Toward Northeast Asia Cooperation for Energy Efficiency and Climate Change through Korean Case

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I. Overview of Korean Energy Consumption

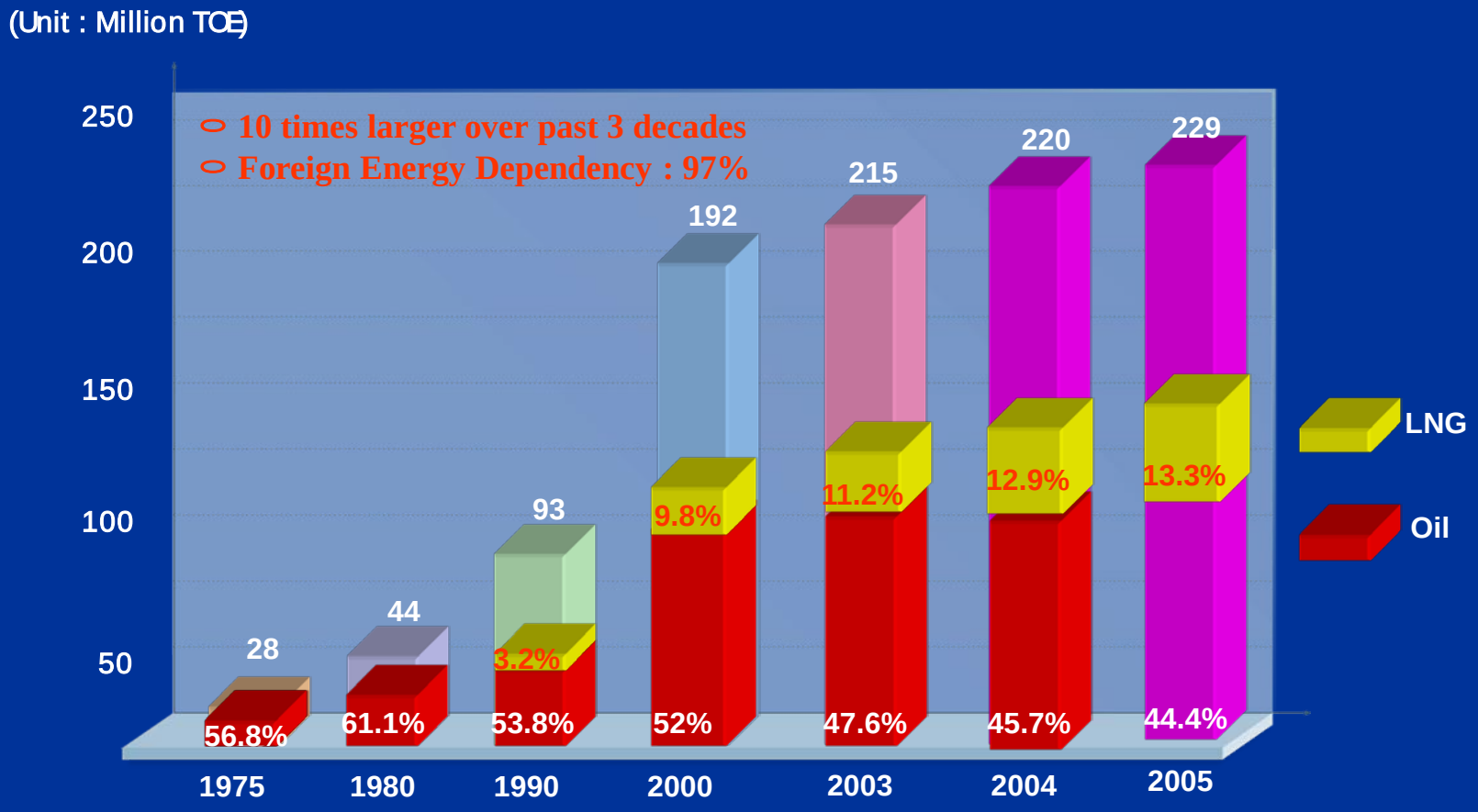
1. Main Energy Indicators

- Stable Primary Energy Consumption
- High Energy Intensity
- Extremely High Overseas Energy Dependency

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Primary Energy Consumption Growth(%)	9.8	9.3	−8.1	9.3	6.4	2.9	5.2	3.1	2.8	4.1
Energy/GDP (TOE/mil.Won)	0.33	0.35	0.34	0.34	0.33	0.33	0.32	0.32	0.32	0.32
Overseas Dependency(%)	97.3	97.6	97.1	97.2	97.2	97.3	97.3	96.9	96.6	96.4

I. Overview of Korean Energy Consumption

2. Trend of Energy Consumption: Concerns on security & environm.



Source : MOCIE & KEEI, 'Yearbook of Energy Statistics(2006)'

I. Overview of Korean Energy Consumption

3. High Energy-Intensity of Korea: Main Target

- Energy-Intensity of Korea: 0.348 TOE/1,000USD (2006)

  - JPN 0.108, UK 0.147, FRN 0.195, OECD 0.199 [IEA, 2006]

- Energy intensive industrial structure

  - The value-added from energy-intensive industry: 27.0%

  - Energy intensive industry in manufacturing sector: 75.8%

- High non-energy consumption

  - KOR 14.2%, JPN 8.5%, US 6.7%, FRN 5.5%

- High energy-intensive, but low value-added manufacturing: Steel

  - KOR: Low electricity intensity, but Lower market price of steel.

II. Korean Institution System for Energy Eff&Cons

1. Main Energy Conservation Policies[I]

- 1970s- Early 1980s

  - Controls of energy consumption based on regulation
  - Emergence of systematic energy management
  - Nationwide resource saving campaign
  - Special survey of industrial energy saving [1979]

II. Korean Institution System for Energy Eff&Cons

1. Main Energy Conservation Policies[II]

- Mid 1980s- Mid 1990s

  - Legislations for systematic energy issue management
  - Fundamental reform of energy use
  - Long-term plan for lowering energy intensity
  - Five-Year Plan for energy intensive industry

II. Korean Institution System for Energy Eff&Cons

1. Main Energy Conservation Policies[III]

- Late 1990s- Present

  - Paradigm shift due to Climate Change Convention

  - Ten-Year Energy Technology Development Plan

  - Three-Year Plan for lowering energy intensity (‘05~’07)

  - Lower energy intensity: 0.348(’06) → 0.200(‘30)

II. Korean Institution System for Energy Eff&Cons

2. Energy-Related Legislations[I]

- Rational Energy Utilization Act (1979)

  - Contribution to energy security, rational and efficient energy use

  - Establish a national energy plan, energy management standard, energy technology development

- Promotion Act for NRE development, utilization, dissemin.(1987)

  - Promote New & Renewable Energy market

II. Korean Institution System for Energy Eff&Cons

2. Energy-Related Legislations[II]

- Integrated Energy Supply[IES] Act(1991)

  - Dissemination of IES to industrial complex and buildings

  - Installation & Operation → District Heating Supply, CHP

- Fundamental Energy Law (2006)

  - Mother law of individual energy legislations to provide long-term strategic vision for energy policy

II. Korean Institution System for Energy Eff&Cons

3. Rational Energy Utilization Fund

- Financial Source

  - Energy Project Special Account from oil import levy

- Supporting Projects (2005)

  - Rational use of energy: 491 million USD

  - Integrated Energy Supply: 183 million USD

  - Dissemination of NRE: 1,019 million USD

- Measures

  - Long-term low interest loan; Required investment full support

II. Korean Institution System for Energy Eff&Cons

4. Rational Energy Utilization Policy Measures[I]

- Energy Efficiency Improvements
  - Energy audits
  - Energy efficiency standard & labeling program
- New & Renewable Energy Dissemination
  - NRE tech. develop. & support for practical use
  - Capacity building & human resource development
  - NRE dissemination program

II. Korean Institution System for Energy Eff&Cons

4. Rational Energy Utilization Policy Measures[II]

- GHG Emission Reduction Initiatives
  - Financial support for GHG reduction projects
  - Infrastructure to handle GHG reduction

III. Measures for Energy Efficiency & Conservation

1. Voluntary Agreement (VA)

- Joint Program between government and industry
  - Industrial, commercial sector: more market-oriented
  - Submit ‘Letter of Intent’: low interest loan, tax incentive
- Summary of VA Action Plan(1999-2004)
  - No. of companies: 1,021
  - Energy conservation: 6.874 million TOE
  - CO_2 Reduction: 8.647 million TC

III. Measures for Energy Efficiency & Conservation

2. Energy Audits and Inspection

- Energy Conservation Recommendation

  - Detailed evaluation of energy facilities

  - In-depth Audit at the request of the users

  - Obligatory energy inspection of high energy-intensity company (2007.1): ‘07 inspection of 383→identify 429,000toe (4.6%)

III. Measures for Energy Efficiency & Conservation

3. Promotion of High-Efficiency Products[I]

- Adapted Measures

  - Preferred purchase for energy saving products from public sector

  - Obligatory use of energy saving products by public institutions

  - Obligatory use of energy saving products by specially defined buildings

  - Financial supports for production facilities, installation, operation

III. Measures for Energy Efficiency & Conservation

3. Promotion of High-Efficiency Products[II]

- Programs

  - Energy Efficiency Standard & Labeling program

  - e-Standby Program: saving standby electricty

  - Certification of High Efficiency Energy-Using Appliances Prog

III. Measures for Energy Efficiency & Conservation

4. Demand-Side Management (DSM)

- Promotion Measures

  - Rate Policy: remove electricity rate discount

  - Energy Efficiency Standards and Certifications

  - Financial incentives: rebate, loan, tax-exemption, free installation

  - Technical audits

III. Measures for Energy Efficiency & Conservation

5. Energy Service Companies (ESCOs)

- Adapted Measures

  - Removal of market barrier at the early stage by offering standard performance contracting

  - Requiring energy audit to public facilities

  - Low interest loan & tax credits for energy saving facilities

  - Recognizing ESCOs as credit producer

IV. Climate Change into Energy Efficiency &Conserv

1. GHG Emission & Energy Statistics Infrastructure

- Sector-Emission Coefficient & Abatement Information
  - Establish sector-emission DB system
  - Estimate GHG emission coefficient in each manufac. process
- Evaluate abatement potential and set the abatement target in proc.
  - Determine with economic and industrial structure

IV. Climate Change into Energy Efficiency &Conserv

2. Strategic GHG Abatement Project [I]

- Enhance sectoral abatement capacity
  - Promote carbon market through CDM, emission-permit
  - Establish GHG measuring standard
- Expand certification system for GHG abatement
  - Provide incentive for GHG abatement based on certificates
- Expand carbon market step by step
  - Induce voluntary carbon market based on abatement certificate

IV. Climate Change into Energy Efficiency &Conserv

2. Strategic GHG Abatement Project [II]

- Introduce required GHG abatement system

  - Enforce electricity companies to bear burden of NRE & efficien.

- Abate Non-CO_2 emission in manufacturing process

  - Promote Non-CO_2 related-technology

IV. Climate Change into Energy Efficiency &Conserv

3. Sustainable Energy Conservation System[I]

- Industrial Sector
  - Strengthened VA: Negotiated Agreement
  - Introduction of Energy Management System
  - More active ESCO projects
- Transportation Sector
  - Improve fuel mileage and expand more fuel-efficient car market
  - Modal shift for more mass transportation demand

IV. Climate Change into Energy Efficiency &Conserv

3. Sustainable Energy Conservation System[II]

- Residential · Commercial Sector
  - Strengthen Efficiency Management System
  - Expand Efficiency Grade System
  - Establish Limited Total Energy Consumption System
- Expand Investment for Higher Energy Supply Efficiency
  - More investment target for higher efficiency energy company
  - Introduce Energy Efficiency Resource Standard

V. Prospects of NEA Energy Cooperation for Eff&Cons

1. Common GHG Emission & Energy Statistics Infrastructure

- Promote Information exchange

  - Establish regular information exchange channel

  - Publish NEA Regional Report for GHG-Emission and Energy Sta.

- Identify Energy Efficiency Cooperation Potentials

  - With NEA information, introduce pilot project for higher efficien.

  - With the pilot project results, identify more specific potential

V. Prospects of NEA Energy Cooperation for Eff&Cons

2. NEA Regionwide GHG Abatement Project

- Promote more active CDM project
  - Identify more effective CDM project in specific region
  - Establish more efficient financing system for identified CDM
- Establish NEA Carbon Market
  - Standardize abatement certificate and emission-permit
  - Promote Cooperation Mechanism for NEA Carbon Market

V. Prospects of NEA Energy Cooperation for Eff&Cons

3. Energy Efficiency Technology Transfer among NEA Region

- Promote more effective technology transfer mechanism
  - Identify necessity of efficiency technology in each region
  - Probe more effective channel through transfer pilot project
- Establish NEA Energy Efficiency Market
  - Identify barrier to interstate efficiency technology transfer
  - Establish comparable institutional system for tech. transfer
  - Provide financial incentive to early technology transfer