Opportunities and Challenges to Promote Economic Transition to Low Carbon Green Economies

International Conference on the Korean Experience: Lessons for LAC Development

CHUNG, Suh-Yong
Korea University

Washington D.C., May 14 2014
Serious Impacts of Climate Change
How much do we need to reduce GHGs?

![Diagram showing the effect of delaying action on global GHG emissions.](image)

- Peak at 550 ppm, long-term stabilization 550 ppm, expected 3°C increase
- Peak at 510 ppm, long-term stabilization 450 ppm, expected 2°C increase
- Peak at 480 ppm, long-term stabilization 400 ppm, expected 1.8°C increase
- Lost abatement opportunity

Global GHG emissions
GtCO₂e per year

Potential emission development if starting in 2020¹
Potential emission development if starting in 2010¹

¹ Technical levers < € 80/CO₂e.
Source: Global GHG Abatement Cost Curve v2.0, v2.1; IEA; US EPA; Houghton; IPCC; OECD; den Elzen; Meinshausen; van Vuuren
CO2 Emissions

CO₂ emissions per country from fossil-fuel use and cement production

GHG Emission: US

- 26% Coal-fired power plants
  - Ash disposal regulations (EPA)
  - New source performance standards and pre-construction permits (EPA)
  - Energy efficiency standards (DOE/States)
  - Traditional pollution regulations (EPA/States)

- 7% Agriculture
  - Agricultural policies (USDA)
  - Land management policies (DOI)
  - Federal forest lands management (USDA, USFS, DOI)

- 6% Natural gas power plants
  - New source performance standards and pre-construction permits (EPA)
  - Energy efficiency standards (DOE/States)
  - Traditional pollution regulations (EPA/States)

- 2% Hydrofluorocarbons
  - Elimination of use (EPA)

- 9% Industrial combustion
  - New source performance standards and pre-construction permits (EPA)
  - Energy efficiency standards (DOE)

- 7% Commercial and residential heating fuel
  - Energy efficiency standards (DOE)
  - Building energy codes (States)

- 2% Aircraft
  - Aircraft emissions standards (EPA)
  - Operational changes to save fuel (FFA)

- 16% Light-duty vehicles
  - Vehicle corporate average fuel efficiency standards (DOT)
  - Vehicle emissions standards under Clean Air Act (EPA)
  - Renewable and/or low carbon fuel standards (EPA)
  - Policies that reduce vehicle miles (States, Metropolitan Planning Agencies, Cities)

- 6% Heavy-duty vehicles
  - As per light-duty vehicles

- 0.2% Other

- 1% Other power plants

- 3% Off-highway vehicles

- 2% Other transportation

- 2% Landfills

- 0.3% Adipic and nitric acid manufacturing

- 1% Coal mining

- 4% Natural gas systems

- 4% Other industrial

DOE, Department of Energy; DOI, Department of the Interior; DOT, Department of Transportation; EPA, Environmental Protection Agency; FAA, Federal Aviation Administration; USDA, US Department of Agriculture; USFS, US Forest Service. Figure reproduced with permission from ref. 13, © 2013 WRI.
GHG Emissions: Mexico

source: Global CCS Institute
Assessment on the effectiveness of current Climate Change Regime

• 1992 UNFCCC
• 1997 Kyoto Protocol

• Mainly top-down
• With some market mechanisms
• Changed landscape of GHG emission
• Problem of country-grouping
  – Annex I vs. Non Annex I
• Legally binding without effective enforcement mechanism?
New Approach?

• Bottom-up Approach
  – Country level efforts
  – Issue of development/growth
  – Means of implementation
    • Technology
    • Finance
    • (capacity-building)
  – Low Carbon (Emission) Development Strategy
Bottom-up Approach in the UNFCCC regime

• NAMAs (Nationally Appropriate Mitigation Actions) by developing countries
  – MRV
  – ICA

• Elements of NAMAs
  – Emission reduction strategy and related law/regulation
  – Finance
  – National Communications
  – Technology Needs Assessment
  – Technology Action Plan
Why Low Carbon Green Economy?

- Development is essential for eradicating poverty and creating prosperity
- Development, mitigation and adaptation efforts are interlinked
- Low carbon and climate resilient development as the answer - "green growth plans"
- Strategic framework for mitigation and adaptation efforts in the context of the local economy for developing and developed countries

Source: Project Catalyst
How would 2020 Regime look like?

Top-down

Bottom-up
Why Low Carbon Green Economy?

From the Issues of Costs

To the issues of Opportunities
Why Low Carbon Green Economy?

From the issues of Environmental Protection

To the Issues of Growth/Development

Suh-Yong Chung
Why Low Carbon Green Growth?

LCICG members have diverse interests in low carbon technologies and support different stages of the innovation chain. In the period up to April 2015, some LCICG members expect to spend over £1 billion of public-sector funding on low carbon innovation. By working together, the members of the LCICG can maximize the impact of their spending and add value to the low carbon innovation landscape. The LCICG is working to:

- Coordinate future investment programmes delivered through individual member organisations, building on its Strategic Framework - Coordinating Low Carbon Technology Innovation Support
- Improve communication with innovators across low carbon technologies
- Create a robust, shared, evidence base to understand the innovation needs of a range of key low carbon technologies in the form of Technology Innovation Needs Assessments
- Develop a shared toolkit of metrics to assess the impact of public spending in low carbon innovation
- Share learning, approaches and tools to accelerate performance improvement

Information about current funding opportunities from LCICG members can be found on their own websites or on the Low Carbon Funding Landscape Navigator: www.lowcarbonfunding.org.uk
Planning, Finance & Technology
Global Green Growth Institute

• Lack of any consultative organization or think-tank type of organization to address the challenges which can become new opportunities
• Given the limited coordination ability of existing global institutions, country based bottom-up approach may work better
• Need for strengthening public-private relationship
Three Pillars of GGGI Activities

• **Green Growth Planning and Implementation (GGP&I)**
  
  GGP&I assists developing and emerging countries in mainstreaming green growth in their economic development plans. The GGP&I workstream includes about 3 programs in about 20 countries and regional and cross-cutting projects to support achieving economic goals while integrating social and environmental aspirations.

• **Knowledge Development & Management (KDM)**
  
  KDM creates and shares knowledge about the green growth paradigm through a portfolio of initiatives that advance the knowledge available to policymakers, including Green Growth Best Practices, Green Growth Knowledge Platform, Technology Innovation to Advance Green Growth, Green Growth Indicators and Methodologies, and Green Growth: the New Industrial Revolution.

• **Public-Private Cooperation (PPC)**
  
  PPC facilitates cooperation between the public and private sectors to unlock the barriers to green growth through engagement with the Global Green Growth Forum (3GF), the Green Growth Action Alliance (G2A2), and Clean Energy Ministerial initiatives. PPC aims to rebalance the risk/reward profile of green growth sectoral investments. A recently established private sector advisory committee provides guidance on the program of work.
GGGI Organs

- **The Assembly** is composed of the GGGI Members (contributing and participating) and is the supreme organ that advises the overall direction of the GGGI’s work and elects Council members.

- **The Council** is composed of a balanced number of Members, non-state/expert actors, the host country and the Director-General, and is the executive organ that directs the GGGI’s activities.

- **The Advisory Committee** is composed of leading private sector and non-state actors, and is the consultative/advisory organ.

- **The Secretariat**, headed by the Director-General, is the operational organ that supports the above governance bodies.
Climate Finance

Figure 2: Funding targeted for climate change activities

- GCF
- The GEF
  - Trust Fund
  - SCCF
  - LDCF
- CDM/JI
- BILATERAL
  - ODA (OECD/DAC)
  - Seed financing
  - Green Financing
- MULTILATERAL
  - World Bank Carbon Finance
  - UNEP
  - EU COMMISSION
  - UNDP
  - IFC
  - EBRD
  - UNCTAD
- PRIVATE SECTOR
  - Commercial Banks
  - Micro financing
  - Insurances

2014-5-14

Suh-Yong Chung
Climate Finance & Technology

Figure 0X-41. Technology cost and financing curve

- Early development phase may need direct assistance
- Purchase incentives and/or the CO₂ market drive(s) early deployment
- More cost competitive
- Earlier deployment
- Purchase incentives and/or CO₂ price
- Competing technology

Source: Kirkman A et al., 2007.
Climate Finance

We’re falling further and further behind the globally agreed upon goals for safe emissions levels. If we are going to close the gap, we’ve got to know how finance is flowing now.

$5 trillion
additional investment for clean energy alone, up to 2020

Source: IEA

Source: CPI
Climate Finance

Where is climate finance going?

76% of climate finance is spent domestically.
The majority of global climate finance originated in the country in which it was used.

$86 bn
24%

$273 bn
76%

24% of climate flows between countries.
Much of the international money flowing between developed countries is private.
The vast majority of money flowing from developed to developing countries is public.

This highlights investors' preference for familiar environments perceived to be lower risk.

Source: CPI
THE FLOWS OF CLIMATE FINANCE 2013

The Flows of Climate Finance Diagram illustrates the most comprehensive inventory of climate finance flows along their life cycle for the latest year available, mostly 2012. Click on each box for more detail about the actors, instruments, and uses of climate finance.

**Sources and Intermediaries**

- Government Budgets
- Agencies
- Development Finance Institutions
  - National
  - Bilateral
  - Multilateral
- Climate Funds
- Commercial Financial Institutions
- Private Equity, Venture Capital, Infrastructure Funds
- Institutional Investors
- Project Developers
- Corporate Actors
- Households

**Instruments**

- Policy Incentives
- Risk Management
- Grants
- Low-Cost Project Debt
- Project-Level Market Rate Debt
- Project-Level Equity
- Balance Sheet Financing

**Channels**

22
Adaptation

337
Mitigation

**Uses**

$359 BN Total

**Key**

- Public Money
- Public Financial Intermediaries
- Private Money
- Private Financial Intermediaries
- Finance for Investors & Lenders
- Capital Investment and Incremental Costs

NE: Not Estimated
Green (Climate) Finance in Korea

Framework Act on Low Carbon Green Growth

- Article 28. The Government shall establish and enforce financial measures, including the following matters, to facilitate low carbon, green growth:

1. Raising of financial resources for supporting green economy and green industries and financial support therefor;
2. Development of new financial products for supporting low carbon, green growth;
3. Encouragement of private investment in projects for the establishment of infrastructure for low carbon, green growth;
4. Reinforcement of the public disclosure system for information about enterprises’ green management and expansion of financial support for enterprises adopting green management;
5. Establishment of a carbon market (referring to a market in which rights to emit greenhouse gases or results of performance of reducing or absorbing greenhouse gases are traded; the same shall apply hereinafter) and stimulation of transactions therein.
Policy Instruments (year 2010)

- **Korea Finance Corporation**: Generated 1.5 trillion Korean Won fund for stimulating investments
- **Green Certification**: Incentivizing SMEs
- **Expanding ESCO funds**: Liking to target management system
- **Green Finance Information Sharing**: Lunched a comprehensive website system
Policy Instruments

Emission Trading System

- First non-Annex I country which adopts the ETS Bill (2012)
- Scheduled to have ETS bill effective in 2015
- 3 phases (2015-2017; 2018-2020; 2021-2026)
- About 490 of the country’s largest emitters (roughly 60% of the country’s annual GHG emissions) will receive caps.
- 2 categories for ETS participants:
  - voluntary
  - Mandatory: capped emitters are determined by thresholds: companies that annually discharge over 125,000 tCO2e and/or workplaces that annually emit over 25,000 tCO2e are required to submit allowances for each ton of CO2e that they produce.
  - All participants must fill out an application for receiving permits, as well as constructing an annual emissions inventory for the government to monitor
Auctioning/allowance distribution:

<table>
<thead>
<tr>
<th>Phase</th>
<th>% of allowances freely allocated</th>
<th>% of allowances auctioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Phase 2</td>
<td>97%</td>
<td>At least 3%</td>
</tr>
<tr>
<td>Phase 3</td>
<td>Up to 90%</td>
<td>At least 10%</td>
</tr>
</tbody>
</table>

⇒ high % of free allocations is intended to ease costs and int’l trade burdens on industries. In addition, to invigorate emissions permit trading and to prevent loss of business competitiveness due to the introduction of the ETS, financial and tax support, assistive monies, and/or other assistance may be provided. (companies in sectors that are considered energy-intensive and trade-exposed (EITE) will receive 100% of their allowances free of cost.)
Hosting GCF

- GCF is headquartered in Songdo, Korea (2013)
- In 2013 at the UN Long-term Finance Work Programme Wrap-up meeting, Korea promised to provide US$40 million to GCF (2014-2017)
- In July 2013 Korea passed the “Law on the Operational Support for GCF
  - The Law allows GCF to issue financial products and to trade financial products in the financial market. However, this clause is to become effective only after the Secretariat is entrusted with the fund (currently the World Bank is temporarily given this role for 3 years)
- The Korean government provides office in Songdo (max 15 floors), and also at the Songdo Convention Center when needed.
- Contribution Agreement (Oct., 2013)
  - Korean government will contribute $1 million/year 2013-2019 to the operation cost of GCF secretariat
It has been shown that reliance on government is increasing in areas such as green loans, guarantees, and insurance, because domestic financial industry operates funds usually around short-term risk management, which makes it difficult to secure funds to satisfy the green industry’s investment demand.

Source: Namhee Kim, 2013)

<table>
<thead>
<tr>
<th>Category</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green financing total</td>
<td>5.5 trillion won (100%)</td>
<td>9.9 trillion won (100%)</td>
<td>14.8 trillion won (100%)</td>
</tr>
<tr>
<td>National bank</td>
<td>3.1 trillion won (56.4%)</td>
<td>6.4 trillion won (64.6%)</td>
<td>10.4 trillion won (70.3%)</td>
</tr>
<tr>
<td>Private bank</td>
<td>2.4 trillion won (43.6%)</td>
<td>3.5 trillion won (35.4%)</td>
<td>4.4 trillion won (29.7%)</td>
</tr>
</tbody>
</table>
• Introduction *Suh-Yong Chung*
• Why the World has Failed to Slow Global Warming *David Victor*
• Is an international treaty worth fighting for? *Yvo de Boer*
• Post-2020 Climate Change Regime Building: An Advanced Developing Country’s Perspective *Suh-Yong Chung*
• Post-Durban Prospects for Low-Carbon Green Growth *Paul Ekins*
• Climate Negotiations: How to Break the Impasse and Deliver *Juan Zak and Myung Kyoon Lee*
• China’s Transition Towards a Low-carbon Economy: a Review of the 11th Five Year Plan *Ye Qi and Hui-min Li*
• Moving Forward in the Climate Change Policies and Practices *Wan Portia Hamzah*
• Conclusion *Suh-Yong Chung*
THANK YOU!

mahlerchung@gmail.com
www.gggi.org
www.csdlap.org