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한국환경정책·평가연구원



Climate Change and Local Adaptation in Korea

Huicheul JUNG^{*1}, Sungwoo JEON¹, Dong Kun LEE²

¹Korea Environment Institute, ²Seoul National University

(hchjung@kei.re.kr)

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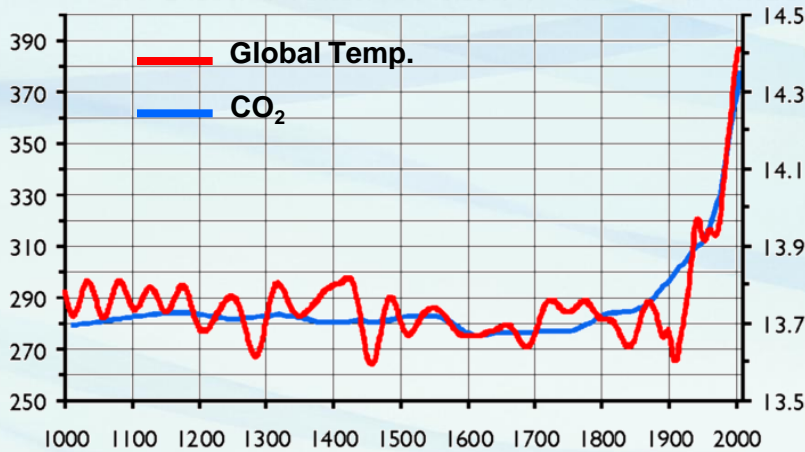
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- III . Achievements and Lessons
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Introduction

Climate Change Trends



Annual Increase rate of GHG

concentration : 2ppm

Global temperature : $+0.74^{\circ}\text{C}/100\text{yrs}$

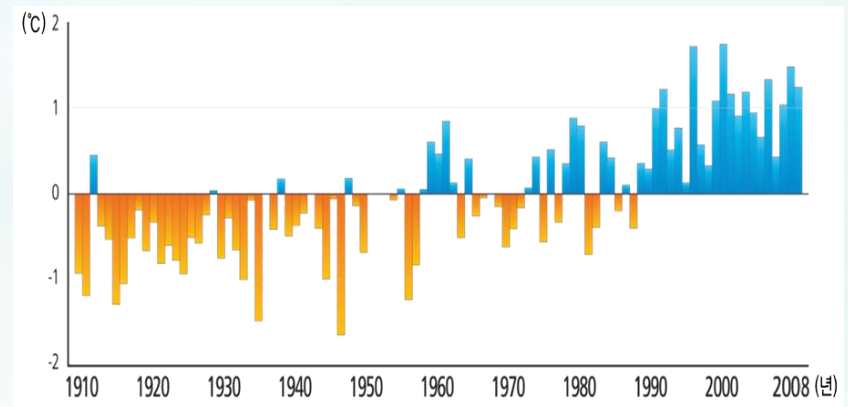
Trends in Korea

Temperature : $+1.8^{\circ}\text{C}/100\text{yrs}$

(6 major Cities)

Sea Level : $+22\text{cm}/40\text{yrs}$

Seawater temp. : $+1.2\sim 1.6^{\circ}\text{C}/100\text{yrs}$

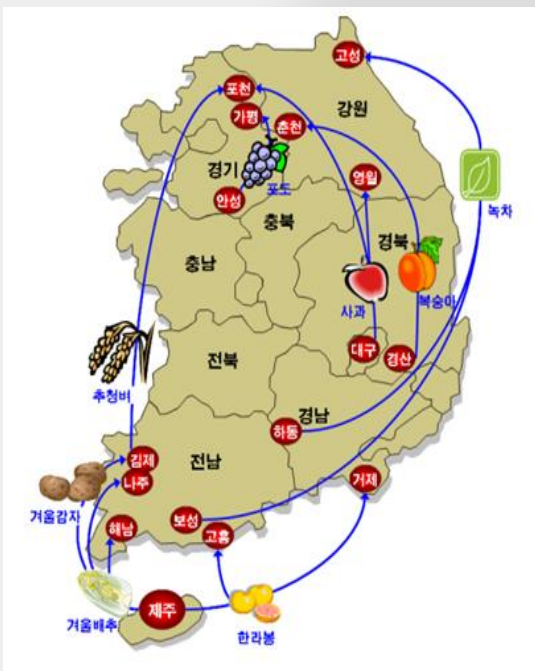


▲ Temperature Change of 6 Major Cities in Korea

Introduction

Impacts of CC

Agriculture



❖ Cultivation area shifting

Health



❖ Increase in infectious diseases and heat wave

Disaster



❖ Increase in the cost of extreme weather events

Introduction

Impacts of CC

Ecosystem



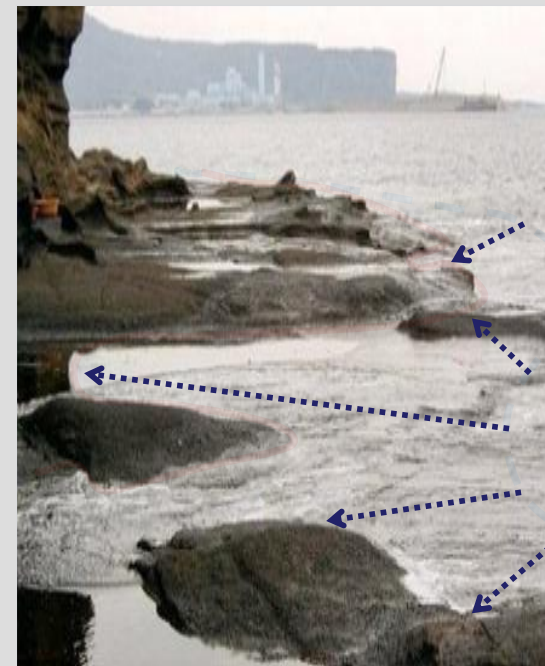
- ❖ More vulnerable over subtropical zone and mountain area

Forest



- ❖ Frequent land sliding due to heavy rainfalls

Sea level rise



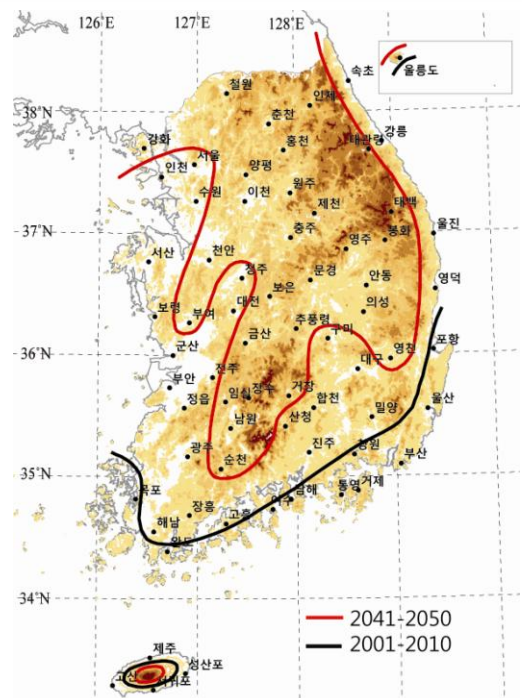
- ❖ Sea level rise at Yong-Mu-Ri, Jeju: 22cm over the past 43 years (Global mean=8cm)

Introduction

Future Climate Change
based on RCP 8.5 Scenarios

1.8°C increase during the past 100 years ⇒
(New Scenario) 3.2°C increase by 2050
(Old Scenario) 2.0°C increase by 2050

Change to Subtropical Climate



- Seoul's climate will become similar to Busan's current climate.
- Korea except for the interior will become a subtropical climate zone.

Change in Length of Season

Seoul: Spring will begin in Feb.
Summer will end in Oct.

The length of spring and summer will lengthen
but the length of winter will shorten.

	1	2	3	4	5	6	7	8	9	10	11	12
'10	겨울		봄		여름				가을			
'50	겨울 (-27일)		봄 (+10일)		여름 (+19일)				가을 (-2일)			

Change in Length of Season(Seoul)

Winter of Jeju and Ulleung islands
will be disappeared.

Introduction

Future Climate Change
based on RCP 8.5 Scenarios

Increase in Possibility of Heat Wave, Tropical Night and Heavy Rain

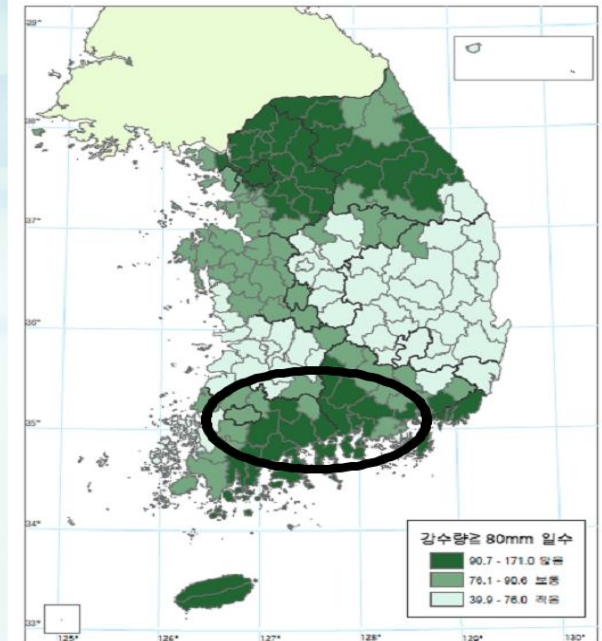
Heat Wave



Tropical Night



Heavy Rain



(Present) Annual average days of localized heavy rain: 2.20
(2010 by RCP 4.5): 6.54(+4.24)
(2010 by RCP 8.5): 6.59(+4.39)

Climate change will worsen **drought, flooding, landslide, disease and insect attack** leading the damages to agriculture, ecosystem and infrastructure.

Foundation and Characteristics

- Foundation: Clause 4, Article 48 of the **Low Carbon, Green Growth Law** and Article 38 of its implementing ordinances
- First legal national adaptation plan by Framework Act on Low Carbon, Green Growth Law (4/4/2010)
- Master Plan to establish detailed action plans for national & local governments
- **5 year** Rolling Plan considering uncertainty of climate change impacts

Consultative Body of Ministries

Ministerial Level Committee

Chairperson : Head of environment policy department

Climate Change Adaptation Committee



Introduction

Vision and Goals of
National Adaptation



VISION

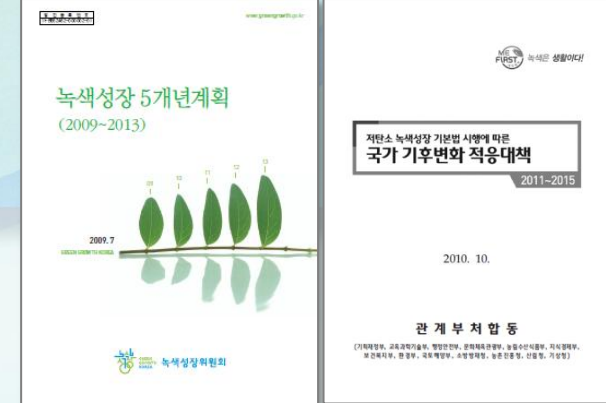
Establishment of a Safe Society & Support for Green Growth through
Climate Change Adaptation

10 Sectoral Adaptation Plans

Health	Protecting people from heat waves & Infectious Diseases
Disaster	Minimizing damage through the consolidation of disaster prevention foundation
Agriculture	Switching to adaptation based agricultural system & Create a new opportunity
Forestry	Improving forestry health & reduce forestry disaster
Coastal/Marine Resources	Responding to sea-level rise & Secure stable marine resources
Water Resources	Building secure water management system from flood and drought
Biodiversity	Securing biodiversity through restoration and protection
Industry and Energy	Finding new and promising businesses for climate change adaptation
Climate Change Monitoring and Prediction	Providing foundation data & minimize uncertainty
Education, PR & International Cooperation	Enhancing domestic and international communication on adaptation

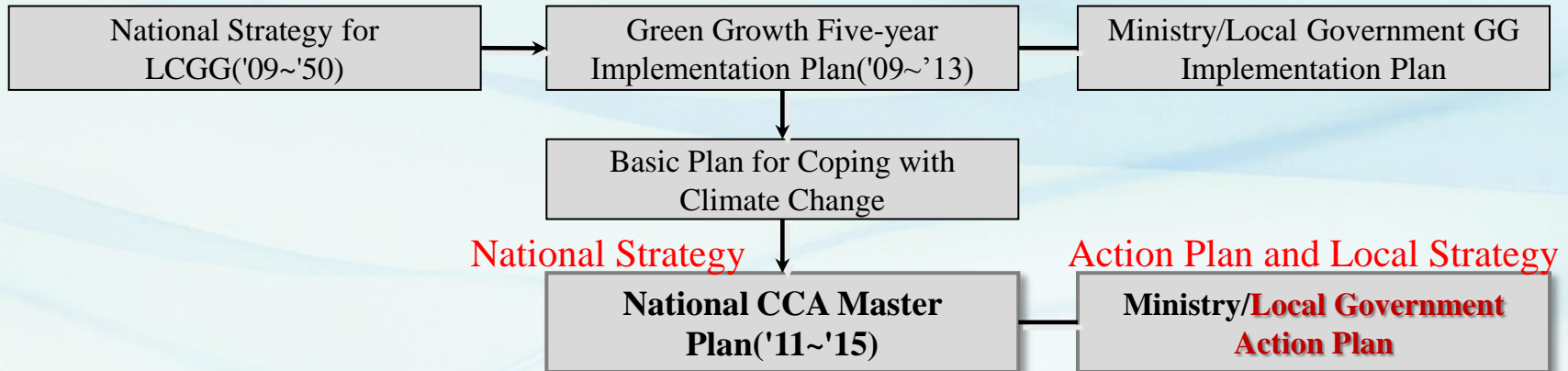
Introduction

Adaptation Policy



[Law]

Framework Act on Low Carbon, Green Growth (April, 2010)



[Host]



Objectives:

- How national government and local government play their role in enhancing province level adaptation and;
- The main challenges and lessons that we have now

Facilitating Factors

- **Introduce Top-down Approach to adapt to Climate Change**
 - Korea composed a National government adaptation committee with 13 ministries to implement the National Adaptation Strategy
 - Ministry of Environment(MOE) is in charge of the NAS and supporting local governments
- **Build up Ground for Adaptation : Policy and Budget**
 - In August, 2010, Korea has established the National Climate Change Adaptation Master Plan by Framework Act on Low Carbon, Green Growth and set up the committee to implement the NCCAMP successfully
 - In 2011, MOE allocated about 4billion(KRW) in supporting local government adaptation plan
- **Establish a National Task Force Center for Adaptation**
 - MOE launched a national task force for climate change adaptation , Korea Adaptation Center for Climate Change(KACCC) in 1st July 2009 at KEI
 - MOE and KACCC are working closely to support successful local adaptation plan

Supporting system

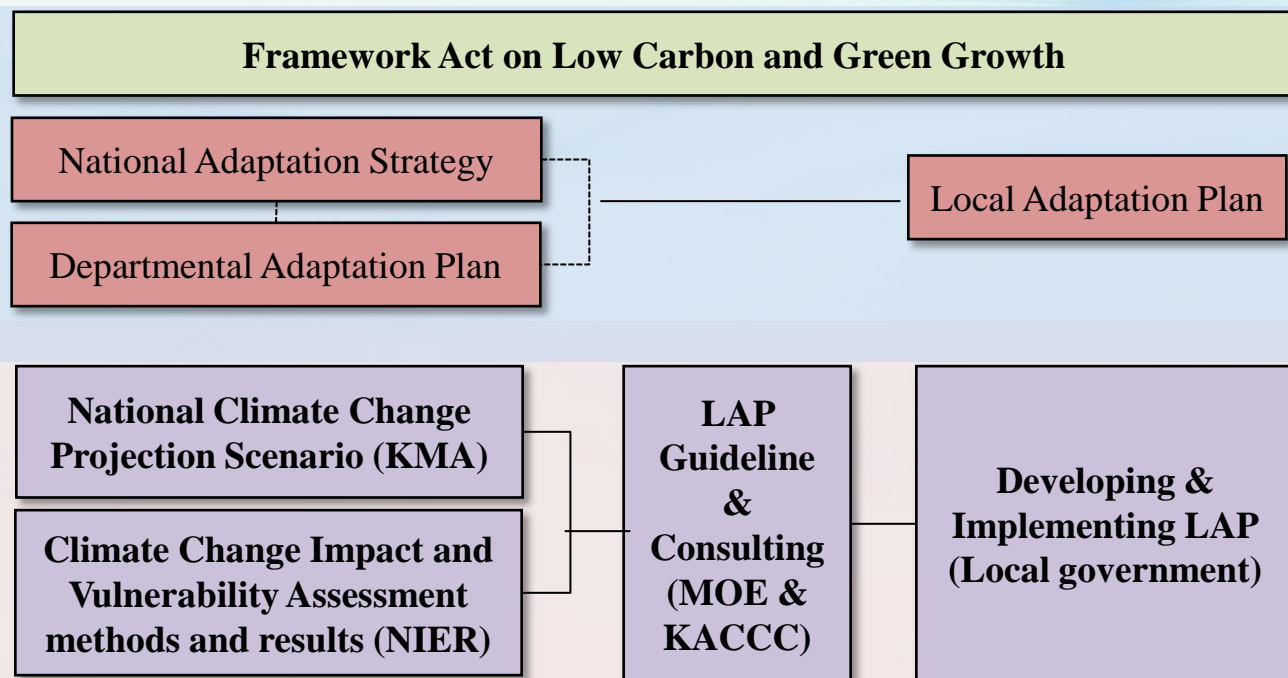
- To help local governments prepare for climate change, central government support their preparedness based on **resources, tools, examples and communication**
 - Systematic and various supporting programs that helps local governments to enhance their adaptation knowledge and build adaptation capacity
 - Supporting programs are divided into 3 categories and now is in 3rd phase

	Guiding & Consulting	Informing	Communicating
Phase 1 (2010)	<ul style="list-style-type: none"> • LAP Guideline • LAP Pilot studies 	<ul style="list-style-type: none"> • Inventory of adaptation policy options (national) 	<ul style="list-style-type: none"> • Workshops, seminars • Online community : website
Phase 2 (2011)	<ul style="list-style-type: none"> • LAP Consultation • Impact and risk assessment manual for adaptation 	<ul style="list-style-type: none"> • Climate change projection • Risk assessment • Updating inventory (local and other nations) 	<ul style="list-style-type: none"> • Workshops, seminars, expert forum • Online community : website

Developing LAP (Phase2)

National government draw picture of how to manage LAP

- Local government promoted LAP with national government(MOE) and related organizations including Korea Meteorological Administration(KMA), National Institute of Environmental Research(NIER), Korea Adaptation Center for Climate Change(KACCC)



LAP system in Korea and related organizations

Developing LAP (Phase2)

Under National Adaptation Strategy KACCC is in charge of supporting and managing province-level adaptation planning

- Finding needs and issues while preparing and developing step
- Talking and sharing knowledge with province LAP group by attending meetings and briefing
- Monitoring planning process and linking MOE with local government
- Helping 16 local governments to have networking and sharing their knowledge and experiences
- Launch advisory group to support various adaptation sector issues



Developing LAP (Phase2)

Sharing adaptation knowledge and communicating with stakeholders

- Hold meetings, workshops, seminars to share knowledge, know-how with experts, national/local governors and citizens
 - Share knowledge from who already experienced LAP
 - Find issues in preparing and planning LAP by communicating with local governments with national
- Bring out adaptation issues by publishing news letters



2011 WS for LAP

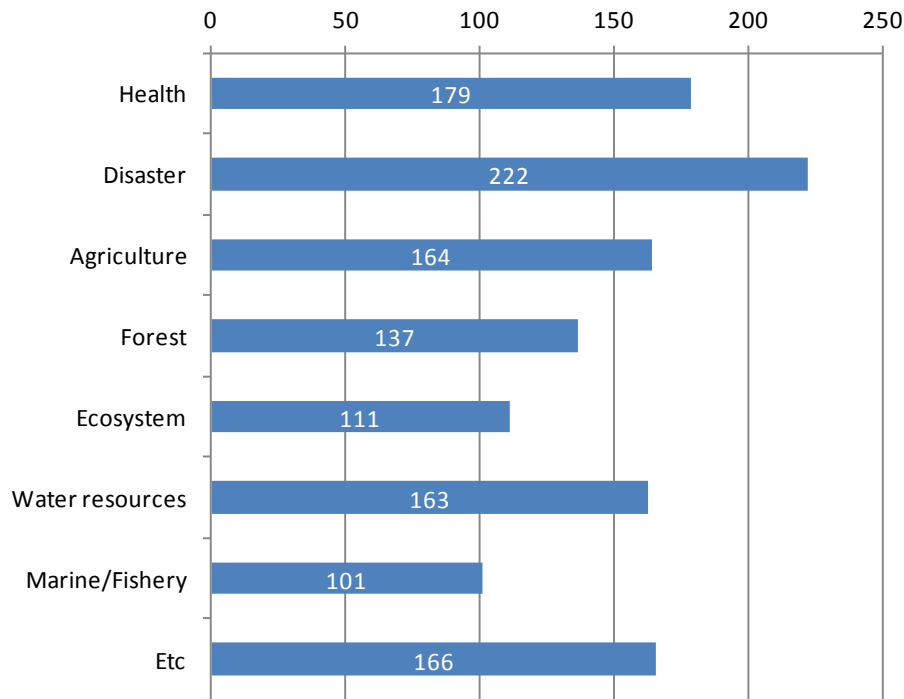


News letters for the publics

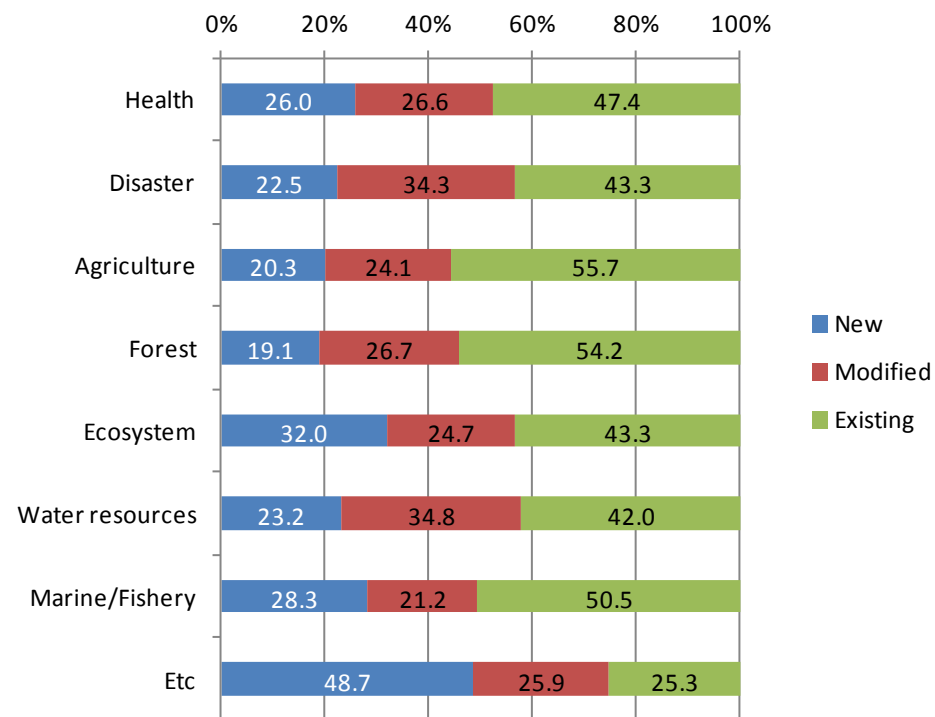
Achievements and Lessons

2011 Action Plans

- All of 15 province developed their “Adaptation Action Plan(12~16) in 2011
- Total **1,243 projects**: Disaster prevention(222 projects, **17.9%**), Health(179, **14.4%**), Water resources(163, **13.1%**),,Ecosystem (111, **8.9%**), Marine/Fishery (101, **8.1%**)



No. of projects by sectors



Type of projects

Lessons

- More **scientific research results** (ex, climate change scenario, impact assessment, vulnerability assessment) and **data** are needed to support decision making in consideration of planning scale and time line
- Finding and securing **local adaptation specialists** for adaptation planning, GIS, vulnerability assessment etc.
- In adaptation planning and preparing implementation participation of **various stakeholders** are necessary
- **Vertical** and **lateral policy integration**, funding for local adaptation projects, private sector's interests etc.

Green Korea Stable to Climate Change

Consistent Responding System

- Establishing a consistent response framework with new climate scenario
- Establishing a safety infrastructure to prevent from climate induced disasters
- Establishing a prompt recovery system for climate disasters

Expansion of Adaptation Framework to all sectors

- Expanding the adaptation policy from central to local governments
- Expanding the adaptation strategy from the public to the private
- Building a international cooperation system

Improving Efficiency with 「Selection and Focus」

- Protecting socially vulnerable groups
- Implementing according to priority

Constructing a Consistent Responding System from Forecast to Recovery

Constructing a Consistent System Based on New C.C. Scenario

- Reflecting the outcome of new climate change scenario(12.9)
- Constructing('13) and Enhancing(~'16) an 「Integrated Climate Change Information Support System」

Constructing a Safety Infrastructure

- Improving city disaster management infrastructure to prevent from landslides and floods, and establishing an unified disaster prevention guideline
- Improving DB management, providing shelters and operating 'Safety Care Service' for vulnerable groups to heat wave

Constructing a Prompt Recovery System

- Assessing emergency medical care needs and providing a tailored medical care in the event of climate disaster

Adaptation Framework with Public, Private and International Partnership

Expanding to Local Level

- Establishing local climate change adaptation implementation plans
 - '12: 16 Metropolitan Cities and provinces, '13~'15: Community-level governments

Expanding to Private Sector

- Adopting an **Evaluation System to Assess Risks and Adaptation Capacity of Climate Change**, starting from public organizations ('12)
- Developing and disseminating a **climate change risk management evaluation framework** ('12)

Establishing Global Partnership

- Sharing the outcomes of new C.C. scenario with other countries in adaptation area
- Enhancing partnership with IGOs such as UNEP, IPCC, APAN and promoting adaptation ODAs

Improving Efficiency with 「Selection and Focus」

Supporting and Protecting Vulnerable Regions and Groups

- Constructing a **database of vulnerable regions and groups** based on new C.C. scenario('12.6)
- Establishing a **prevention strategy for vulnerable regions and groups**

Implementing according to Priority

- Establishing a **socio-economic infrastructure management strategy** based on impacts studies on sea-level rise
- Expanding **disaster insurances** and supporting **new adaptation business opportunities**
- Establishing a **Food Security Framework with Analysis on Change in Major Food Production and Map of Appropriate Cultivation Location Considering Climate Change**

Thanks for your attention!

Huicheul JUNG (hchjung@kei.re.kr)
Korea Adaptation Center for Climate Change,
Korea Environment Institute