Green Technology Field Application for Coping with Climate Change Issues

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Agenda

I. The New Climate Regime

II. MSIT and Green Technology Center (GTC)

III. GTC’s Technology Cooperation Cases

IV. How to Connect Technology with Finance
Global Threat of Climate Change

It’s happening, “extremely likely” human driven, causing extreme weather and will worsen without action

- Average surface temperatures up 1°C on pre-industrial levels in 2015
- Heat waves, extreme precipitation
- Ocean warming and acidification
- Global mean sea level rise
- Worst in developing countries
- Effects will continue for centuries
- Mass migration and security crises
Countries CO₂ Emissions and Climate Vulnerability

As well as cutting emissions, developed countries have “historic responsibility” to assist climate change vulnerable developing countries.

Source: http://www.carbonmap.org

Source: Verisk Maplecroft
## Korea’s Green House Gas Reduction Efforts

Korea’s Nationally Determined Contribution to the UNFCCC (June 30, 2015)

TARGET: GHG emission reduction: **37% from BAU level by 2030**

- Domestic reduction: **25.7%**
- Reduction via international markets: **11.3%**

### Emission Rating

<table>
<thead>
<tr>
<th>Inadequate:</th>
<th>Medium:</th>
<th>Sufficient:</th>
<th>Role Model:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emissions targets in this area are less ambitious than the 2°C range</td>
<td>Not consistent with limiting warming below 2 °C</td>
<td>Fully consistent with below 2 °C limit</td>
<td>More than consistent with below 2 °C limit</td>
</tr>
</tbody>
</table>

### Korea’s GHG Reduction Target

<table>
<thead>
<tr>
<th>Year</th>
<th>BAU (MtCO₂ eq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>782.5</td>
</tr>
<tr>
<td>2025</td>
<td>809.7</td>
</tr>
<tr>
<td>2030</td>
<td>850.6</td>
</tr>
</tbody>
</table>

### Graphical Representation

- Historical emissions, excl. forestry
- Historical emissions/removals, from forestry
- Current policy projections
- 2020 pledge
- Reference for 2020 pledge
- INDC
- INDC, domestic reductions
- Reference for INDC
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Technology Transfer to Partner Dev. Countries through CTCN/GCF

- **CTCN Members**
  - Public Bidding
  - TA Proposal
  - Technological Information

- **NDE**
  - Policy Participation

- **TEC**
  - Policy Participation

- **CTCN**
  - Technology Assistance
  - Knowledge Sharing
  - Capacity Building

- **NDE**
  - Provision of Information
  - NDE Capacity Building Workshop

- **GCF**
  - Readiness Program
  - Project Preparation Fund
  - Project

- **NDA**
  - Project Proposal
  - Screening & Funding
  - Proposal Submission & NDA Agreement

- **International & Regional IEs**

- **Developed Countries**

- **Developing Countries**

- **Approved NIEs**
  - Project Application
  - Screening & Funding
  - Project Application & NDA Agreement
  - Committee Approval & Funding
Korean NDE’s Global Cooperation Strategy

MSIT aims to become a hub for global climate technology cooperation – linking Korean technology providers with needs of developing partner countries around the world.

**Vision**
Hub & Sherpa for Global Climate Technology Cooperation

**Target**
Develop Global Cooperation Model

**Five Strategic Directions**

1. Climate Technology Pilot Projects
2. Expand Global Cooperation Resources
3. Strengthen Global Climate Channels
4. Support Climate Tech. Cooperation
5. Support for CTCN Involvement


GTC’s Roles

GTC plays an important role of becoming a platform of the global climate technology cooperation

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**Center for Climate Technology Cooperation**

- Promote climate technology infrastructure projects
- Develop climate technical cooperation model
- Match tech. needs & supply
- Cooperate with UN and int’l org. including MDBs & NDEs
- Capacity building and knowledge sharing

**International Strategy Division**

- Global network
- Negotiations at the UNFCCC Technology related Meetings
- Assist TEC member
- Climate technology information system (DB)

**Division of Policy Research**

- Support forecasting, planning and researches on green technologies
- Climate statistics and related research

**Division of Administration**

- Support institutional management
- Enhancing environment for open convergence researches
- Establishing a performance-oriented creative management
GTC’s Technology Cooperation Framework

GTC supports major four areas – identifying tech. needs, designing projects, conducting F/S, and linking with financial resources.

Green Development Value Chain

- Green growth policy
- Identify technical demands
- Prepare Project design
- Provide a feasibility study
- Arrange financial support
- Green development
- Operation and Maintenance

Green Tech. Transfer Framework for Developing Partner Countries

UN/ GGGI
- National institutions
- Gov’t in developing countries

GTC

Cooperation network

GTC Core Area
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Case 1: Mongolian Green Educational Building Project

As GTC proves design and required feasibility study on Green Education Buildings, and now GGGI received a fund from the Asian Development Bank for the construction of green buildings.

Data Collection & Review
- Reviewed Data on Mongolian Schools
- Conducted Focus Group Interview

Scenario Development & Evaluation
- Site Visit & Analysis
- Feasibility Analysis
- Knowledge Sharing
- Provided Tech. Guideline and PPP Model

Improvement & Construction
- Improvement of Legal Systems
- and Construction of a Demonstration Building
Case 2: CTCN TA Projects

Response to a technical assistance from Kenyan National Designated Entity (NDE) on implementation of the low-cost green technologies in water sector

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**Project Overview**

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Catalyzing low-cost green technologies for sustainable water service delivery – Kenya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Frame</td>
<td>5 months from the contract date (December 2016 – May 2017)</td>
</tr>
<tr>
<td>Language</td>
<td>English</td>
</tr>
<tr>
<td>Objective</td>
<td>Adaptation</td>
</tr>
<tr>
<td>Target</td>
<td>• PPP business model development and capacity building to develop sustainable green water resource technology such as pumping systems based on renewable energy</td>
</tr>
<tr>
<td>Country partners</td>
<td>Water Services Trust Fund of Kenya, Kenya Industrial Research and Development Institute (NDE)</td>
</tr>
</tbody>
</table>

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**Project Consortium Structure**

- PPP model with focus on the selected water technologies
- PPP model with focus on large scale renewable energy facilities
- Assessment on possible linkage with electrification
- Financial and operational aspects of PPP model
- PPP model with focus on water supply and water pumping system in Africa
- Lead organization
- PPP business model development
- Capacity building workshop
Case 3: CTCN TA Projects

Response to a technical assistance from Guinean National Designated Entity (NDE) on optimization of funding access to the climate change adaptation projects in Guinea.

**Project Overview**

- **Project Title**: Optimizing Access to Funding of Technology Projects for Adapting to Climate Change – Guinea
- **Time Frame**: 6 months (November 2016 – May 2017)
- **Language**: French
- **Objective**: Adaptation
- **Target**:
  - Increased knowledge and capacities to attract investors and donors to fund projects
  - Increased number of initiatives funded to deploy and scale up climate technologies for adaptation

**Country partners**:
Ministry of Agriculture, Ministry of Energy & Hydraulics, Ministry of Environment, National Environment Council, Research Centers of Guinea

**Photos of Guinea**

**Project Consortium Structure**

- **CTCN & UNIDO**
- **Guinea NDE/Request Applicant**
  - Pollution Prevention Division, National Environmental Division, Ministry of Environment

**External Consultants**
Case 4: CTCN TA Projects

Bangladesh CTCN TA

(Lead) GTC; (Consortium) KICT, GAT

(Title)

- Technical Assistance for Saline Water Purification Technology at Household level, and Low cost durable housing technology for coastal areas of Bangladesh
- Period: 2017. 12 ~ 2018. 7
- Scope:
  - Tech Assistance Response plan (GTC)
  - Low cost durable housing tech for construction (KICT)
  - Saline water purification tech (GTAT)
  - Cap Building and Tech transfer (GTC)
- Expected benefit: Exploring climate technology transfer to partner countries

CONSORTIUM LEADER

GTC-K

- Project coordination and management
- Stakeholder engagement
- Response plan design
- Upscale project development
- Identification of financing opportunities

TECHNICAL PARTNER

KICT
- Identification of climate resilient housing and saline water purification technology
- Training & capacity building

GAT
- Identification of saline water purification technology
- Training & capacity building
Case 5: GCF PPF Proposal

As a model of South-South cooperation in the climate technology sector, planning to link the result of a pilot (ITS) to the GCF project (ITS, BRT).
## Case 6: GCF PPF Proposal

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<td><strong>Time Frame</strong></td>
</tr>
<tr>
<td><strong>Objective</strong></td>
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</table>
| **Activities**   | 1. Shift traditional power source to renewable energy such as solar floating photovoltaic and biomass power  
2. Improve waste water management and access to clean water  
3. Develop Eco-friendly tourism |
| **Partners**     | Korea Engineering Consultant Corp.  
Deloitte India  
Korea Environmental Industry & Technology Institute |
Case 7: Large Scale Infrastructure: Waste2Energy Project

Developing a cooperative project and a masterplan for sustainable integrated waste management considering various issues in current status of waste disposal through planning and implementing preliminary studies.

- Improving Waste Collection and Disposal
  - Introducing curbside program and related facility to increase recycling rate and to reduce amount of landfill
  - Increasing recycling rate of valuable resources and facilitating recycling industry
  - Improving efficiency of waste-to-energy (incineration) facility

- Waste Recycling and Energy Supply Facilities
  - Introducing power generation and heat supply facility using waste energy
  - Improving waste disposal facility to eco-friendly and supplying renewable energy
  - Minimizing amounts of waste landfill through eco-friendly waste disposal
Case 8: Carbon Capture Utilization: Waste Treatment through Green Cement Technology

The empirical research on the production of green cement based on Carbon Mineralization technology in Vietnam & Joint empirical research and human resource training in Vietnam

- Low-carbon and high-functionality ‘Green cement’
- Carbon money system and In-situ PCC technology
Case 9: Facilitation of Korea R&D Institutes' Technology Transfer

In order to commercialize the KIST's Smart Farm technology, planning to conduct a base research (relevant institution, process, investment, etc.) and develop an optimized model.

- **Sensors and Actuators** to control the greenhouse environment
- **Automatically** adjust temperature, humidity, as well as watering
- **Graphic User Interface (GUI)** gives information to the user with ease
- Establishing **Database** for expanding its function
OVERSEAS PROJECT MODEL DEVELOPMENT

CLIMATE TECHNOLOGY LOCALIZATION PROGRAM

ESTABLISHMENT OF TECHNOLOGY-FINANCE NETWORK

SMALL AND MEDIUM-SIZED ENTERPRISES SUPPORT

OPEN COLLABORATIVE RESEARCH

**Overview of Global Climate Tech. Cooperation in GTC**

- Contracting CTCN technical assistance projects
- Activation of domestic CTCN member institutions
- Networking with overseas CTCN member institutions
- Identifying potential demands in energy, water, and agriculture sector
- Capacity building for desalination technology
- Linking technology to financing
- Technology demonstration of energy efficiency in rural area housing
- Technology demonstration of wave energy generation
- Bankable feasibility study on biomass power plant
- Capacity building for desalination technology
- Eco-friendly Samosir Island Development
- Bankable feasibility study on flare gas recovery
- Master plan on waste management system
- Bankable feasibility study on bio-product project
- Bankable feasibility study on waste to energy project
- Lake Toba floating solar PV project

**China**

- Bankable feasibility study on carbon capture utilization (CCU) related to eco-friendly paper recycling
- Capacity building for desalination technology
- CCU technology transfer and linking to financing
- Technology demonstration of clean water treatment

**Vietnam**

- Technology demonstration of gravity-driven membrane filtration in villages
- Capacity building for desalination technology
- Technology demonstration of gravity-driven membrane filtration in villages
- Capacity building for desalination technology
- Demonstration of ICT smart farm technology
- Investor Relations (IR) for small and medium-sized enterprises project development in developing countries

**Kenya**

- Developing public private partnership model for sustainable water supply technology
- Technology demonstration of energy efficiency in rural area housing
- Technology demonstration of wave energy generation
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**Uzbekistan**

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**Bangladesh**

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Climate Technology Cooperation Process (General)

Providing systematic support for demand analysis
Establishing a roadmap for technology cooperation
Feasibility study
Linking with finance

Phase I
Technology demand survey
Selecting priorities in technology cooperation based on national main strategies (TNA, NDC, etc)

Phase II
Establishing a roadmap for technology cooperation
Establishing cooperative projects based on demand of technology and short/mid/long-term action plan

Phase III
Feasibility study on technology cooperation
Conducting a feasibility study on economic/social aspects of technology transfer

Phase IV
Linking with financial mechanism
Establishing an implementation plan linking with domestic/overseas financial institutions based on the results from FS

Phase V
Implementing technology cooperation
Laying out a foundation for Korean CO2 mitigation through technical support and technology diffusion
Phase 1: Climate Technology Demand Analysis

Selecting priorities of technology cooperation through discussions with relevant institutions, and
Matching with national key strategies (TNA, NDC, national cooperative strategies, etc.)

- Analyzing TNA under UNFCCC
- Analyzing national NDC
- Analyzing national development policies
- Analyzing CPS of international organizations
- Analyzing national cooperative strategies of Korean ODA
Finding a way to diffuse climate technology in short/mid/long term through appropriate technology package based on needs for technology and roadmap for technology cooperation
Phase 3: Conducting a feasibility study on climate technology cooperation

Confirm the possibility of forming a business on climate technology through project development for climate technology feasibility studies.
Phase 4/5: Linking climate technology with financing and Implementing climate Technology projects

(1) Deciding a type of climate finance in early phase
(2) The importance of Bankable Feasibility Study
(3) Tailor-made approach based on needs of developing partner countries, development stages and their priorities
(4) Communication with governments of developing partner countries from their perspective

Technical Assistance (Example)
- CTCN Technical Assistance (TA)
- NAMA
- GCF Readiness
- GCF Project Preparatory Facility (PPF)
- Knowledge Sharing Program (KSP)
- ADB- PPTA, CDTA, RDTA, etc.
- World Bank- Green Growth Trust Fund
- IDB – Technical Cooperation Fund,
- Public entity’ feasibility study fund, etc.

Global Climate Finance and ODA (Example)
- GCF
- CIF
- ADB Climate Fund
- World Bank Climate Fund, etc.
- Bilateral development fund:
  KEXIM EDCF, KOICA, JICA, KfW, DfID, USAID, etc.

Commercial Lending (Example)
- Global commercial lending: Barclays Asia Fund, etc.
- Korea domestic/public: Global Infrastructure Fund, etc.
Thank you for your attention.

Any inquiry, please contact kshin@gtck.re.kr