Green growth as a New paradigm for Economic Development: Korea’s Experiences

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Why Green Growth?
Why Green Growth?

✓ What era are we living in?
Why Green Growth?

Energy Crisis
Global Warming
Climate Change

**U.S.A.**
- Jan.3, the worst heavy snow of 84cm since 1890 in Vermont
- Feb.5~9, the highest accumulated amount of snowfall of 183cm in Maryland Bolivia

**China**
- Jun.13~26, 381 deaths due to heavy snow in a century, 83.8B Yuan loss
- Aug.8, more than 1,400 deaths due to landslide caused by flood

**Russia**
- 15,000 deaths due to the worst heat wave in 130yrs
- July 29, the highest tem. of 38.2°C in Moscow

**Brazil**
- Jan.1~3, 85 deaths due to heavy rain, 4,000 flood victims
- Jun.17~21, 45,000 deaths due to heavy rain in northeastern regions

**Australia**
- Feb.7, inundated city due to heavy rain of more than 400mm in a day in Queensland
**Cause of Climate Change**

- CO\textsubscript{2} emitted from fossil fuel is the main cause of global warming

- Since the industrial revolution (1800’s), CO\textsubscript{2} level has rapidly increased (280 → 380ppm)
Cost to prevent global warming: GDP 1%
Cost to pay for inaction: 5~20%

- 9.6 trillion USD > Cost of the World War I & II
Development of Energy Crisis

Annual average oil price after 2005 ($/B)

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>49.37</td>
<td>61.55</td>
<td>68.43</td>
<td>94.29</td>
<td>61.92</td>
<td>78.13</td>
<td>105.98</td>
</tr>
</tbody>
</table>

Sharp increase after 2007

First Oil Shock  
Second Oil Shock  
Gulf War  
9/11  
Financial Crisis

Korea National Oil Corporation
Crisis of resource depletion

Increase in energy consumption

Increase in greenhouse gases

Aggravation of water shortage

Food shortage

Resource R/P (oil 42yrs, gas 60yrs, coal 122yrs)

Global energy consumption increases by 40% by 2030 (as of 2007)

Global GDP annually decreases by 5~20% within current economic system

Fresh water supply per person decreases by 1/3 in 25 yrs

With every 1 ℃ increase in night temp., rice production decreases by 10% (IRRI)
This is the solution we’ve devised for dealing with the flooding caused by climate change.

Need for Noah’s ark to save the earth?
Noah’s Ark in Turkey (Mt. Ararat)
Ways to save *people, animals,*
And the *earth?*

⇒ *Green Growth*
*(To develop while reducing carbon)*
Ⅱ. Green Growth, virtuous circle of the environment & economy
Korea’s Path?

- Evaluation of the past 60 yrs & Future plan for the next 60 yrs

- What are the achievements of Korea for the last 60 years?

- Can we continue to achieve growth with the same economic framework?

- If not, what are the alternatives?
Need for new growth engine

- Growth rate: Before the Korean financial crisis (‘87~’96 average) 8.4% → After (‘97~’07) 4.4%
- Expected Potential Growth Rate (KDI): ’11~’20, 4.1% / ’21~’30, 2.8%
- Investment slowdown

### Drop in economic growth rate

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP growth rate(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>'71~'80</td>
<td>7.1</td>
</tr>
<tr>
<td>'81~'90</td>
<td>9.0</td>
</tr>
<tr>
<td>'91~'00</td>
<td>5.7</td>
</tr>
<tr>
<td>'01~'07</td>
<td>4.6</td>
</tr>
</tbody>
</table>

### Era of low birth and aging population

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth rate of working population(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>'80~'89</td>
<td>2.31</td>
</tr>
<tr>
<td>'90~'96</td>
<td>1.49</td>
</tr>
<tr>
<td>'97~'00</td>
<td>1.05</td>
</tr>
<tr>
<td>'01~'06</td>
<td>0.50</td>
</tr>
</tbody>
</table>

### Capital Accumulation slowdown

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth rate of facilities investment(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>'86~'90</td>
<td>18.06</td>
</tr>
<tr>
<td>'90~'96</td>
<td>11.40</td>
</tr>
<tr>
<td>'97~'00</td>
<td>4.63</td>
</tr>
<tr>
<td>'01~'06</td>
<td>2.40</td>
</tr>
</tbody>
</table>
Korea’s Situation

Korea is highly dependent on foreign fossil fuels

✓ Korea is among the world’s top 10 energy consumers

✓ 97% of energy is from foreign sources

⇒ energy imports (141.5 billion USD) > exports of automobiles, shipbuilding and semiconductors (110.9 billion USD; as of 2008)

✓ Korea’s energy imports in 2010 account for 29% of its total imports
Korea faces abnormal climate and aggravated damages

- For the last 10 yrs, there were 133 natural disasters resulting in 14 billion USD worth of economic damages (311% increase compared with 1990’s) and 684 fatalities
  - “Rusa” in 2002 was the worst typhoon in the last 10 yrs causing an economic loss of 4.3 billion USD and 246 deaths

- It is estimated that the accumulated economic loss due to climate change by 2100 will **reach 2.4 trillion USD**.
  - July 2011, Korea Environment Institute
“Low Carbon Green Growth” : Korea’s new development vision

“Green growth seeks sustainable growth by reducing GHG emission and environmental pollution. It is a new development paradigm which creates new growth engines and new jobs from green technologies and clean energies.”

(President Myung-bak Lee, on August 15, 2008, marking the 60th anniversary of the Republic of Korea)
III. Green Growth
: Korea’s Experiences
Achievements of green growth?

4 years of Green Growth,

What have been the achievements?

Aug. 15\textsuperscript{th}, 2008 ~ May 30\textsuperscript{th}, 2012

(3 years 10 months)

Jan. 2009 ~ May 30\textsuperscript{th}, 2012.5.30

(3 years 5 months)
Economic development model that harmonizes growth with environmental protection.

1. Paradigm Shift in National Development Strategy

- Green - Growth: Trade off
- Green – Growth: Win-win

**Economy** (Growth) → **Environment** (Green) → **Win-Win Effect**

- Economic growth that enhances environment
- Economic development model that harmonizes growth with environmental protection
Change in national development paradigm

Past 60 yrs

“On the day when black smoke of industrial production rises up into the sky, we will realize the day of hope and development has arrived for our nation”

- Inscription on Ulsan Industrial Tower (3 Feb. 1962)

Future 60 yrs

- Sustainable growth while reducing GHGs and environmental pollution
- New national development paradigm while preparing for climate change and creating new growth engines and jobs in green technology and new and renewable energy
2. Establishment of Policy Infrastructure

- National Strategy for Green Growth and 5-Year Plan (‘09.7)
- GHG Reduction Target (‘09.11)
- 4 Major Green Growth Acts (‘10~’12)
3 Objectives

Mitigation of Climate Change and Energy Independence
1. Effective mitigation of greenhouse gas emissions
2. Reduction of fossil fuel use and progress toward energy independence
3. Strengthening capacity to adapt to climate change

Creation of New engines for Economic Growth
4. Development of green technology
5. Greening of existing industries, promoting green industries
6. Maturing industrial structures
7. Development of structural foundation for green economy

Improvement in Quality of Life and Enhancement of Int’l Standing
8. Greening the land and creating green transportation infrastructure
9. Bringing the green revolution into daily life
10. Becoming an international green growth role model

10 Key Agenda

※ Government’s Investment: 2% of GDP annually
   (UN recommendation: 1% of GDP)
2-② GHG Reduction Target

Target setting

✓ Midterm GHG Mitigation

2020 GHG Emission Target (mil. ton)

- Voluntary GHG emissions reduction by 30% below BAU by 2020

✓ Energy Security

Energy Independence Ratio (%)

- Renewable energy supply (%)
  : (‘09) 2.5 → (‘15) 4.4 → (‘20) 6.1 → (‘30) 11.0
4 Major Green Growth Acts (’10~’12)

- **Framework Act on Low Carbon Green Growth (2010)**
  - establish foundation for green growth implementation, make use of green tech. and green industry for new growth engine

- **Smart Grids Act (2011)**
  - systemically promote smart grid industries combined with energy and IT

- **Green Buildings Act (2011)**
  - set GHG reduction target on buildings, provide systemic basis for green buildings

- **Emissions Trading Scheme Act (2012)**
  - introduce ETS in order to reduce GHG cost effectively
Target Management Scheme
(effective in April 2010)

- To reduce GHGs by imposing mandatory targets on 458 major producers of emissions including steel and chemicals
  - 60 % of total GHG

Emissions Trading Scheme
(introducing in 2015)

- To reduce GHGs by setting reduction targets and achieving those targets through market mechanism (trading allowances)
  - Special Committee on Climate approved the Bill on ETS (April 2011)
  - Plenary Session passed the Bill on ETS on May 2nd 2012
Al Gore, environmental activist

“South Korea passes historic climate legislation”
(transmitted to 2.5M followers through Twitter)

“South Korea's parliament has approved a long-delayed bill to start trading carbon dioxide emissions in 2015, joining the vanguard of countries battling climate change.”

(linked article of APF to Twitter)
3. Development of Green Technologies and Industries

- **Rapid increase in government R&D investment** (2.3 billion USD in 2011)
- **Improvement of green technologies** (2011, 77.7% compared to advanced countries)
- **Rapid increase of investment in green industries** by 30 largest conglomerates
- **Growth of new and renewable energy industry**: employment 3.7 times, sales 6.5 times, exports 7.3 times from 2007 to 2010
3. Development of Green Technologies and Industries

- The world’s largest tidal power station (2011, Shihwa)
- The world’s largest plant for batteries for electric vehicles (2011)
- Lithium battery (2nd in the world), LED (2nd)
Exports of CSGT (Climate Smart Goods and Technologies)


* China(1st), Germany(2nd), U.S.A.(3rd), Japan(4th), Italy(5th), France(6th)

World’s 4th in 2015
4. Improvement in Public Awareness

- ‘Green Growth Policy’: The 2\textsuperscript{nd} best economic policy

(KTV, Jan 2012)

* 1st: achievement of 1 trillion USD trade volume

- Report on major policies in 2010
- Report on major policies in 2011
4. Improvement in Public Awareness

Survey of Public Awareness on Green Growth

- Recognition of seriousness in climate change: 95.6%
- First impression on green growth:
  - Helpful: 25.1%
  - Ahead of time: 17.9%
  - Costly: 15.6%
  - Difficult: 14.2%
  - Uncomfortable: 13.7%
- Need for continued green growth policies: 96.7%

* January 15~17, 2012, survey of 1,000 adults via phone (Korea Research)
5. Global Diffusion of Green Growth

2010

- UNEP, introduction of Korea’s green growth as a role model
- Establishment of GGGI (Global Green Growth Institute)
- G20 Seoul Summit, Adoption of green growth agreement

2011

- Green growth alliance between Korea and Denmark
- OECD, Declaration of green growth as a vital future strategy
✓ Green growth means fostering economic growth and development, while ensuring that natural assets continue to provide resources and environmental services on which our well-being will depend.
5. Global Diffusion of Green Growth

**Green ODA**

- Scaling up of ODA: (2009) 0.10 -> (2015) 0.25 % of GNI

**East Asia Climate Partnership**

- Total 200 million USD (2008~2012)
- Customized technical assistance for climate change mitigation and adaptation (46 projects; 09~11)
  - Azerbaijan (water management), Sri Lanka (solar plant)
Global Green Growth Institute (GGGI)

✓ Global think tank for mainstreaming green growth low carbon economy

✓ (Vision and Mission)

- Green Growth Planning
  * supporting developing and emerging countries in the design and implementation of green growth economic development plans

- Public-Private Partnership
  * strengthening the enabling environment for resource-efficient investment, innovation and diffusion of best practice in the private sector

- Research
  * advancing theory and practice of green growth

✓ (Partner Countries) Australia, Brazil, Cambodia, Denmark, Ethiopia, Indonesia, Japan, Kazakhstan, Mongolia, Philippines, Korea, Thailand, UAE

✓ Conversion of GGGI into an International Organization (expected in 2012)
IV. Lessons Learned
Lessons Learned

Comprehensive Approach (Top-down)

- Build strong legal and institutional frameworks for green growth
- Inter-ministerial coordination for increasing efficiency
  * PCGG (Presidential Committee of Green Growth) consists of 13 Ministers and 34 experts from the private sector
- Shared vision and clear mid-to-long term goals for green growth

Active Participation from the Public (Bottom-up)

- Increase public awareness on green growth
- Policies needed to translate into action through public participation
Thank you!