

Sustainable Development Strategy



Ministry of Environment

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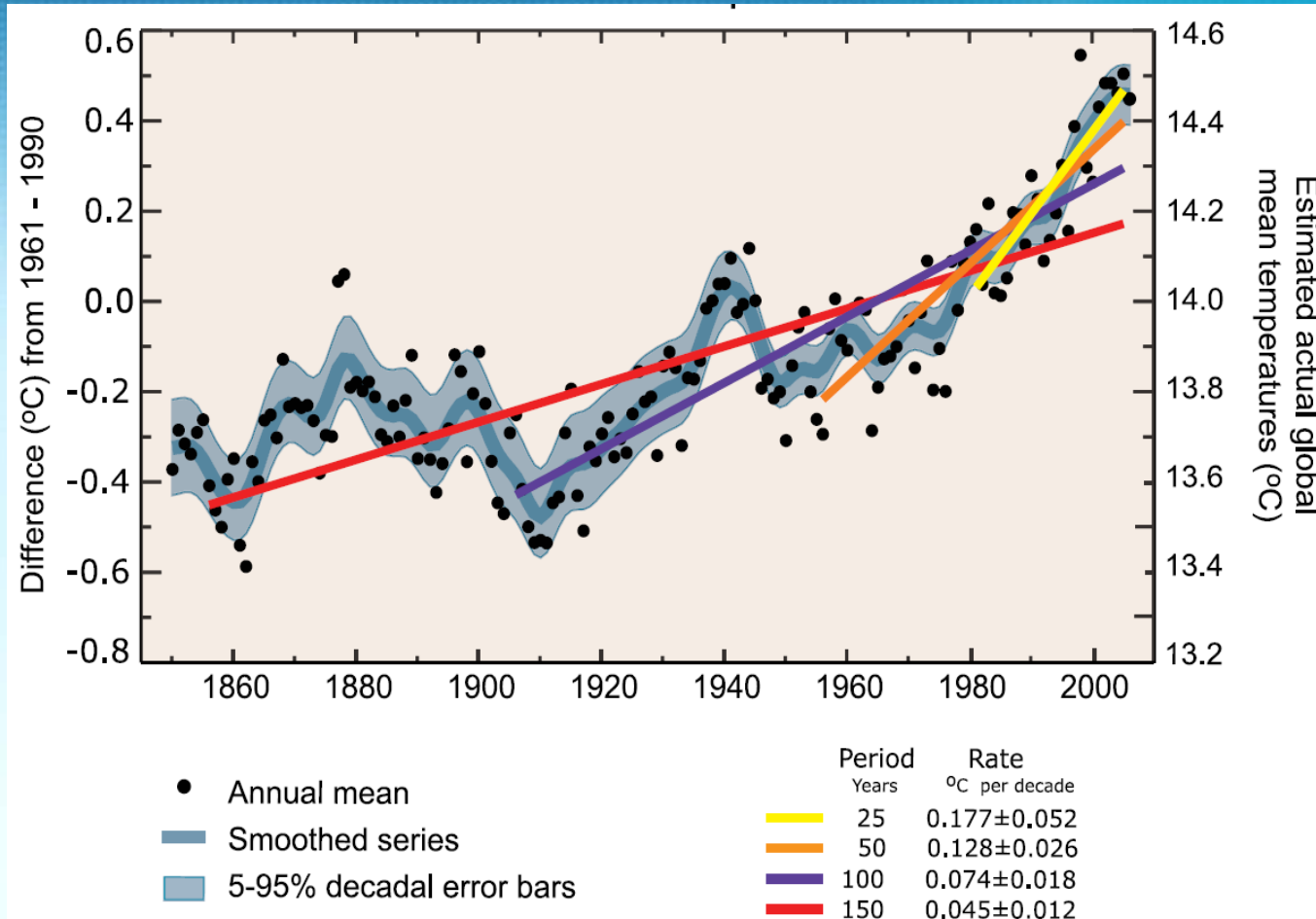
IV. Korea's Policy against Climate Change



I.

Science of Climate Change

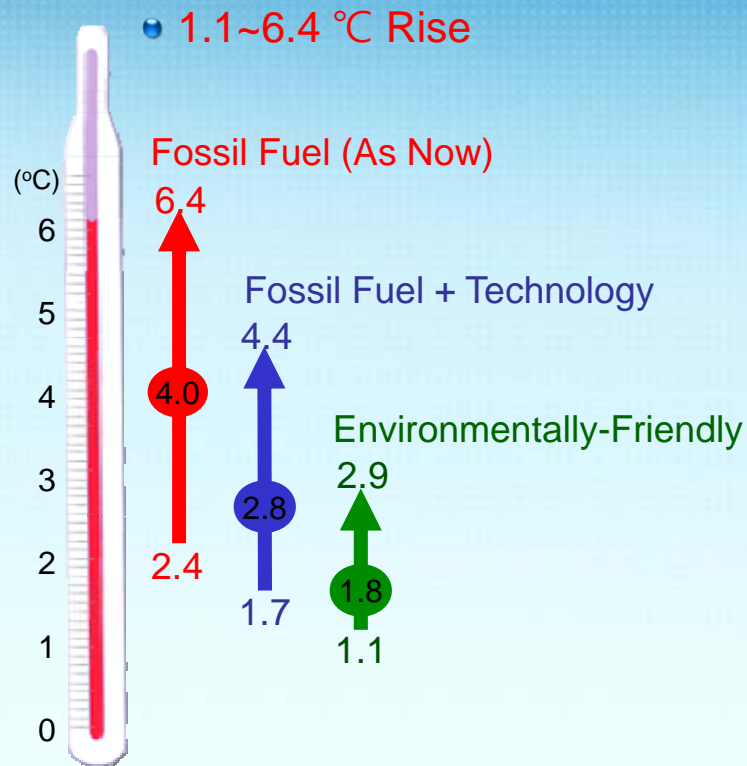
Annual Change in Global Temperature



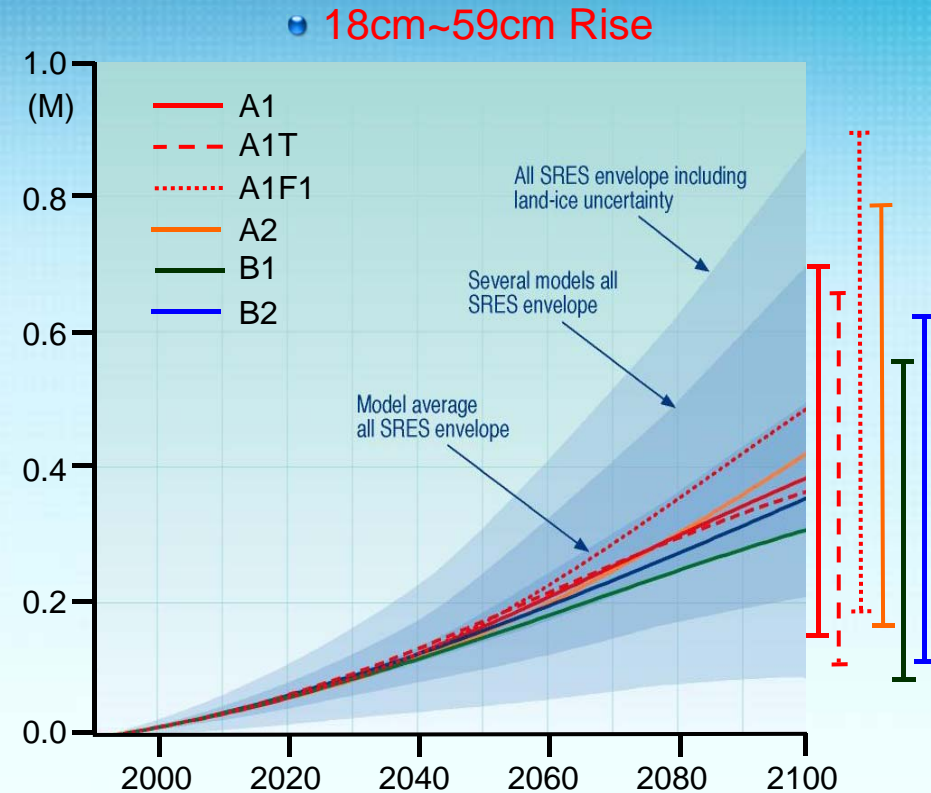
0.74 degree increase in 100 years(1906-2005)

GW is expected to intensify in the 21st Century

Temp. Rise at 2100

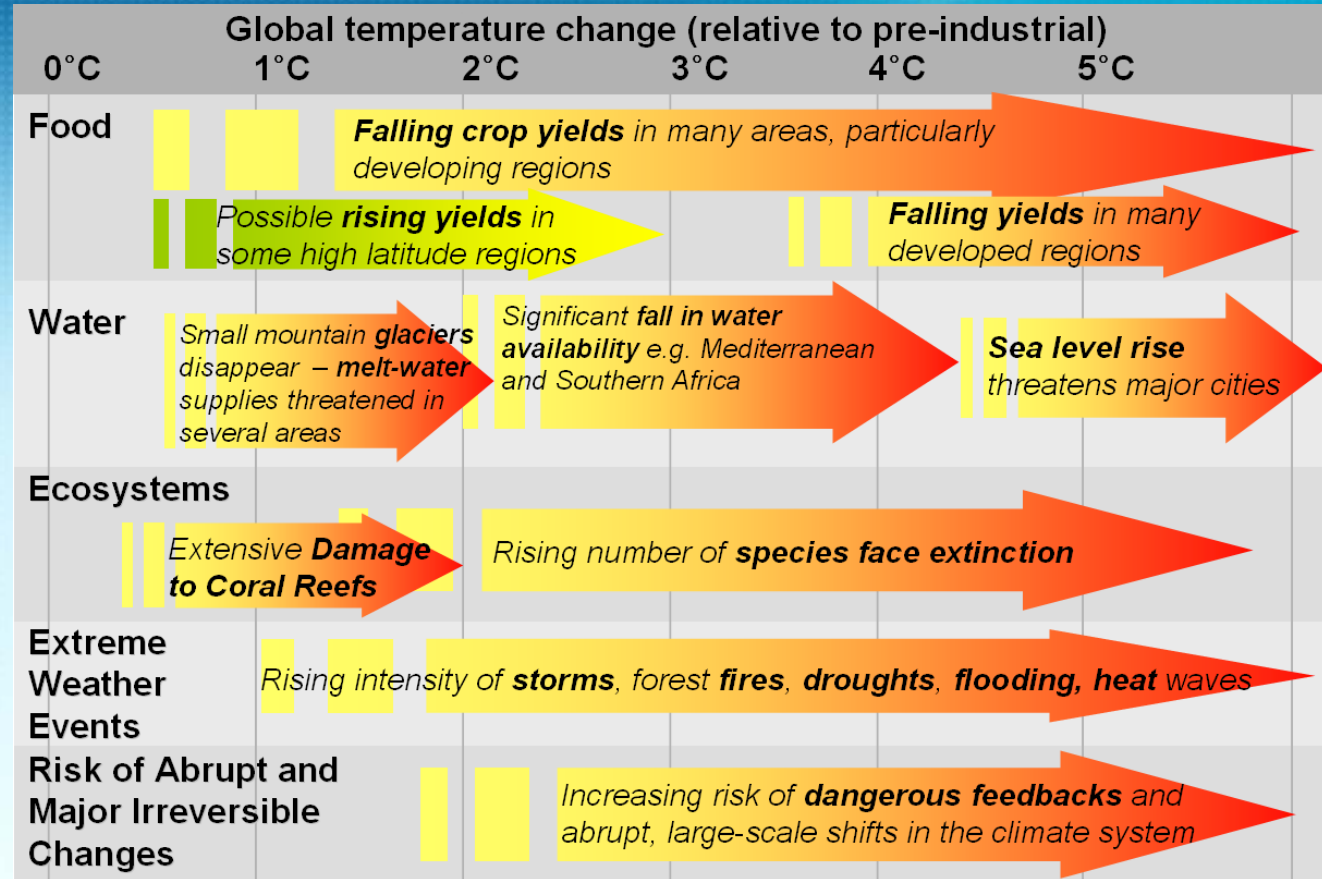


Sea level Rise at 2100



• **SRES** (Special Report on Emission Scenario) : **Future Emission Scenario developed by IPCC using the economic growth, population growth, technology innovation, etc**

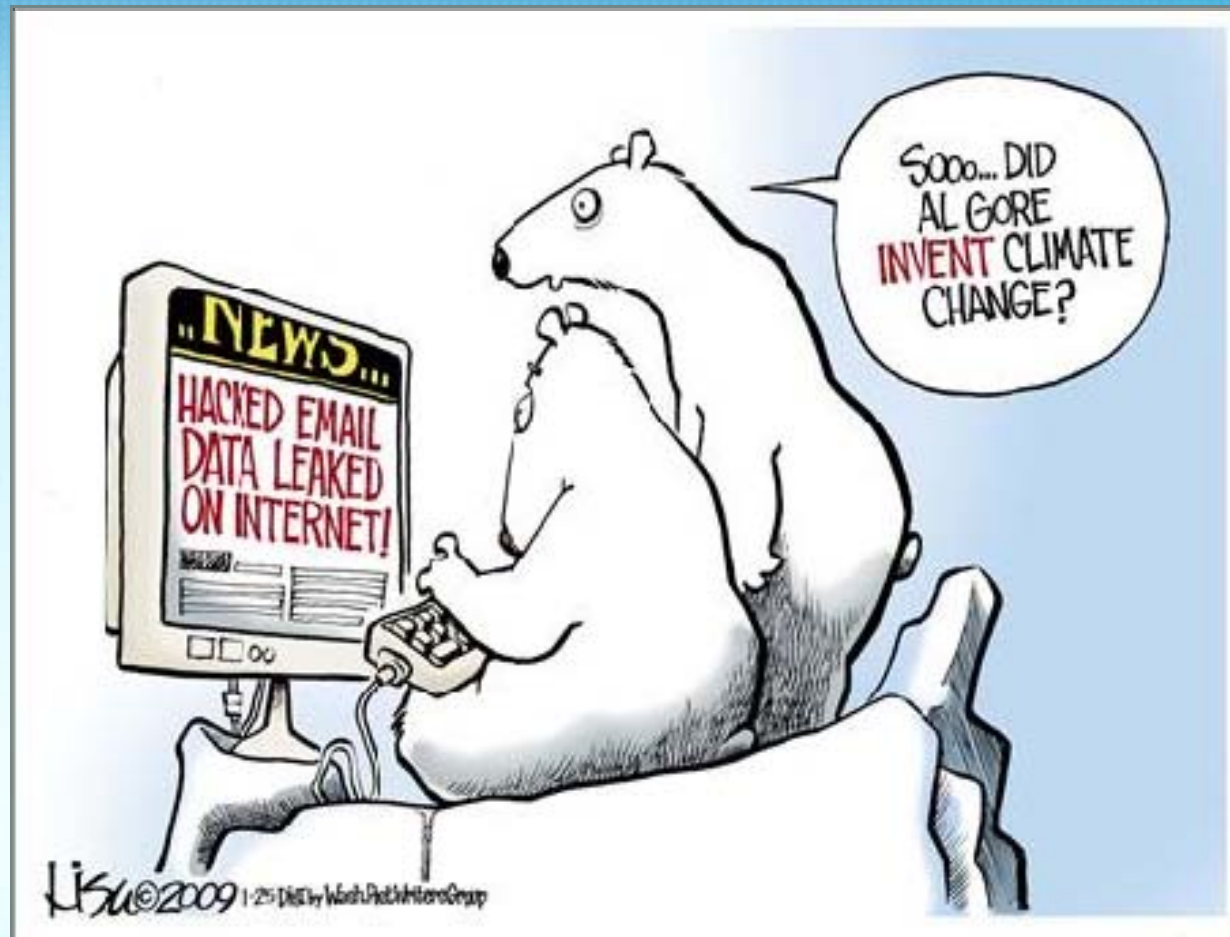
Economics of Climate Change (Stern Review)



- Cost to stabilize the CO₂ level at 450ppm : GDP 3%
- Cost caused by the unregulated Climate Change : 5~20%
 - Over the total cost of the 1st and 2nd World War (more than 9.6 trillion dollars)

Skepticism on Climate Change

Failure in Copenhagen, Climate-gate, Glacier-gate all reinforced the Climate Change Skepticism in the early 2010



Advent of Mini-Ice Age suspected

Severe cold wave in some parts of the world caused assertion on mini-ice age.

Global Warming?



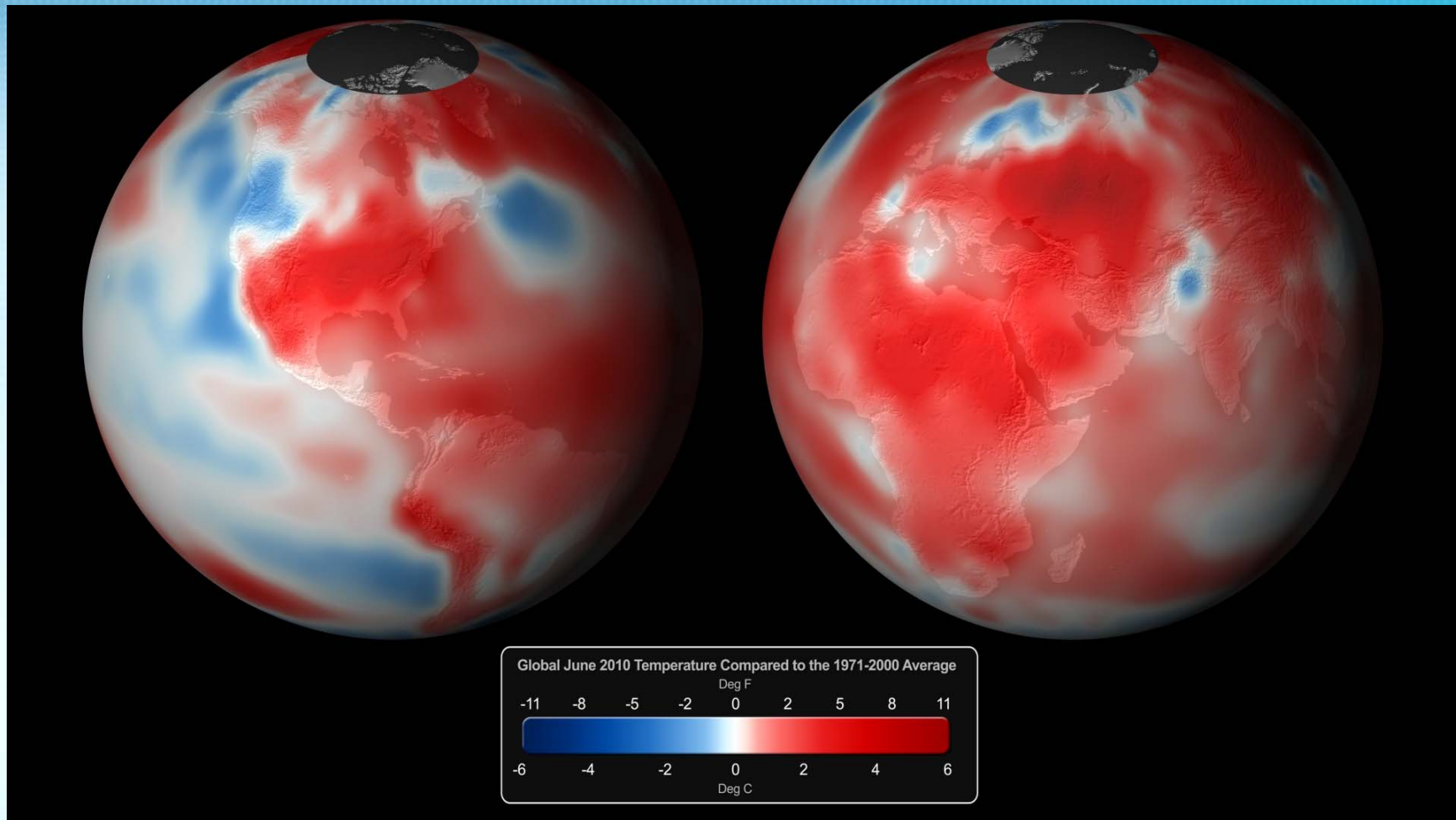
VS.

Mini-Ice Age?



The fact is... the Earth is still heating

2010 was the hottest year with 2005 since the first measurement of the global average temperature (NOAA, 2011.1)

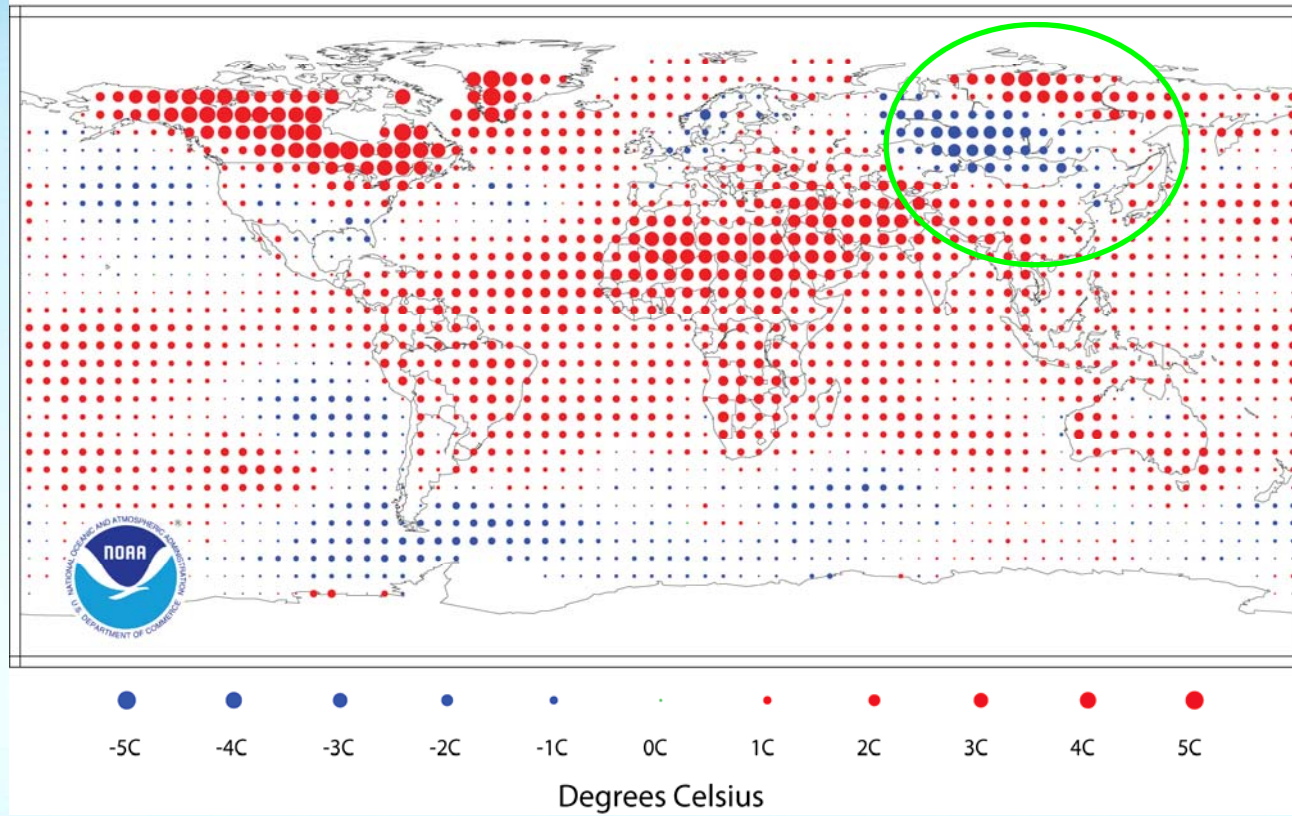


There are Regional Variations

Temperature Anomalies Jan-Jun 2010

(with respect to a 1971-2000 base period)

National Climatic Data Center/NESDIS/NOAA





II.

Climate Change in Korea



Impacts of Climate Change on Korean Peninsular



● Faster temperature rise in last 100 years

◆ 1.5°C vs. 0.74°C (global)

● Seasons' change (1920s → 2000s)

◆ summer ↑ 16 days ◆ winter ↓ 19 days

◆ cherry blossom (Seoul) : April 15 → April 5

● Sea-level rising

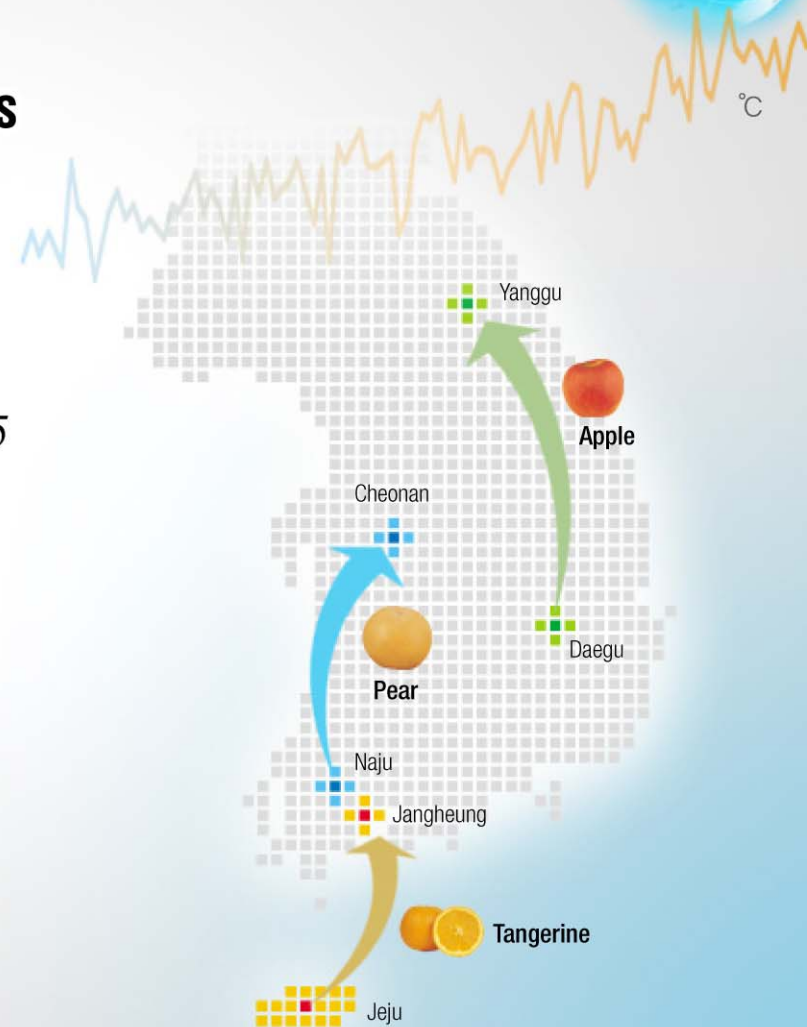
◆ 5.1 mm/yr (Jeju) vs. 1.8 mm/yr (global)

● Cultivation area shifting

◆ ex) Apple : Daegu → Yanggu

Tangerine : Jeju → Jangheung

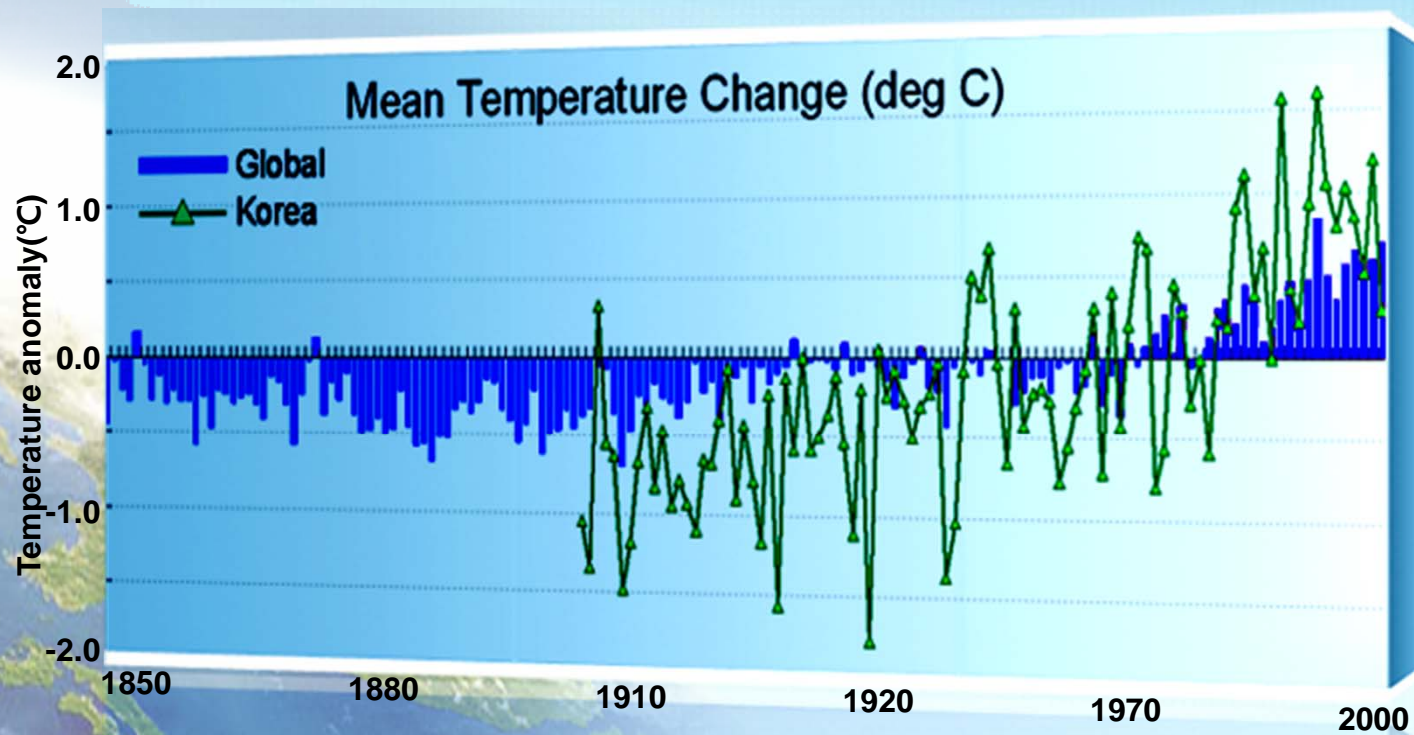
Pear : Naju → Cheonan



Adopted from *Climate Change and Adaptation Policy* in Korea
C40 PRESENTATION of MOE (May 2009)

Temperature rise in Korea

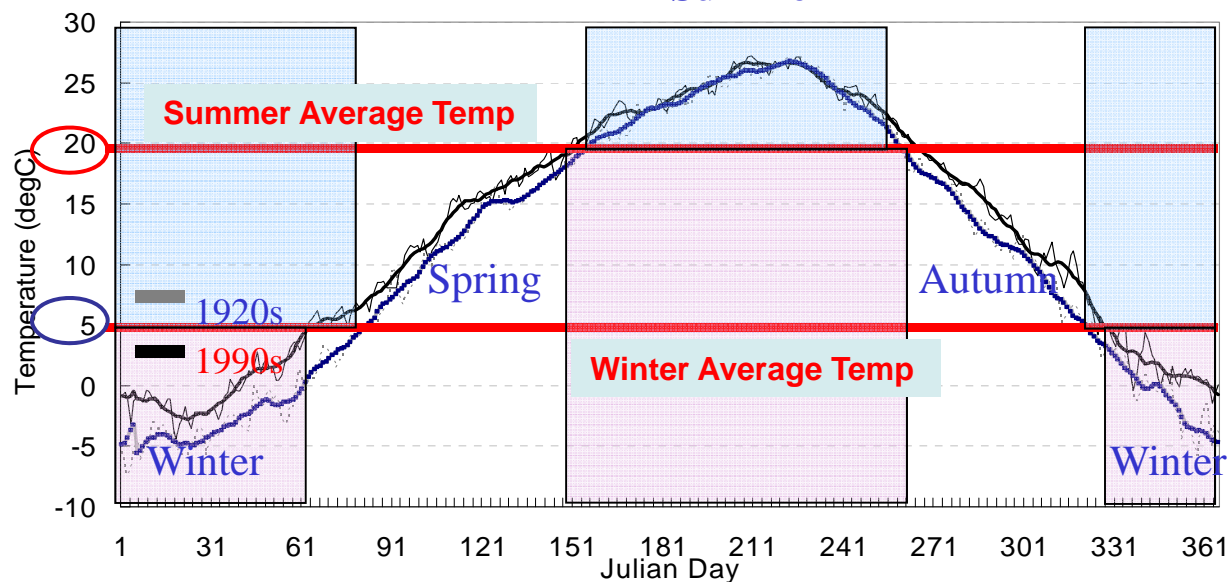
- **Temperature Rise : Double the Global Average (1.5°C for the past 100 yrs)**



Seasonal shift in Korea



i.e.) Seoul



Source: METRI Korea, 2006

Summer Period
 : Jun. 3 ~ Sep. 21(1920s)
 -> May 24 ~ Sep. 27(1990s)
 : **16 days increase**

Winter Period
 : Nov. 21 ~ Mar. 18(1920s)
 -> Nov. 29 ~ Mar. 8(1990s)
 : **19 days decrease**



1950



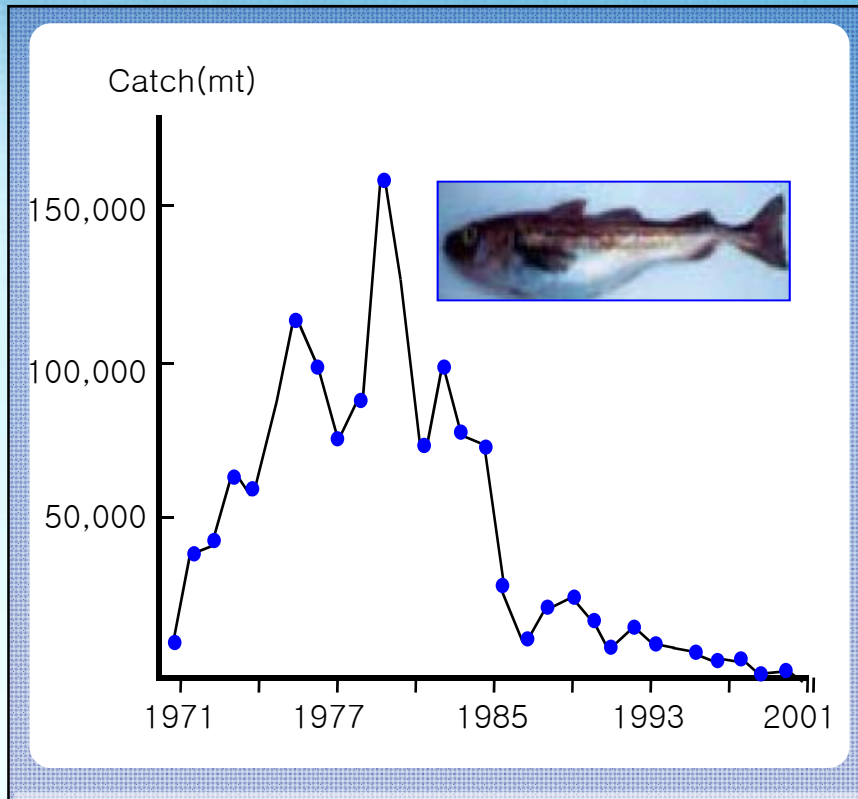
Now

Sea-level Rise at *Yongmeori*(Dragon Head), Jeju Island

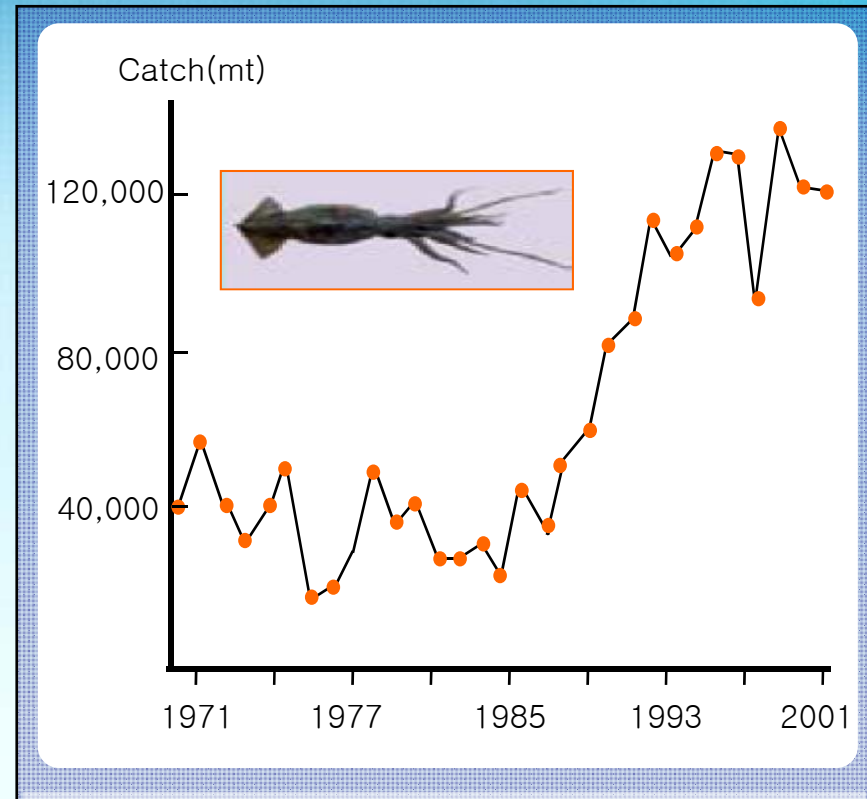


Change in catch of fish

Walleye Pollock in 1971~2001



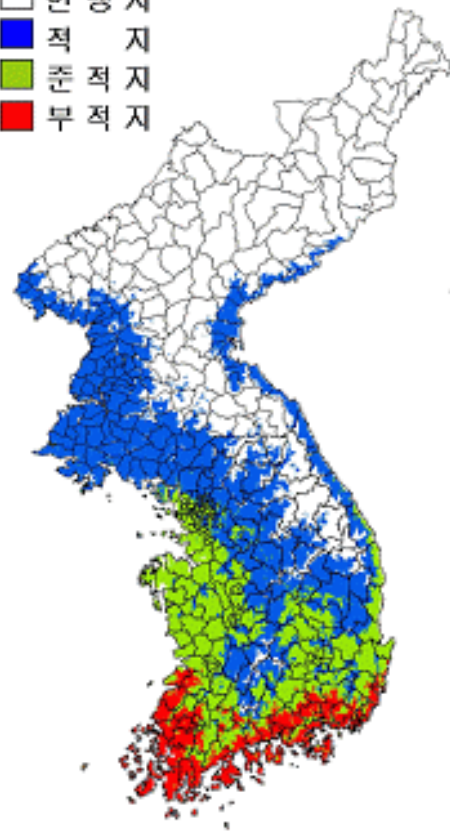
Squid in 1971~2001



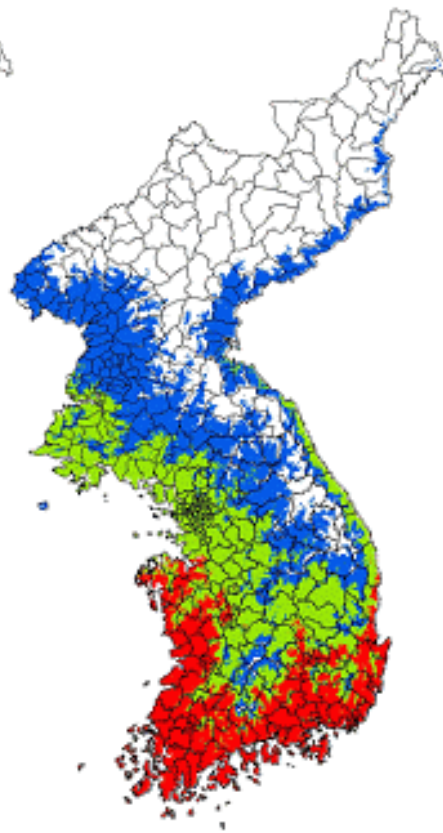
Area for Cultivation

Cultivation Area for Apple

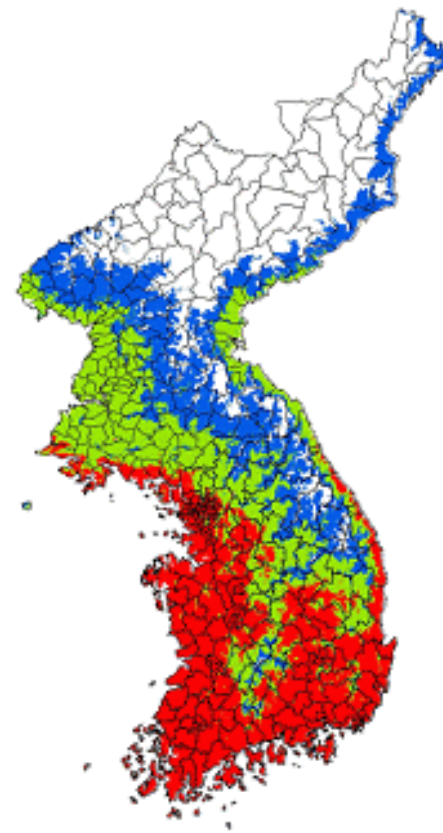
- 한 냉 지
- 적 지
- 준 적 지
- 부 적 지



평년



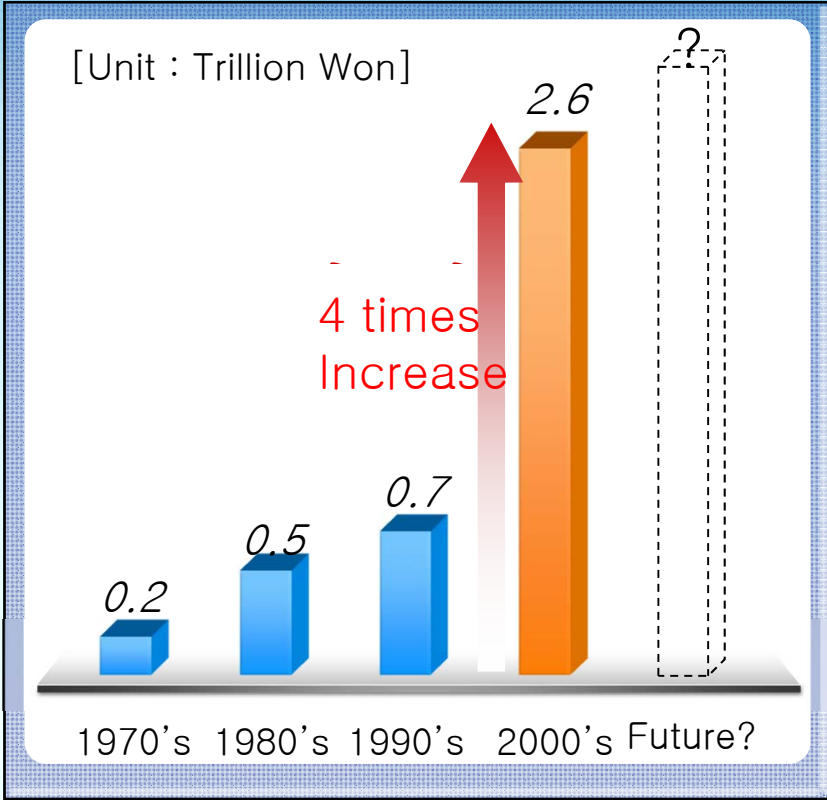
1°C 상승



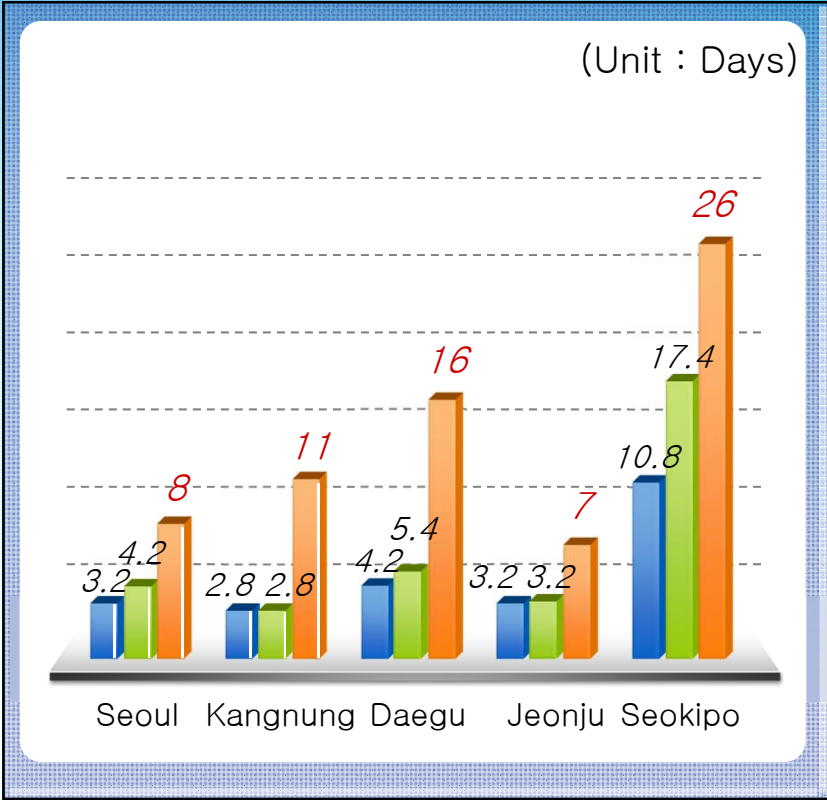
2°C 상승

Increase in Meteorological Disaster & Tropical Nights

Losses by Meteorological Disasters



Number of Tropical Nights



■ Before 2000
 ■ After 2000
 ■ 2006



III.

Korea's Vision for Green Growth

Korean Way : 'Low Carbon, Green Growth'

Framework Act on Low Carbon Green Growth : Comprehensive Act to fight climate change while promoting new growth engines and creating clean energy jobs

*Low Carbon Green Growth is a new National Growth Paradigm that create new growth engines and clean jobs.
(2008. 8.15, Celebration of the 60th National Foundation Anniversary)*



*The Change has been initiated.
(2010.4.14, Enforcement of the Act)*



Framework Act on Low-Carbon Green Growth

Background

- To lay institutional foundation for the “Low-carbon Green Growth” national vision (Aug. 15, 2008)
- Enacted (Jan. 2010) as a law on green growth that incorporates climate change, energy, and sustainable development comprehensively

Main Contents

- Focus on promoting **green technology/industry** as new growth engines
- Organically connect and harmonize **climate change and energy measures**
- Suggest the direction of **environmentally friendly taxation**
- Secure **statistical data such as GHG emissions and energy production** and establish the foundation for promoting green management by corporations
- Introduce the **Target Management System** for GHG mitigation and energy saving

National Strategy and 5-Year Implementation Plan

- Inherits the spirit of the “Economic Development Plan” in the past

Mitigation of Climate Change & Energy Independence

1. **Effective reduction of GHG emissions**
2. Reduction of the use of fossil fuels and the enhancement of energy independence
3. **Strengthening the capacity to adapt to climate change**

Creation of New Engines for Economic Growth

4. R&D of Green Technology
5. The “greening” of existing industries
6. Advancement of industrial structure
7. Establishing a structural foundation for the green economy

Improvement in Quality of Life & Enhancement of Korea’s International Standing

8. Greening the national land and updating transportation infrastructure
9. Bringing the green revolution into people’s daily lives
10. Becoming a role-model of Green Growth for the international community

3 Policy Objectives & 10 Key Policy Items

<Ref.> National Strategy and 5 year Implementation Plan : Green Budget

- A total of 107 Trillion KRW will be invested between 2009-2013
 - Invest annually about 2% Korea's GDP

* 2008-2012 National Financial Management Plan: R&D 10.7, SOC 7.3, Environment 3.7, Total Budget 6.2%

	Sub-Total	2009	2010~2011	2012~2013	Increase Rate
Invest Amount Total (Unit: Trillion KRW)	107.4	17.5	48.3	41.5	10.2%

Mitigating Climate Change and Increasing Energy Independency

56.9

14.0%

Creating New Growth Engine

28.6

9.4%

Enriching Quality of Life & Improving Korea's Global Status

27.9

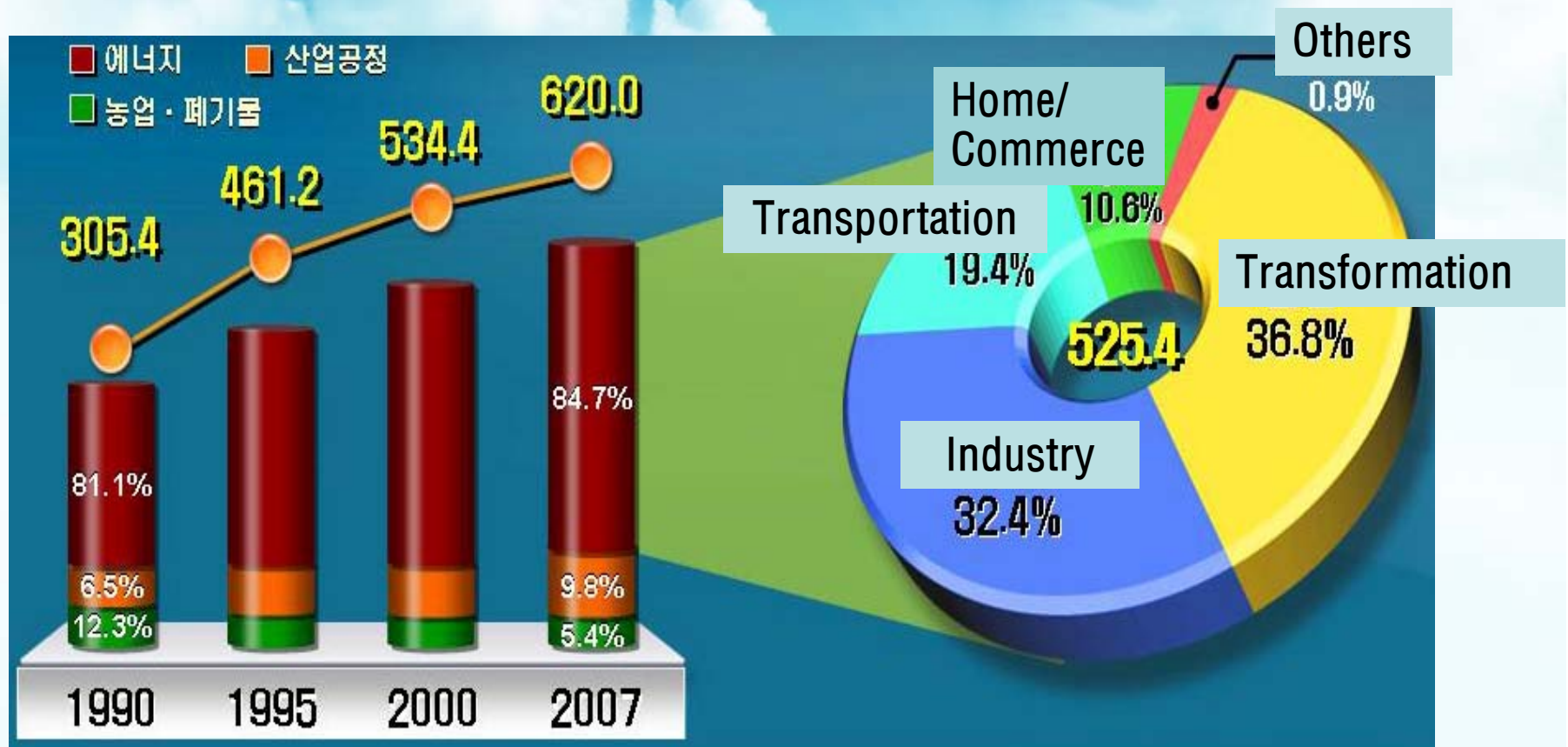
3.6%



IV. Korea's Policy against Climate Change

Status of CO₂ emissions in Korea

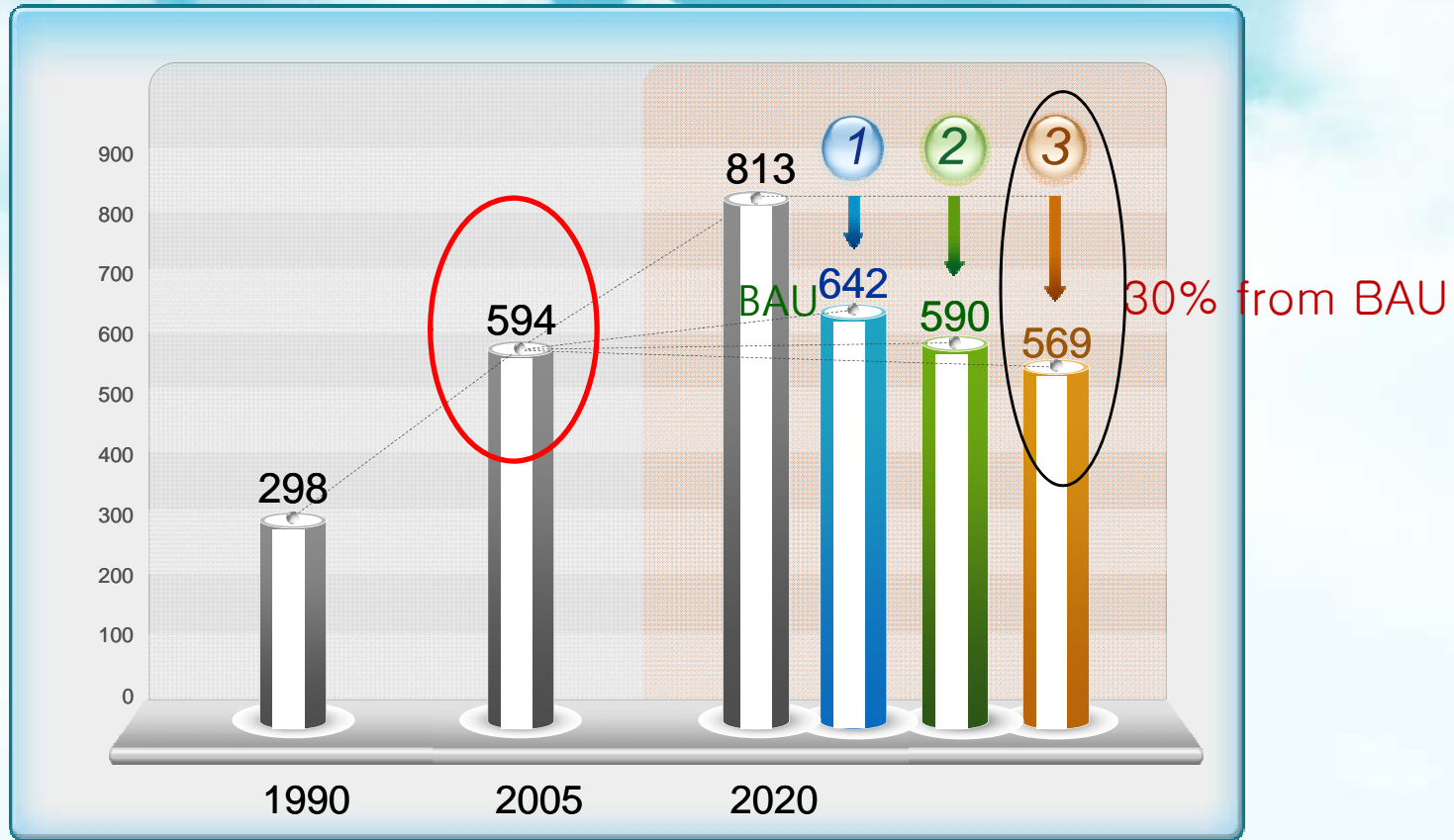
- Total 620 million tons of CO₂ emissions (2007)
- **Increased 103%** from 1990 level



Korea's Mid-term GHG Reduction Target

Korea wants to maintain economic growth, while curbing the GHG emissions

(Million ton CO₂)



* established('09.11) and submitted to UN('10.1)

<Ref.> Means for Emission Reduction

Green Building



- Promote Green Building – Promote Insulation, Solar, Geothermal
- Promote green products – LED, Green IT
- Electricity saving through real-time information on demand

- Promote highest-efficiency products

Green Transportation



- Promote Low-carbon Cars
- Modal Shift – Shift to public transportation
- Promote Hybrid cars
- Promote Biofuel

- Next Generation Green Cars replace the traditional engine cars

Low-Carbon Industry



- High-efficiency process
- Low-Carbon Energy (Renewable, Nuclear, Natural Gas)
- Introduce Smart Grid

- Apply CCS Technology

Green Consumption



- Green Consumption (Carbon Labelling, etc)
- Green Living (Eco-Driving, etc)
- GreenStart Green Life Campaign

Scenario

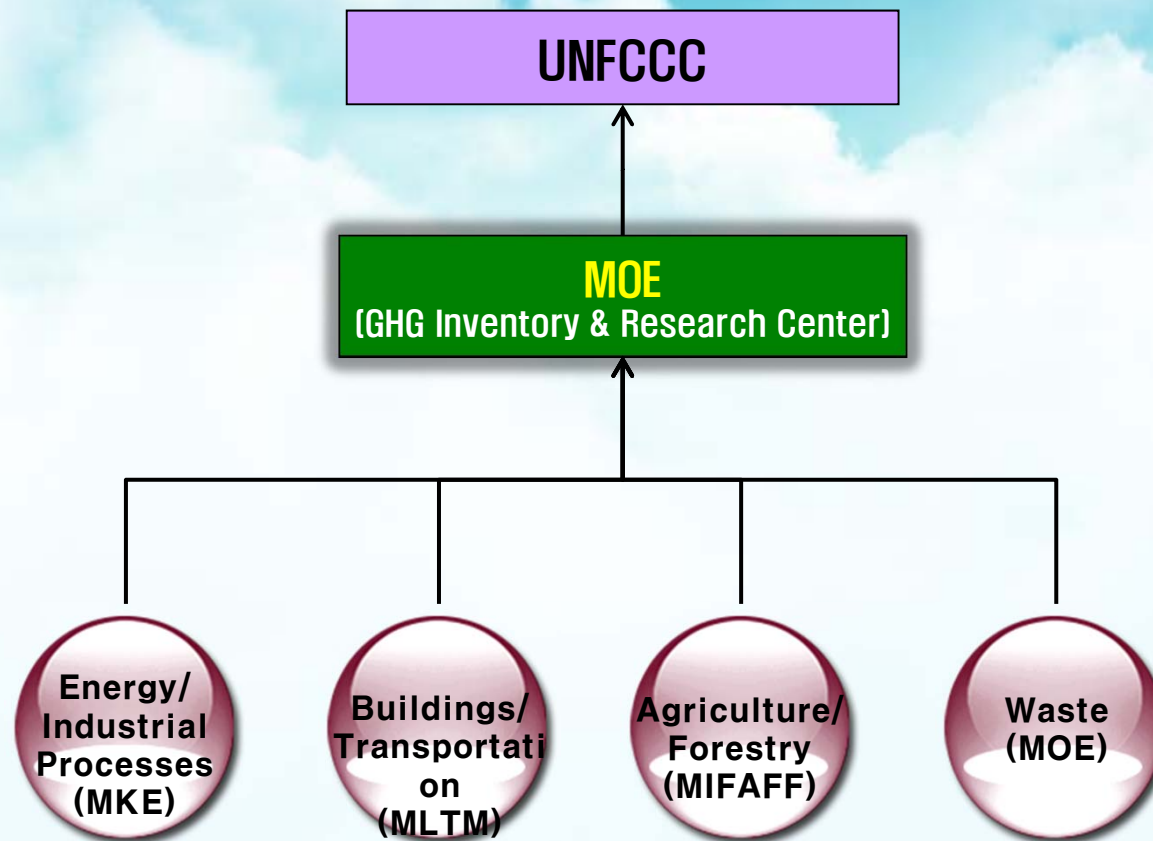
1

2

3

National GHG Inventory

Sectoral inventories will be reviewed by the newly established GHG Inventory and Research Center (GIR)

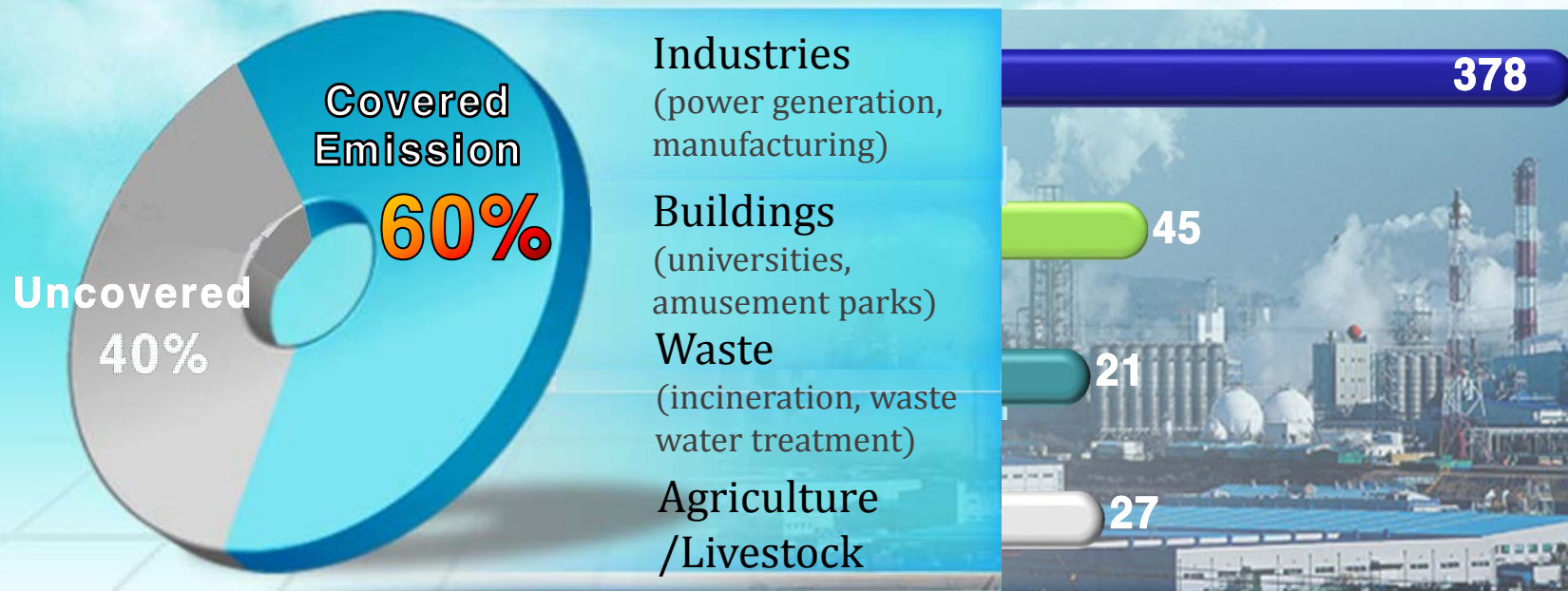


GHG-Energy Target Management System

To set and manage targets for GHG mitigation and energy saving of large-scale entities

Total emission: 620M Ton (2007)

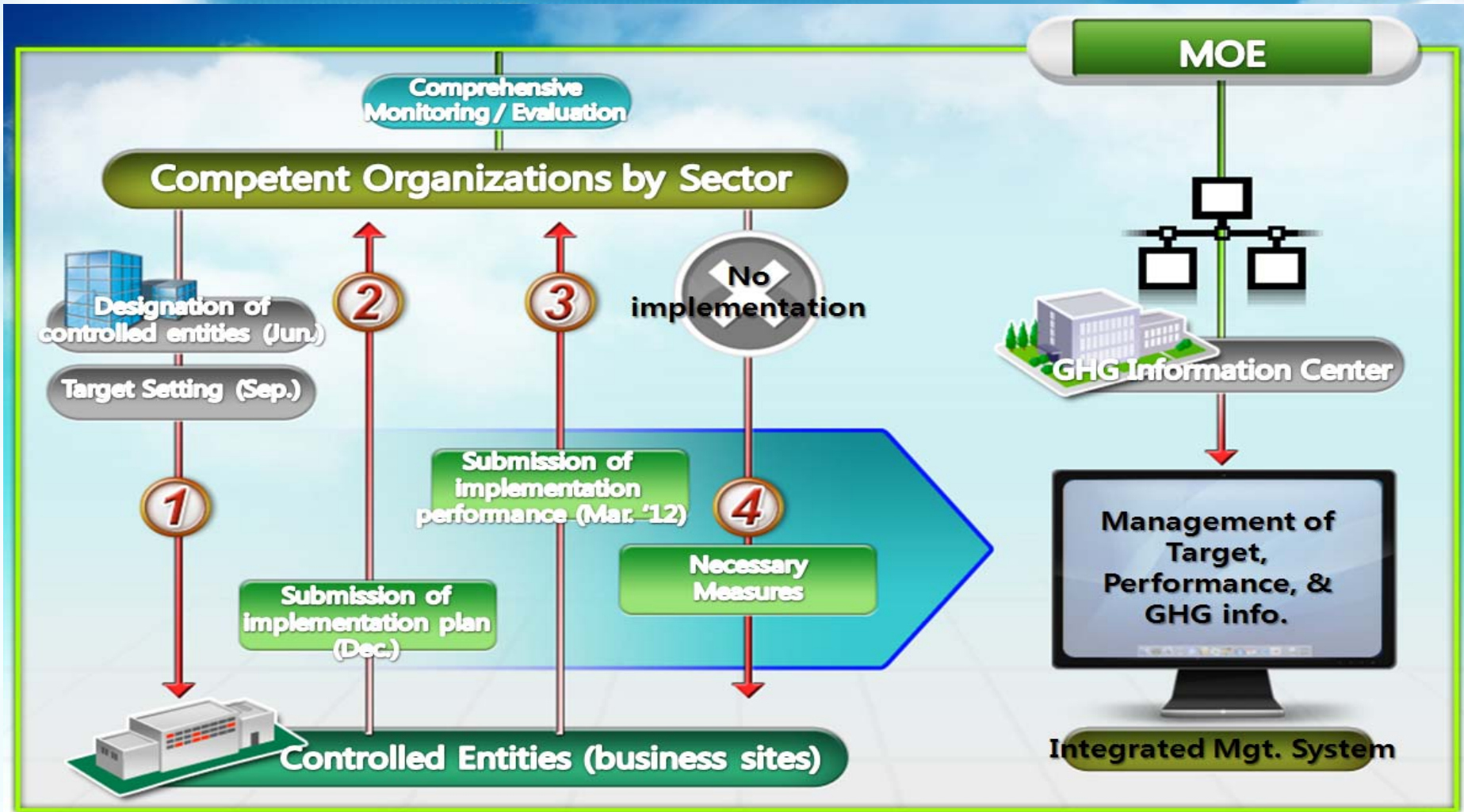
Controlled entities : 471



Manage 60% of National GHG Emission

GHG-Energy Target Management Scheme

Through close collaboration between Government and Regulated Entities



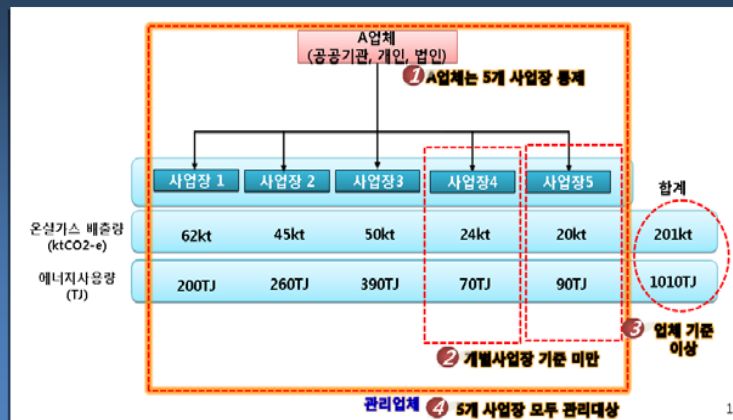
<Ref.> Who is large emitters?

➤ Large emitters : over 125,000 tCO2(corp.) or 25,000 tCO2(site)

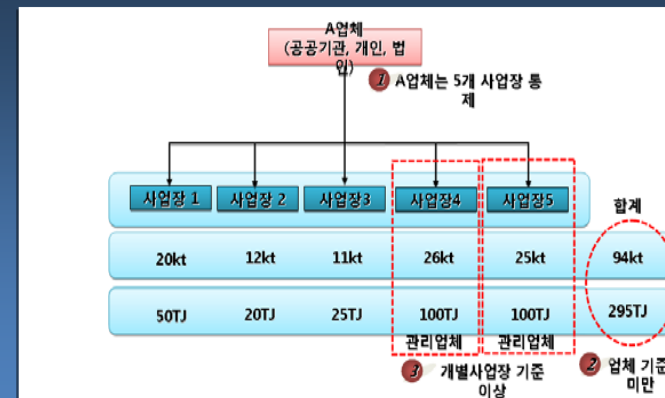
Criteria : Corporation criteria first

	Until 2011.12.31		2012.1.1 ~ 2013. 12.31		From 2014. 1.1	
	Corp.	Site	Corp.	Site	Corp.	Site
GHG (CO2 ton)	125,000	25,000	87,500	20,000	50,000	15,000
Energy (TJ)	500	100	350	90	200	80

Corporation Criteria

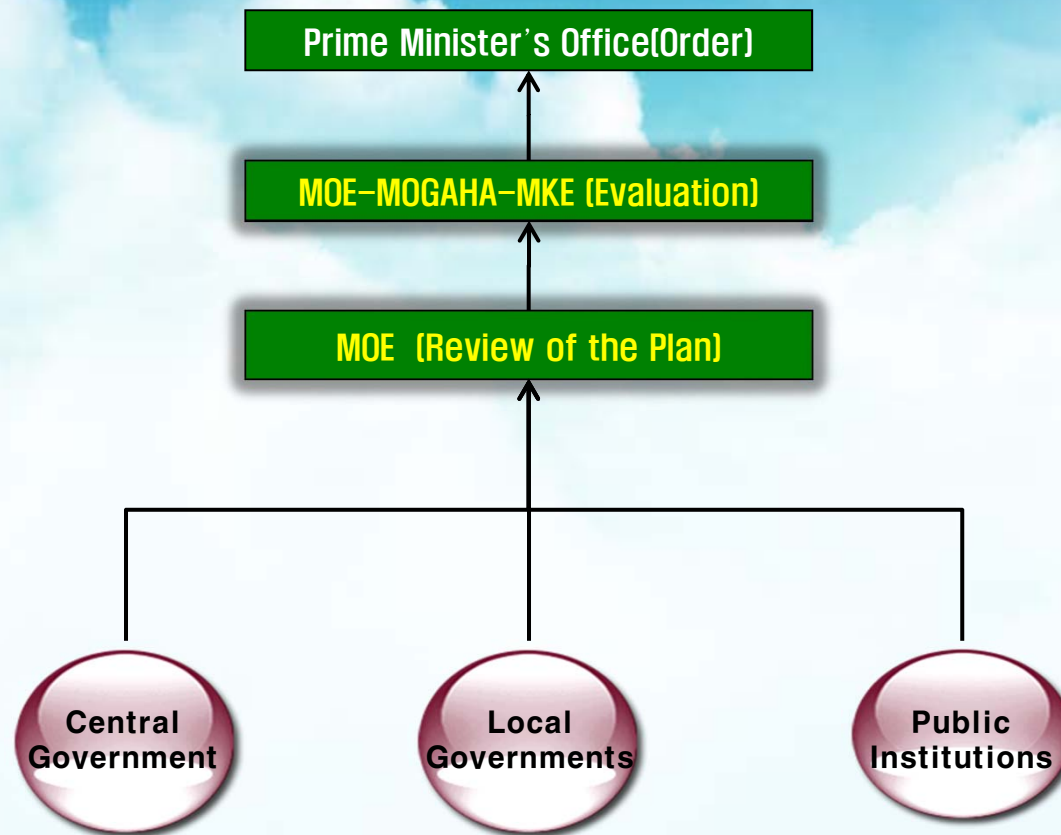


Site Criteria



Target Management Scheme for Public Institutions

Applies to all the public entities(total 770 institutions)



Status of Emission Trading System(ETS) in Korea

- ◆ The Framework Act specified spin-off legislation to introduce ETS (Dec. 2009)
- ◆ Pre-Announcement of ETS bill (Nov. 2010)
- ◆ Vigorous Refutation by the Industry (~Feb. 2011)
 - Huge burden on Korean economy
 - Compared to TMS : Carbon emission is not free, transaction cost, possibility of speculation by external brokers, intense penalties, etc
 - Too fast, Double regulation with TMS, Industry is not ready, etc
 - US, Japan, and China are not moving, why should we do it?
- ◆ 2nd Pre-Announcement of ETS bill (Feb 28 ~ March 3. 2011)
 - Implementation : 2013 → 2015
 - Free allocation : 90% → 95%
 - Easing of non-compliance penalties : 5 times → 3 times of the market price
 - Target sectors will be adjusted to incorporate international trends (in allocation plan)

* ETS bill was submitted to National Assembly(Apr. 15, 2011)

Dissemination of EV(Electric Vehicle) and Charging Station

Promoting plan by stage

**2010
~2011**
Verification
project of EV
and charging
infra

- Implement verification project to come up with guideline for government subsidy and evaluate & test on-road running performance of developed EVs
 - 16 charging stations, 13 EVs

**2011
~2012**
Create early
EV market

- Disseminate EVs in public sector to reduce manufacturing cost and reinforce R&D



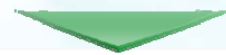
- 4,000 EVs (800 in 2011, 3200 in 2012)
- 3,000 charging stations (500 in 2011, 2500 in 2012)

Dissemination of EV(Electric Vehicle) and Charging Station

**After
2013**

Mass
production &
dissemination
of EVs

- Expand purchasing demand in private sector thru tax exemption and bonus
 - ※ Bench marking of **Bonus-Malus** system(support max 5000 Euro)
- Construction of charging stations
 - 2000 stations (year '13 1000 in 2013, year '14 1000 in 2014)



Korea becomes a EV leading country



High Speed EV



Hyundai Motor Co.
BlueOn (Compact)

-
- 130km/h
 - 160km/1 charging
 - 55 million won



KIA
CUV

-
- 130km/h
 - 120km/1 charging
 - N/A



Renault Samsung
SM3 (Midsize)

-
- 140km/h
 - 150km/1 charging
 - 40 million won

Electric Bus



Hyundai
Ultra low-floor bus

- 100km/h
- 60km/1charging
- 0.5 billion won



Fiber Korea
CHANGE

- 80km/h
- Under test
- 0.5 billion won

Fuel Economy & GHG Emissions Standard for Vehicles

Level

- Above US level
- **Above 17km/L (fuel economy) and below 140g/km (GHG)**

Schedule

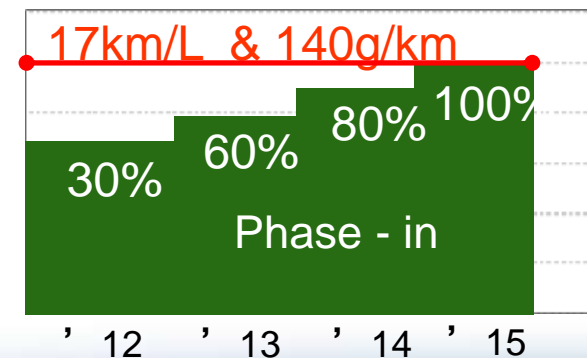
- *Phase-in implementation*
- '12 (30%) → '13 (60%) → '14 (80%) → '15 (100%)

Target

- Passenger Vehicles with loading capacity over 10 people

Penalty

- Non-compliance penalties for the automobile companies



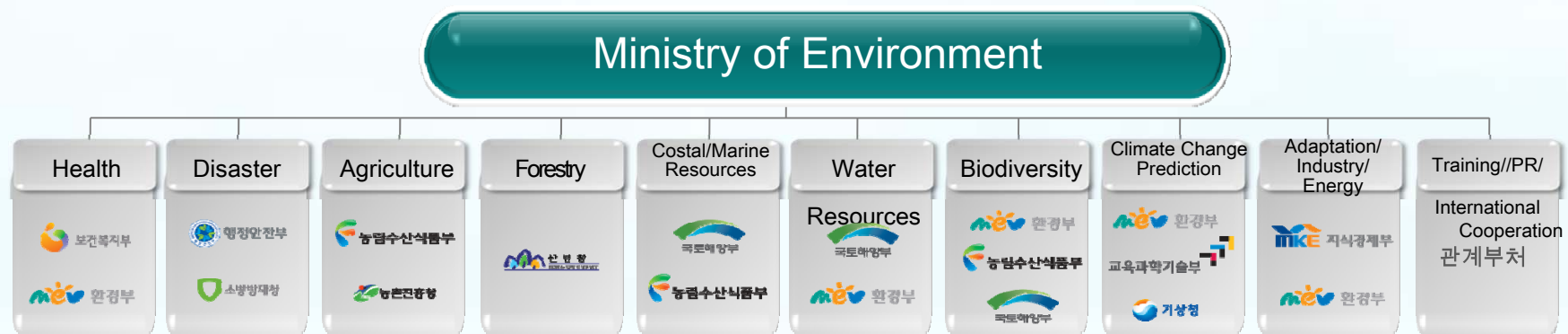
National Climate Change Adaptation Plan

National Climate Change Adaptation Master Plan (2011~2015)

Characteristics

- First legal national adaptation plan by Framework Act on Low Carbon, Green Growth Law
- Master Plan to establish detailed action plans for nations & local governments
- 5 year Rolling Plan considering uncertainty of climate change impacts

Consultative Body of Ministries



<Ref.> Vision and Sectors



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

Sectoral Adaptation Plans

Health

Protect people from heat waves & air pollution

Disaster

Minimize damage through the consolidation of disaster prevention foundation

Agriculture

Switch to adaptation based agricultural system

Forestry

Improve forestry health & reduce forestry disaster

Coastal/Marine Resources

Secure stable marine food resources & minimize damage

Water Resources

Build stable water management system from climate change

Biodiversity

Secure biodiversity through restoration and protection

Cross-sectoral Plans

Climate Change Monitoring and Prediction

Provide foundation data & reduce uncertainty

Adaptation industry/Energy

Find new and promising businesses for climate change adaptation

Education, PR & International Cooperation

Enhance domestic and international communication on adaptation

Nation-wide Low Carbon Life Campaign

Participation of all citizens to cut GHG in the non-industrial sectors

*** 43% of GHG emitted from Non-industrial Sector**

- (1) “Me First” low carbon life campaign
 - (2) Green Home, Green Consumption (Dissemination of Green Life Codes)
 - (3) Green Workplace (Cool Dress code, Cool Maepsy Look)
 - (4) Green Transportation (Public Transportation, Eco Driving)
 - (5) Home/Commercial Low carbon Incentives (Carbon Point)
 - (6) Production/Commercial Incentives (Carbon Labeling)
 - (7) Key Human Resources (Green Leader)
 - (8) Green Life Communication Center
- 

<Ref.> “Me First” Green Start Campaign

- Start a nationwide campaign to reduce GHG emission in daily lives (Oct '08)
- Establish an organization for Green Start Campaign (248 national and local networks) ('10)
- Nurture ‘green leaders’ (10,000/year) and conduct nationwide campaigns year round
 - Climate Change Week (April, every year), “Green is Life - 2009 Festival” (Nov. '09)
- Incentives to promote Voluntary Participation
 - Carbon Point, Green card(will launch in early Jul, 2011)
- Conduct “Me First” campaign to promote green lifestyle
 - Increase application of **carbon point scheme**
 - Promote green lifestyle through green home movement and expansion of **carbon labeling**
 - Wear in a smart way “**Cool Maepsy (summer) and On Maepsy (winter)**”

그린스타트



*온도관리는 여름철 노타이 차림의 골렘시 캠페인에 이은 겨울철 따뜻하게 옷입기(내복입기, 겹쳐입기) 캠페인입니다.

<Ref.> Carbon Labeling / Carbon Point Scheme

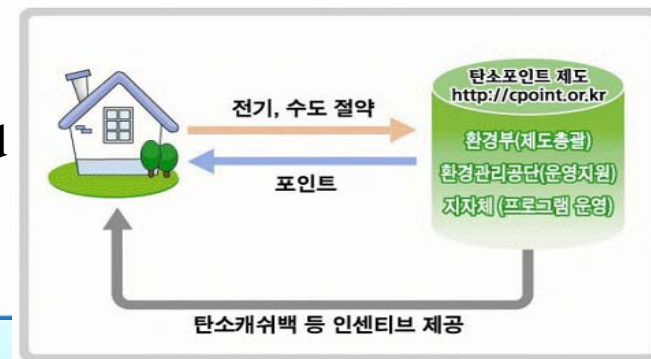
Carbon Labeling

- To make explicit the amount of GHGs generated from products through processes such as production, transportation, use and disposal



Carbon Point Scheme

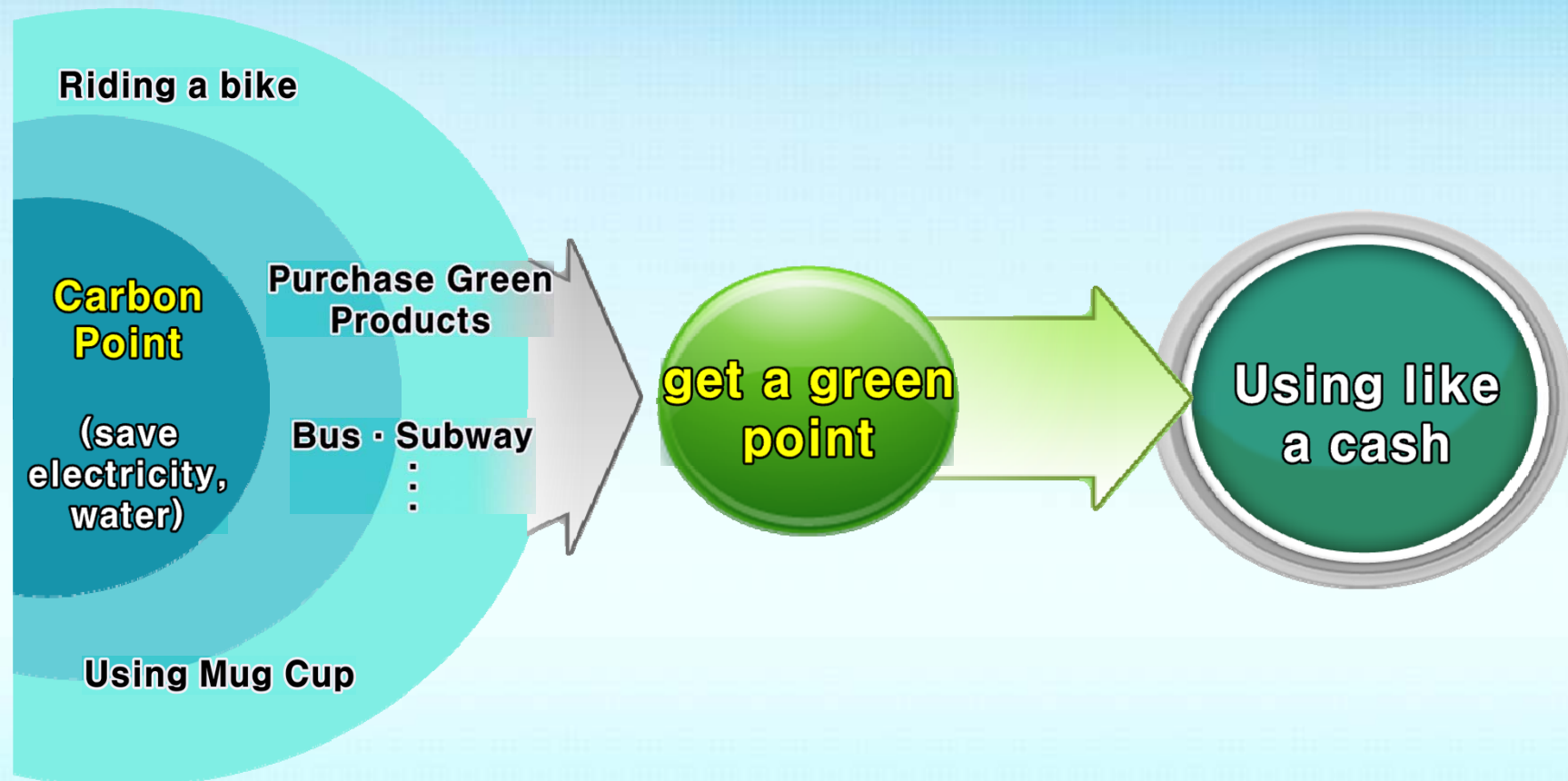
- Incentives provided for the amount of GHG emissions that households reduce through saving of electricity and gas
- More than 1.7 million households participated



<Ref.> 'Green Card' Scheme

Green Card Scheme

- Green Card is a integrated incentive system
- Incentives provided for any verifiable actions such as using bus rather than a car



Research and Development(R&D) for Climate Change

- ◆ Feasibility Survey is going on
- ◆ If the project pass the feasibility test, 300 billion KRW of national budget will be invested for 10 years(2 main sectors, 6 sub sectors)

Category	Sub sector	Program	Main Sector
Mitigation	Integrated Reduction Technology	Develop reduction model for Korea Technology for assessment of reduction policy Develop the technology for GHG emission factor, verification	Integrated Public technology
	Co-Benefit Management Technology	Develop the technology for impacts of climate change Technology for assessment of regional impacts and adaptation Technology for integrated assessment of impacts	
Adaptation	Adaptation Technology	Develop the algorithm for calculating GHG-air pollutants by using satellite Technology for integrated management of climate change-air quality policies Technology for assessment of vulnerability	
	GHG Reduction Technology for Env. Basic infra	CO2 capturing technology using bacteria CO2 capturing and reuse technology using membrane, PSA Pre-treatment technology for CO2 capturing	Commercial Technology
Surveillance	CCS Monitoring and Assessment Technology	CO2 capturing technology using waste CO2 monitoring and assessment technology LCA(Life Cycle Assessment) of CCS	
		GHG Monitoring Technology	Multi-analysis technology for CO2, CH4, H2O Technology for surveillance and tracking

East Asia Climate Partnership & Korea's bid to host COP18

East Asia Climate Partnership

- Former President Lee Myung-bak proposed at G8 Extended Summit to support developing countries in addressing climate change (Jul. '08)
 - An investment of \$200 million for 5 years
- Asia's needs, Korea's technological capacity, and the viability of projects considered
 - ①water management, ②low-carbon city, ③low-carbon development, ④forest, ⑤waste disposal

Korea's bid to host COP-18

- Former President Lee expressed Korea's intention to host COP18 in Copenhagen COP (Dec.'09)
 - Korea and Qatar expressed intention to host COP18
- Korea has been making every efforts for global partnership

Thank You

감사합니다



mev 환경부