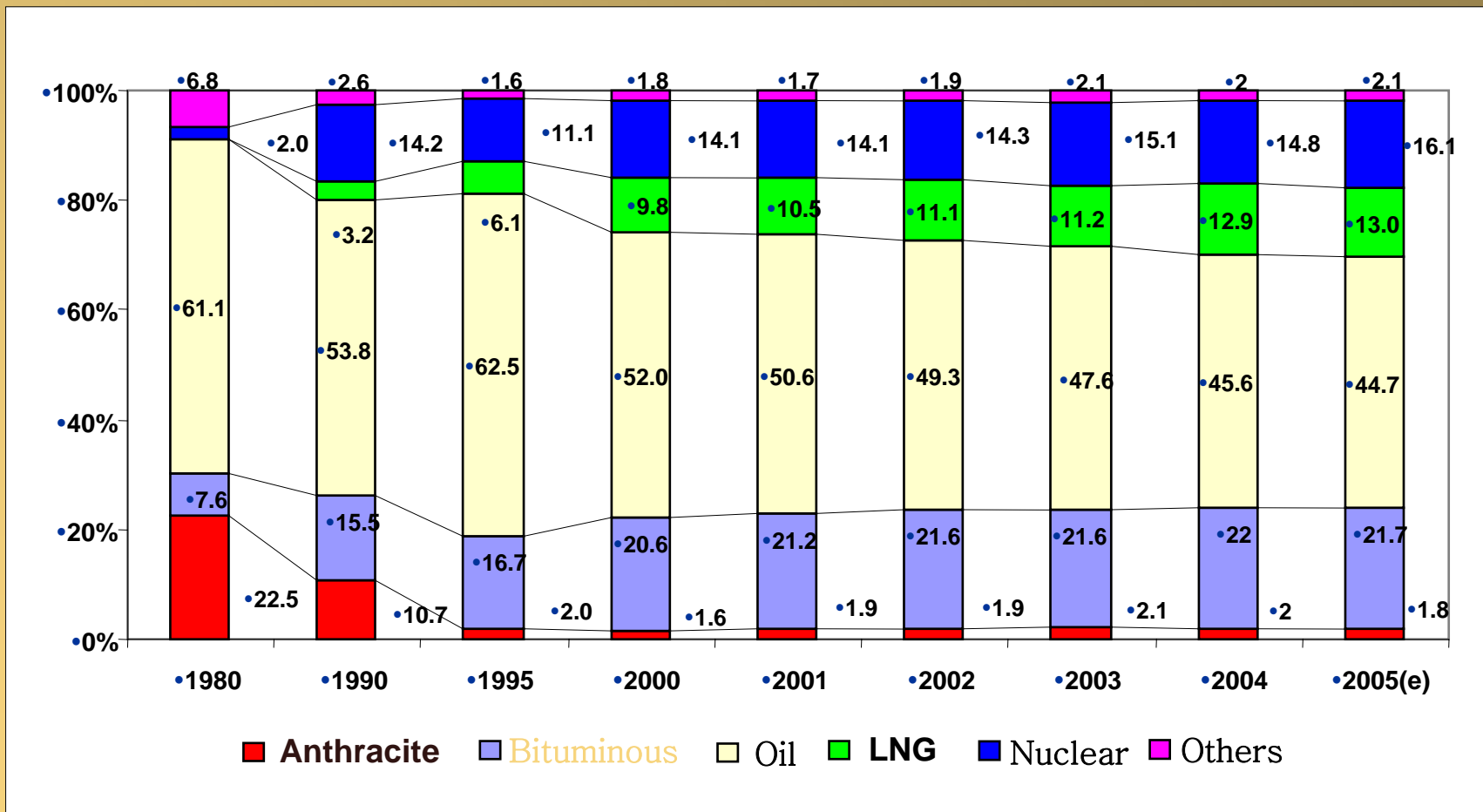
Average Growth Rate of
GDP('91~'01)
5.5%

Average Growth Rate of Energy
Consumption('91~'01)
6.9%



I. Overview : Energy Demand & Supply (2)

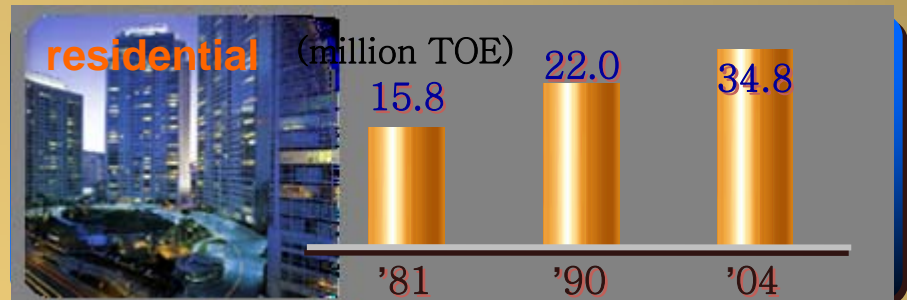
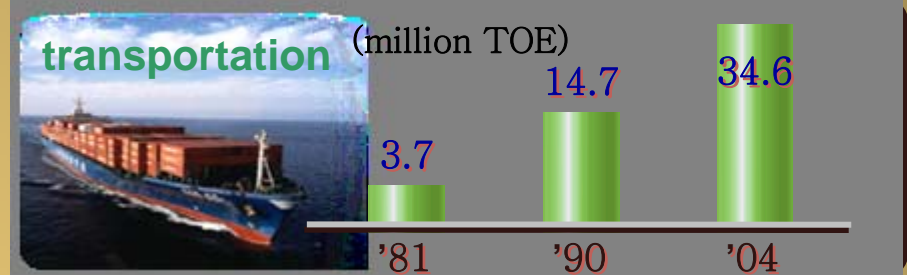
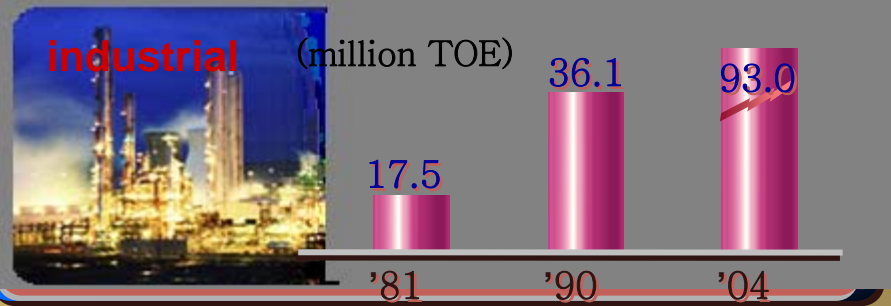
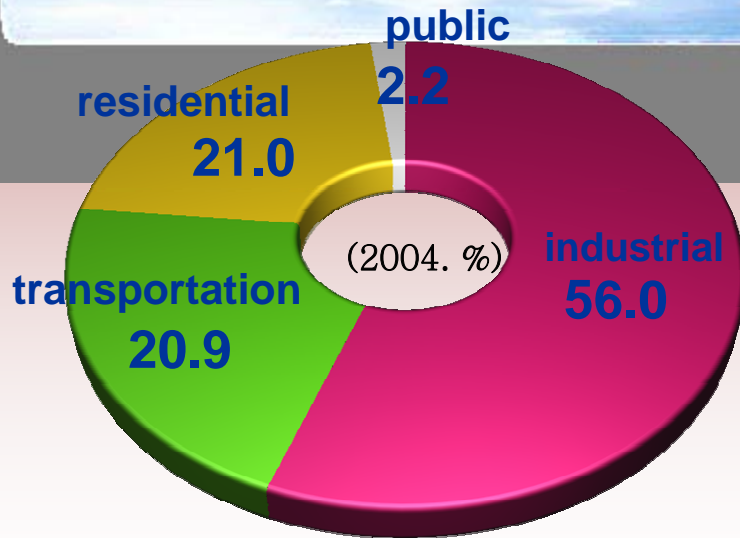
TPES Trend : Decrease in oil, increase in LNG



I. Overview : Energy Demand & Supply (3)

The industrial sector accounts for more than 50% of TPES

As of 2004



I. Overview : Energy Demand & Supply (4)

Supply Side

High Dependency on Energy Import

◆ Dependence on Imports of Energy : 97% (as of 2005)

- energy imports : US\$ 66.7 billion (Oil : US\$ 51.2 billion)

◆ More than 82% of oil from abroad (as of 2005)

Overseas Energy Dependency

(unit : %)

Classification	'80	'90	'00	'02	'05
Energy Imports	73.5	87.9	97.2	97.1	96.4
Dependence on Oil	61.3	53.8	52.0	49.1	44.3
Oil import from the Middle East	98.8	73.7	76.9	73.3	81.8

Source : MOCIE (2006)

II. Circumstances

1. External Circumstances

- High oil prices and instability in the world oil market
- Enhanced efforts of the countries for the energy security
- International environment laws such as UNFCCC

2. Internal Circumstances

- Increased participation from the NGOs to the policymaking
- Balanced approach between energy policies and environment policies
- Growing importance of New & Renewable energy⁷

III. Major Energy Policies

**Overseas Resources
Development**

**RD&D of New &
Renewable Energy**

**Improvement of
Energy Efficiency**

**Environment
Protection**

Energy Welfare

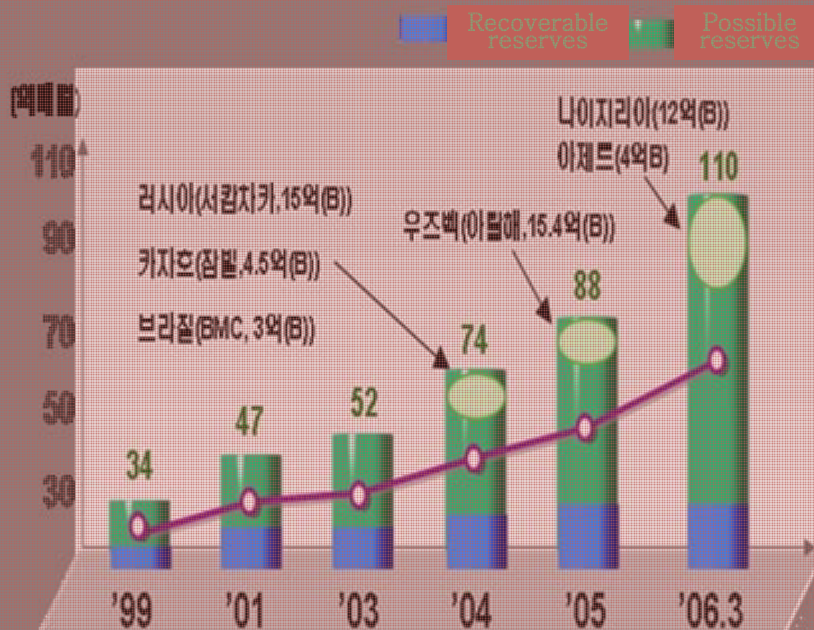
**International
Cooperation**

III-1. Overseas Resources Development (1)

Strategic diplomacy for resources

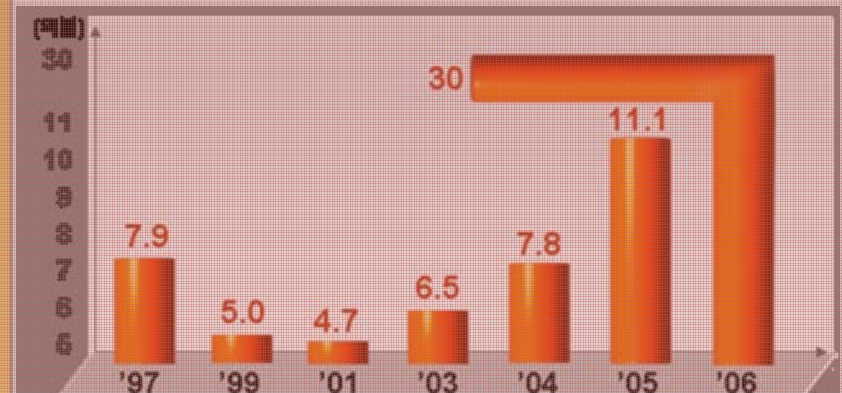
- Driving strategic diplomacy for securing natural resources led by the president : overseas visiting(**17 countries**), participating summit meetings (**5 countries**)
- Diversifying partners of diplomacy : Middle East → Russia, CIS, Africa, Middle and south America, and etc.
- Increasing cooperation committees for resources : **8 countries** → **25 countries** (adding 17 countries)

Expanding overseas E&P



Expanding Investment

- expanding investment significantly since 2000 → '05 : 1 trillion KRW → '06 : 3 trillion KRW
- Investment pattern : small / equity → big / operating right



III-1. Overseas Resources Development (2)

◆ Incorporated Promotion to energy producing countries

- Natural resources development + Electricity + Natural gas, + Plant..
- Expand to the IT, Construction, Medical service..

◆ Enlarge funding for overseas resources development

- Increase the investment capacity for overseas resources development by enlarging Energy Special Fund

III-2. Strategic RD&D of New & Renewable Energy(1)

Target : '05) 2.2% → '11) 5.0% of TPES

Group 1



- Establishing a master plan for the hydrogen economy
- R&D of core energy technology (such as fuel cell)

Group 2



- Exporting photovoltaic trough strategic R&D
- Wind power dissemination

Group 3

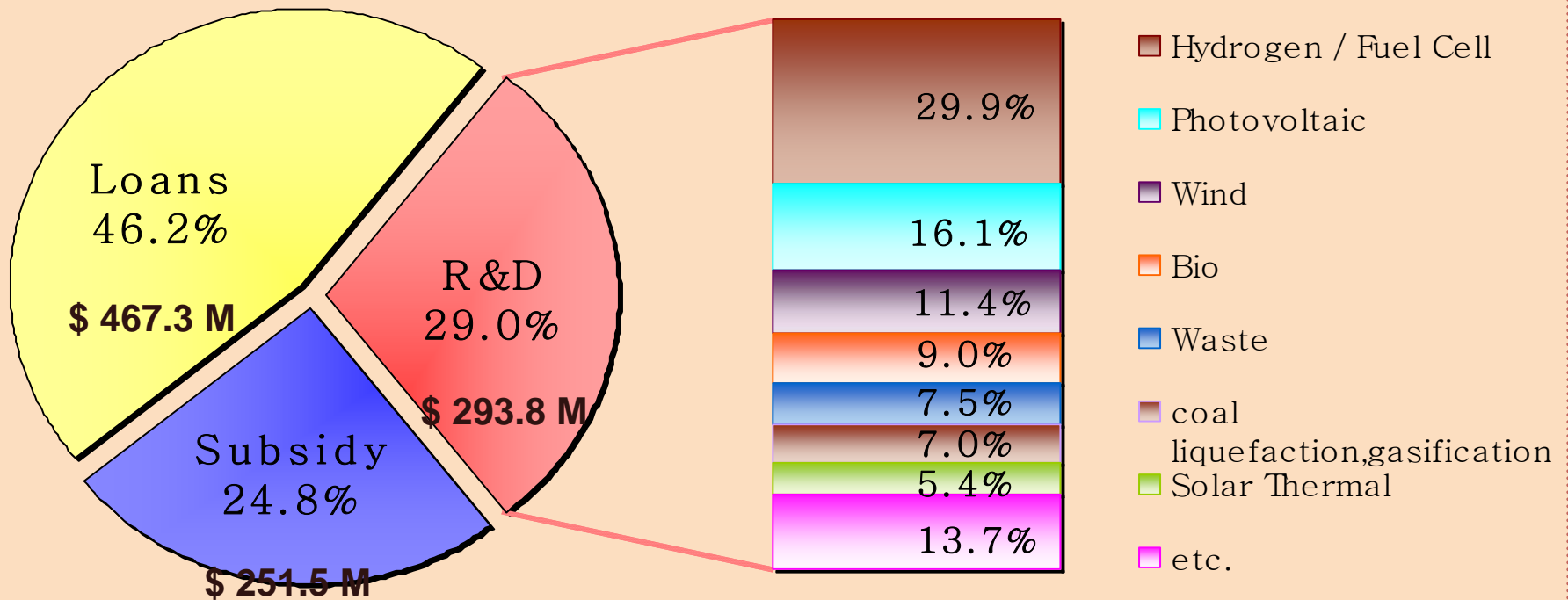


- Encouraging bio energy use
- Developing tidal energy
- Framework for New & Renewable use

III-2. Strategic RD&D of New & Renewable Energy (2)

Portion of the Budget from 1988-2005

Hydrogen/Fuel Cell : 29.9% , Photovoltaic 16.1% , Wind : 11.4%



III-2. Strategic RD&D of New & Renewable Energy (3)

Dissemination programs

Mandatory Programs for New & Renewable facilities Installation at public Institutions

- When constructing a public building exceeding 3,000 square meters, 5% of total construction costs should be used in installing New & Renewable energy facilities.
- The government covers 70% of the installment costs and the user will cover the remaining 30%



III-2. Strategic RD&D of New & Renewable Energy (4)

Dissemination programs

General Subsidies Program for Dissemination of New & Renewable Facilities

- The support measures are equal to that of the program for distribution of photovoltaic houses.

Feed-in Tariff for New & Renewable Electricity Generation

- Subsidies which are currently provided to electricity generated from NRE. They are financed with the government funds.
- The subsidy program will be expanded to bio and IGCC in the Future

Loan Program

- 10-year installment payment with a five-year grace period on annual interest rate of 2.75% (floating interest rate)



III-3. Energy Efficiency (1)

Energy Conservation and Efficiency Measures

- 3-year plan for improving energy intensity ('05~'07) : 18 Ministries, 88 work plans



- Regional energy planning

2.131 Million TOE



- VA(Voluntary Agreement)
- ESCOs

9.865 Million TOE



- Encouraging the use of mass transportation
- Implementing AFE standards

1.271 Million TOE



- Efficiency standards & labeling
- Promoting district heating

4.367 million TOE

III-3. Energy Efficiency (2)

Industrial Sector



Voluntary Agreement

- Joint program between the government and industry
- 1,288 companies joined VA program

Introduced VA in Building Sector(66 Buildings) ESCO

- Private sector-led energy conservation.
(invested 780 billion Won from 1993 to 2004)
- Energy facility investment, maintenance services & energy management monitoring



III-3. Energy Efficiency (3)

Transportation Sector



Implementation of AFE

- Average Fuel Economy standard (effect from 2006)
[over&below 1,500cc]
- Strengthening follow-up management over manufacture under standard
[executive order, duty of performance plan]

Compact car & Hybrid car

- Market share of compact car(below 800cc) :
6.7%
[Incentives ; tax deduction, reduction of toll,
preferential parking rate]
- Dissemination of hybrid Car



III-3. Energy Efficiency (4)

Residential & Commercial sector



Energy-conservation in building

- Energy-conserving standard for building design(MOCT)
 - Reviewing the energy efficiency of building at the first stage of construction
 - Promoting application of high efficiency

Promotion of high-efficiency equipment

- Energy efficiency programs
 - energy efficiency standards & labeling program
 - certification of high efficiency appliances program
- Standby power “1W program”



III-4. Environmental Protection (1)

Clean Energy Supply System

- **Household, Commerce and Industry Sector**
 - Fuel Switching from Oil to Natural Gas and LPG

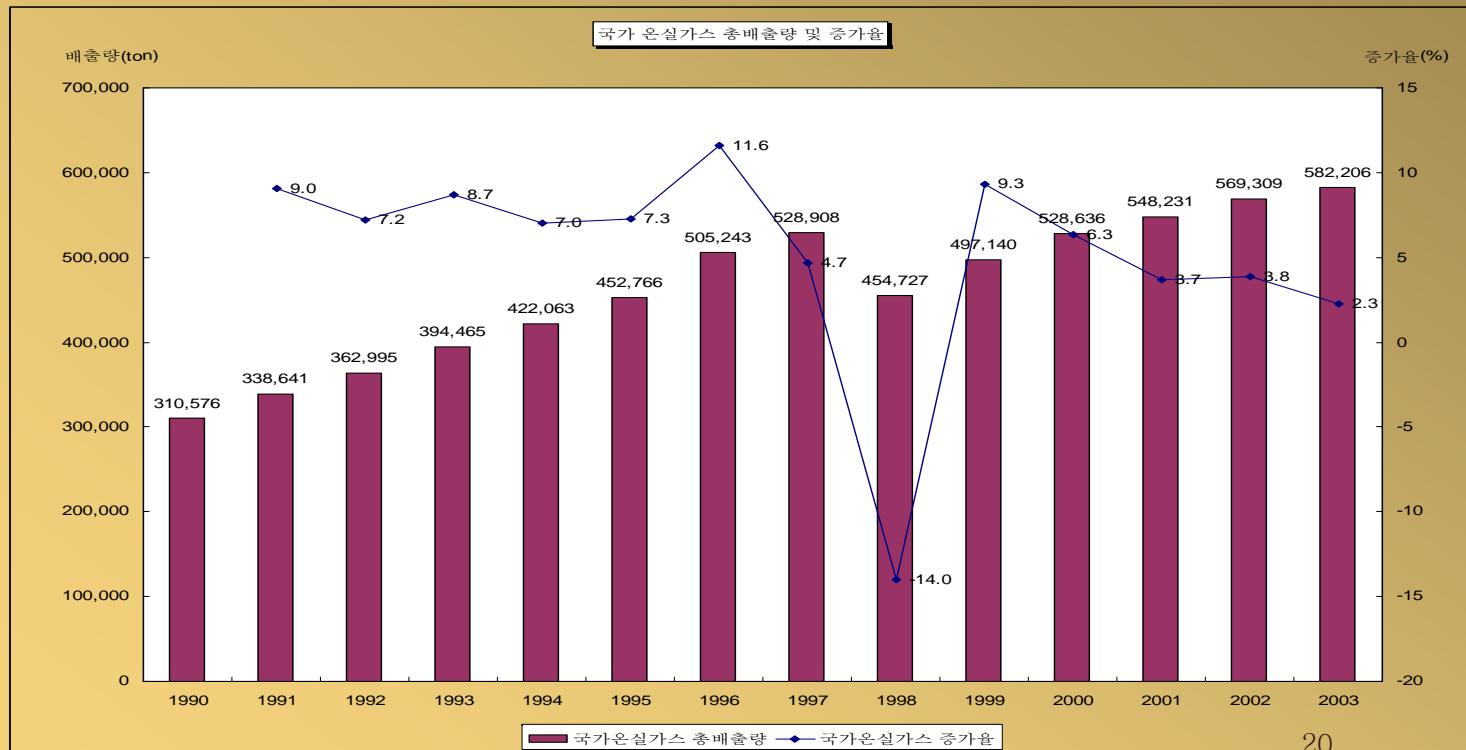
- **Power Generation Sector**
 - Enlarge Electricity Capacity
 - * '05 : 62 millionkW -> '06 : 65 million kW
 - Maintaining the Share of Nuclear Power

- **New and Renewable Energy Dissemination**
 - Hydrogen Economy for 2040, Dissemination of Bio fuel

III-4. Environmental Protection (2)

Addressing Kyoto Mechanism

- Classified as Non-Annex I in the UNFCCC
- Ratification of Kyoto Protocol in November 2002
- Studies on Introducing Domestic Emissions Trading



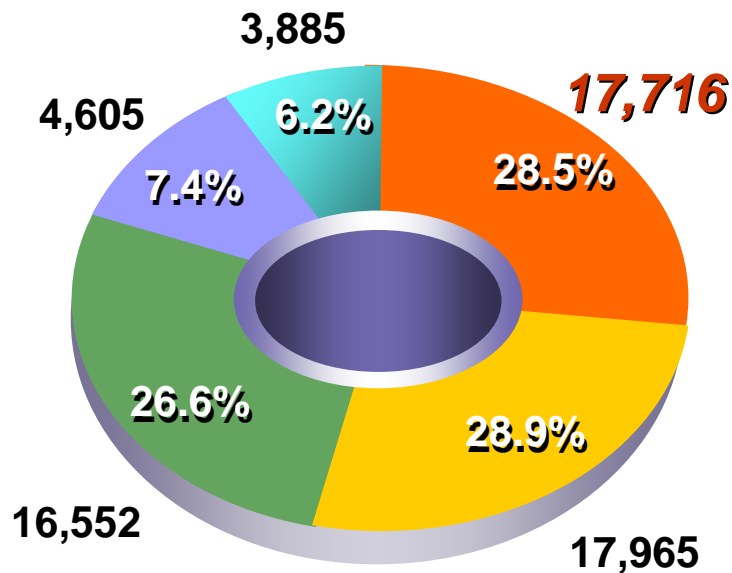
Status of Korea's Bio-energy & Biofuel

- **Bio energy occupied 2.9%(135,000TOE) among renewable energy supply in 2004**
 - Most of bio energy sources are industrial and municipal biogas
 - Action plan has been set up to increase the biomass utilization to 7.9%(1,050,000TOE) by 2011
- **Current aspects of R&D**
 - Utilization of organic waste, production of bio diesel from waste oil and crops, fleet test on bio diesel, and feasibility studies on bio ethanol
- **Market for bio-fuel is under creation**
 - Deployment of biodiesel(20% bio diesel blended) started in 2004 as a trial for 2 years
 - From July this year, oil refining companies will sell biodiesel (5% blended) through their gas station s

Status of Nuclear Energy in Korea

(As of the end of 2005)

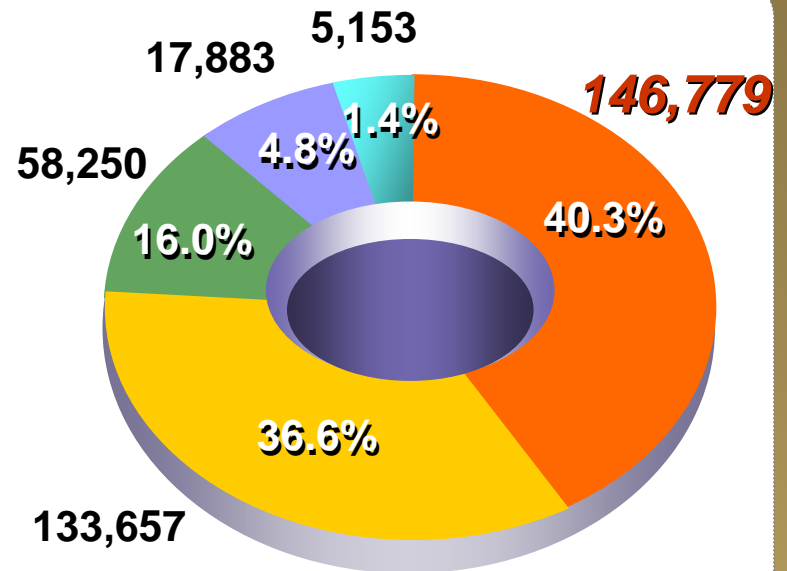
Installed Capacity



*The others : 1,537 MW(2.5%)

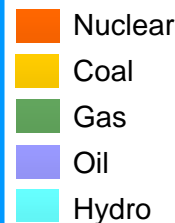
Total : 62,260 MW

Electricity Generation



*The others : 3,349 GWh(0.9%)

Total : 364,571 GWh



Competitiveness of the Korean Nuclear Power Industry

Latest and Proven Technology

- ◆ Optimized Power Reactor 1000
 - Employing recent operational experience and latest codes and standards
 - In operation successfully at Yonggwang and Ulchin and under construction at Shin-Kori #1,2 and Shin-Wolsong #1,2
- ◆ Advanced Power Reactor 1400
 - Evolutionary PWR with power up-rate
 - In pre-contract stage at Shin-Kori #3,4 and Shin-Ulchin #1,2

Up-to-date Construction Experience

- ◆ Constuction Schedule
 - Shin-Kori 1&2 : Jan. '05 ~ Dec.'10 / Dec.'11
 - Shin-Wolsong 1&2 : Oct. '05 ~ Oct.'11 / Oct.'12
 - Shin-Kori 3&4 : Oct. '06 ~ Sep.'13 / Sep.'14 (Planning)
- ◆ Accumulated Progress Rate (as of Mar '06)
 - Shin-Kori 1&2 : Project 37%, Site construction 18.6%
 - Shin-Wolsong 1&2 : Project 26.1%, Site construction 5.7%
 - Shin-Kori 3&4 : A public hearing is scheduled to be held in '06

Outstanding Performance in Operation

Capacity Factor(%)

Unplanned shut down / Unit



C.F.(%)	84.5	87.2	87.4	87.5	87.5	87.6	90.0	88.3	90.4	93.0	92.7	94.2	91.0	95.5
shutdown	1.7	1.6	0.9	1.1 ³	0.9	1.1	0.4 ³	0.9	0.5	0.5 ²	0.4	0.6	0.6 ⁴	0.5

III-5. Energy Welfare Program (1)

Establishment of the National Energy Committee

- Encouraging participation from the NGOs and people
 - the committee is composed of 25 members, and 5 of them are recommended by NGOs and academies
- Four Sub-committees : energy policy, Technology infrastructure, Resources development, conflict management
- ‘National Energy Plan for 2030’
- Discussion on the mid-and-long term policies such as appropriate energy mix, Nuclear energy policy..



III-5. Energy Welfare Program (2)

Comprehensive Energy Welfare Program

Low-Income bracket

- Systemic Energy Welfare Program
 - Establish 'Korea Energy Foundation'
 - Efficient management of the existing social security measures

Consumer Protection

- Monitor the energy market to penalize anti-competitive behavior
- Law enforcement on the adulterated gasoline

Support for SMEs

- Strengthen SMEs of the energy sector
 - Support energy conservation of the SMEs
 - Priority on the energy rationalization fund...

III-6. International Cooperation (1)

IEA

- participation in 2002
- 114 day oil stock (As of April 2006)

	Government	Private	Total
Volume (MMB)	72.5	79.9	152.4
Duration Days (IEA Calculation)	56.8	57.2	114

Other Global Cooperation Mechanisms

- IEF (International Energy Forum)
- IPHE, CSLF, REEEP..

III-6. International Cooperation (2)

Cooperation among the Asian countries

➤ APEC Region



- 59% of World Energy Consumption, 38% of World Energy Production
- Korea hosted EMM7 (cooperation between APEC and OPEC)

III-6. International Cooperation (3)

Intergovernmental Collaborative Mechanism on Energy Cooperation in Northeast Asia (from 2001)

- Participants : Korea, Russia, Mongolia, DPRK, (China, Japan)
- Main Directions : Economic-interest-first approach, Voluntary and non-binding participation
- Through the 1st SOC Meeting (Nov. 2005; Ulaanbaatar), established 4 Countries Energy Cooperation Mechanism
- Future Action Plan : Collect information and data necessary for NEA energy cooperation: Submit Country Energy Report (2006)

Other Regional Cooperation Mechanisms

- ASEAN+3 : Ministers on Energy Meeting(AMEM+3) etc.
- Five Party Talk (China, India, US, Japan, Korea)...

IV. Conclusion

Challenges Ahead

Stable, Efficient and Environment-friendly Energy Supply System

Appropriate Energy Mix

R&D on New and Renewables

Structural Reform of the Energy Industry

Reduction of Greenhouse Gas

Radioactive Waste Repository

Energy Cooperation in Northeast Asia

Energy Policy Act

*Thank You Very Much
For your attention !!*

