

Regional NAP Expo for Asia 2017

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Experiences and Lessons learned from Establishment of National Climate Change Adaptation Plan in Korea

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Outline

- I National Climate Change Adaptation Plan in Korea
- II The 1st National Climate Change Adaptation Plan
- III The 2nd National Climate Change Adaptation Plan
- VI Conclusions and Suggestions

I

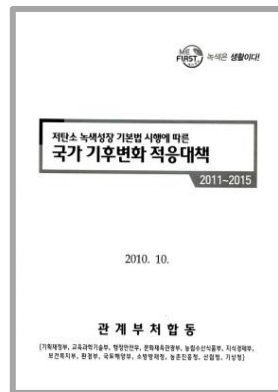
National Climate Change Adaptation Plan in Korea

I. National Climate Change Adaptation Plan in Korea

1. Overview

- Established 2 national adaptation plans (5-year rolling plan)
 - 1st National Climate Change Adaptation Plans ('10-'15)
 - 2nd National Climate Change Adaptation Plans ('16-'20)
- Developed their sectoral and local implementation plans
 - Completed sectoral implementation plans for the 1st and 2nd Adaptation Plans
 - Completed regional & municipal implementation plans for the 1st Adaptation Plans

Plans



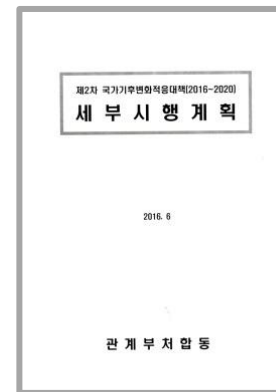
<1st NAP>



<2st NAP>



<2st NAP implementation plan>



<Manual for LAP>

I . National Climate Change Adaptation Plan in Korea

2. Comparison of the 1st and 2nd National Adaptation Plans

	1 st National Adaptation Plan	2 nd National Adaptation Plan
1	Composed of 9 areas and 67 detail projects	Established the integrated adaptation system by sector (economic · social · environment)
2	Simply suggested the needs for each adaptation area to achieve the long-term vision	Visions and goals divided into mid-to long-term and short-term for climate change adaptation at the national level
3	Identified and implemented adaptation measures only	Considered the co-benefit effects of mitigation and adaptation of climate change
4	Gave priority to adaptation measures mainstreamed in evolved ministries	Climate change impacts and risks evaluated to ensure policies are based on sciences and public demands

I . National Climate Change Adaptation Plan in Korea

2. Comparison of the 1st and 2nd National Adaptation Plans

	1 st National Adaptation Plan	2 nd National Adaptation Plan
5	Suggested sectoral adaptation measures without priority	Set the priority of sectoral adaptation measures and key strategies
6	Secured the correlation with the government keynote and higher-level plans	Secured the consistent direction with the value of policies by setting the adaptation principles
7	Regularly checked the implementation of adaptation measures	Strengthened the Monitoring and Evaluation system

II

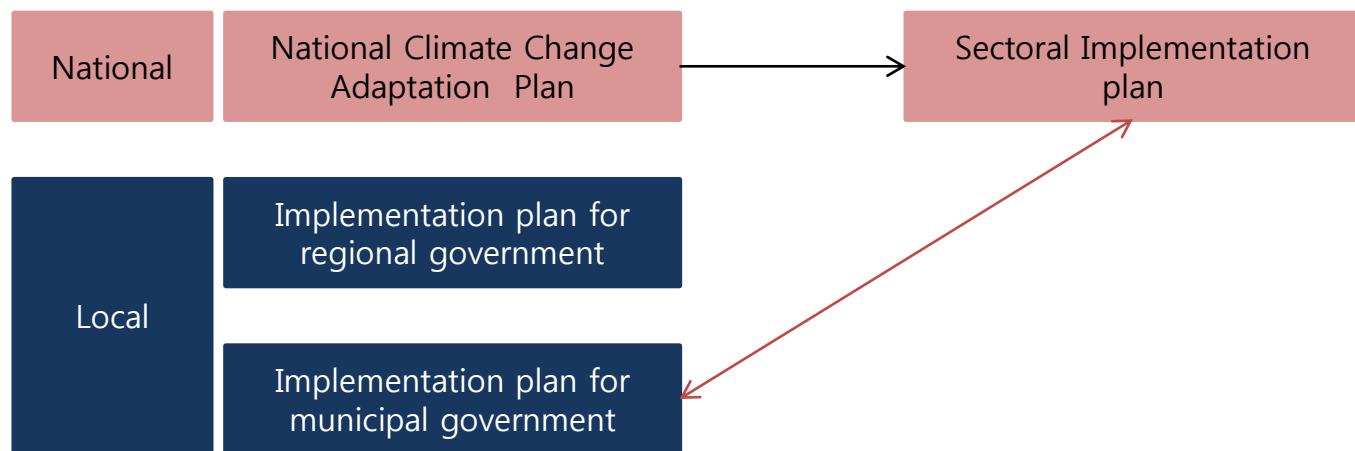
The 1st National Climate Change Adaptation Plan

II. The 1st National Climate Change Adaptation Plan

1. Legal Basis and Structure

- **(Legal Basis) According to the Clause 4, Article 48 of the Framework Act on Low Carbon, Green Growth and the Article 38 of its Enforcement Ordinance**
 - The Government shall exert itself preferentially for preventive management to reduce damage that may be caused by climate change and shall establish and implement countermeasures for mitigating impacts of climate change or for coping with health and natural disasters, as prescribed by Presidential Decree

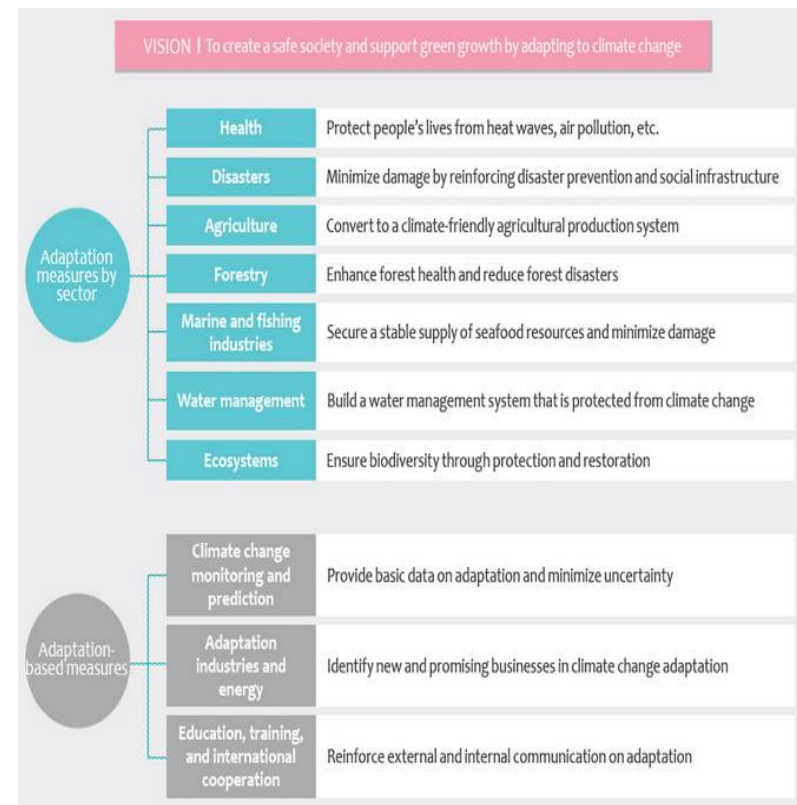
- **(Structure)**



II. The 1st National Climate Change Adaptation Plan

2. The 1st National Climate Change Adaptation

- **The 1st National Climate Change Adaptation Plan (Dec. 2010)**
 - (Period) 2011 ~ 2015
 - (Characteristics) As comprehensive national adaption plan, vision and direction of the national adaptation policy is suggested.
 - (System) 2 areas, 10 sectors, 87 sub-goals
 - (Participated Ministries) 13 Ministries including Ministry of Environment
- **Revision of the 1st Plan (Dec. 2012)**
 - Outcomes of RCP Scenario applied
 - 9 sectors, 67 sub-goals



(Resource: related ministries, 2010)

II. The 1st National Climate Change Adaptation Plan

3. Achievement of the 1st National Adaptation

- **National Level Climate Change Adaptation Framework**
 - Established the direction for the national, local and local adaptation plans
 - Established local and municipal–level adaptation implementation plans
 - Supported local governments to establish/implement adaptation implementation plans
- **Scientific basis of climate change adaptation**
 - Provided standard and high resolution climate change scenarios, vulnerability maps, and assessment tools for local and municipal governments
- **Rise in climate change adaptation awareness and adaptation partnership**
 - Promoted PR, education & international cooperation on adaptation

II. The 1st National Climate Change Adaptation Plan

3. Achievement of the 1st National Adaptation Plan (by sector)

Sector	Major Performance
Health	<ul style="list-style-type: none"> • Monitoring system on climate change health impacts <ul style="list-style-type: none"> – Climate change related diseases DB, etc. , • Health risk reduction strategies due to abnormal weather <ul style="list-style-type: none"> – Develop and supply a relevant manual, introduce what to do to prevent heat wave, etc. ,
Agriculture and Fisheries	<ul style="list-style-type: none"> • Monitoring system, predicted climate change impacts in agricultural and fisheries sectors <ul style="list-style-type: none"> – Produce high resolution scenario for agriculture, build fisheries monitoring system, etc. , • Climate change adaptation resource management, production technology development <ul style="list-style-type: none"> – Develop species adapt to climate change, disease diagnosis and prevention for conservation of aquatic resources
Water Management	<ul style="list-style-type: none"> • Enhance prediction and water monitoring system through water resource monitoring network, aquatic ecology investigation • Water resource management for safe water <ul style="list-style-type: none"> – Enhance water management system considering climate change, advance river management, etc • Enhance infrastructure facilities, dimension capability for floods and droughts <ul style="list-style-type: none"> – Flood-risk map for national stream, etc. ,
Natural Disasters	<ul style="list-style-type: none"> • Policy targeting high disaster risk areas and facilities vulnerable to natural disasters <ul style="list-style-type: none"> – Relevant standards and establish preventive measures, improve ability to predict landslide damages • Disaster preparedness for urban planning

II. The 1st National Climate Change Adaptation Plan

3. Achievement of the 1st National Adaptation Plan (by sector)

Sector	Performance
Forest/Ecosystem	<ul style="list-style-type: none"> • Long-term ecosystem monitoring <ul style="list-style-type: none"> – Research on long-term ecological changes, pilot project on national climate change biological indicators monitoring, etc. , • Systemic management of biological resources through habitat and species protection
Land/Coast	<ul style="list-style-type: none"> • Climate change vulnerability analysis for land, infrastructure <ul style="list-style-type: none"> – Guideline for vulnerability analysis, technical research, research development projects • Improve disaster prevention system • Reduction in climate change impacts and enhance adaptive capacity <ul style="list-style-type: none"> – Expand green areas for heat island
Industry	<ul style="list-style-type: none"> • Climate change vulnerability assessment and risk management • Enhance adaptive capacity through adaptive technology development <ul style="list-style-type: none"> – R&D investment, joint climate change adaptation plans, etc. , • Climate change adaptation targeting private sectors, adaptation industries <ul style="list-style-type: none"> – Extend agricultural insurance products

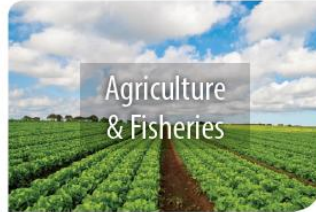
II. The 1st National Climate Change Adaptation Plan

3. Achievement of the 1st National Adaptation Plan (by sector)



Health

Establish health protection measures by focusing on social classes vulnerable to climate change



Agriculture & Fisheries

Strengthen foundation for the safe production of foods



Water Management

Establish and expand climate-resilient water management systems



Natural disaster

Strengthen the climate change adaptation capabilities of the nation's natural disaster prevention system



Forest & Ecosystem

Better management of the natural environment to maintain sound ecosystems



Land & Coast

Foster climate-resilient land and coastal environments



Industry

Strengthen industries' capability to adapt to climate change



Infrastructure & International Cooperation

Strengthen foundation for the establishment and implementation of adaptation measures



Monitoring & Forecasting

Provide basic data for adaptation and minimize uncertainties

〈Fig.〉 Abstract of 1st NAP
〈KACCC, 2016〉

II. The 1st National Climate Change Adaptation Plan

4. Limitation of the 1st National Adaptation Plan

- **Difficulty in making a tangible outcome**
 - Absence of sectoral short-term, medium and long-term goals, adaptation priority, and indicators
 - Lack of systematic implementation monitoring and evaluation
 - Limited budget

- **Insufficient strategic framework for promoting adaptation**
 - Lack of decision supporting tools, experts and scientific foundation
 - Lack of communication among local governments, industries and civil society
 - Lack of alignment among sectoral adaptation measures

III

The 2nd National Climate Change Adaptation Plan

III. The 2nd National Climate Change Adaptation Plan

1. The 2nd National Climate Change Adaptation

- **Contents**

- (Title) The 2nd National Climate Change Adaptation Plan (2016~2020)
- (Vision) Safe society, National happiness
- (Period) Based on long-term vision(2035), Five year rolling plan(2016-2020)
- (Participation) 20 ministries
 - ※ Ministries: Ministry of Strategy and Finance, Ministry of Education, Ministry of Science, ICT and Future Planning, Ministry of Foreign Affairs, Ministry of Unification, Ministry of National Defense, Ministry of Government Administration and Home Affairs, Ministry of Culture, Sports and Tourism, Ministry of Agriculture, Food and Rural Affairs, Ministry of Trade, Industry and Energy, Ministry of Health and Welfare, Ministry of Environment, Ministry of Employment and Labor, Ministry of Land, Infrastructure and Transport, Ministry of Oceans and Fisheries, Ministry of Public Safety and Security, Korea Meteorological Administration, Rural Development Administration, Korea Forest Service, Cultural Heritage Administration

III. The 2nd National Climate Change Adaptation Plan

2. Differentiation from the 1st NAP

- **Reflected internal and external policy environment changes**
 - Continued the initiative & maintained consecutiveness
 - Added newly discovered sectors, and prioritized the existing measures based on risk assessment
 - Explored the co-benefit of climate change mitigation and adaptation
- **Established a strategic adaptation framework including short, mid, long-term adaptation visions and goals**
 - Established the long-term vision and short/mid term goals
 - Visualized a economic, social and environment virtuous circle through adaptation
- **Expanded investment in adaptation technology & international cooperation**
 - Promoted adaptation technology and industry
 - Enhanced international partnership on adaptation

III. The 2nd National Climate Change Adaptation Plan

3. Vision/System

(Vision)

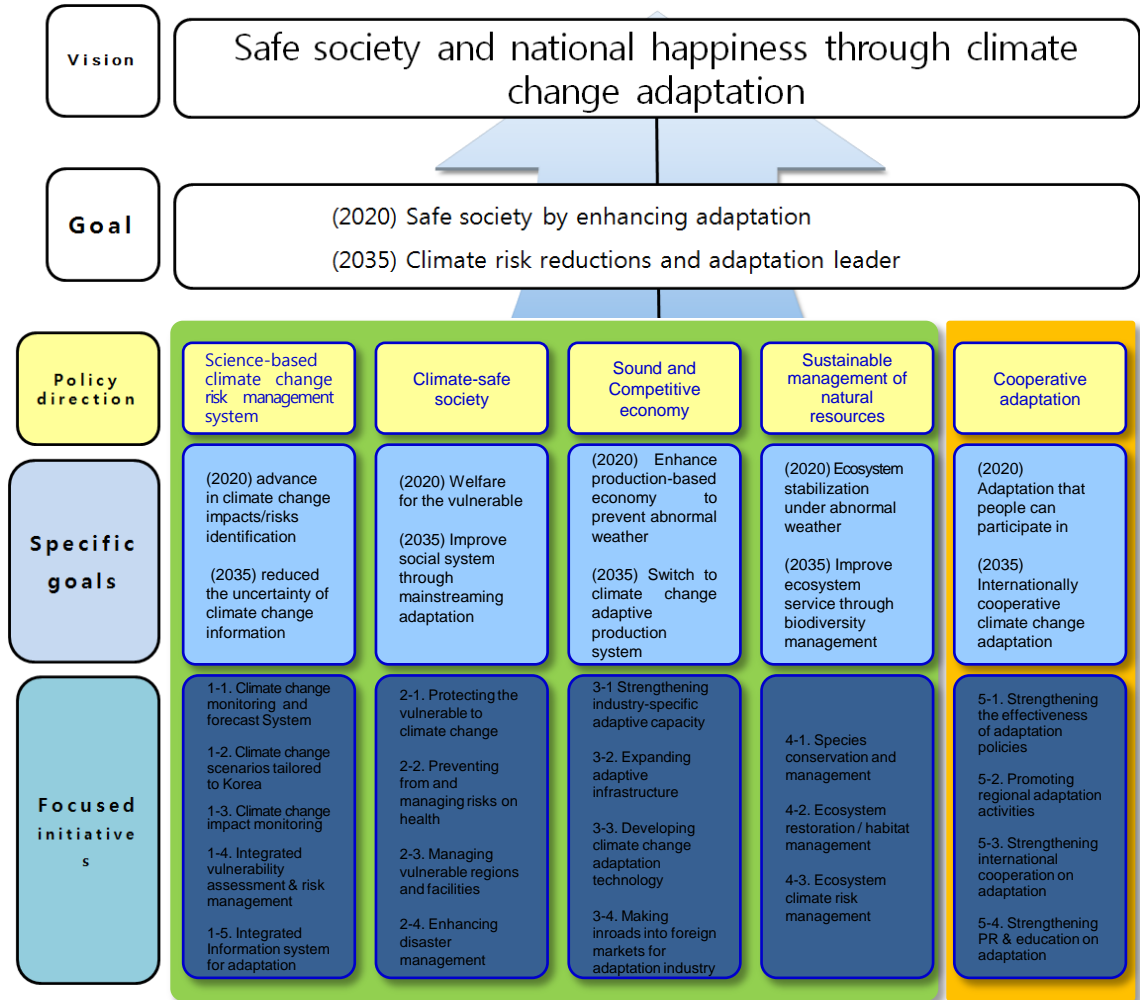
- Safe society and national happiness through climate change adaptation

(Goal)

- 5 years short term, 20 years medium-long term

(System)

- 4+1 system
- 5 directions/specific goals, 20 focused initiatives



III. The 2nd National Climate Change Adaptation Plan

4. Direction and Goals, Focused Initiatives

- Part one : Expanding the knowledge base

Division	Contents
Vision	Lay foundation for scientific climate change risk management system
Specific goal	<ul style="list-style-type: none"> (2020) advance in climate change impacts/risks identification (2035) reduce the uncertainty of climate change information
Planning indicator	<ul style="list-style-type: none"> Accuracy Vulnerability map
Focused initiatives	<ul style="list-style-type: none"> 1-1. Climate change monitoring and forecast system 1-2. Climate change scenarios tailored to Korea 1-3. Climate change impact monitoring 1-4. Integrated vulnerability assessment & risk management 1-5. Integrated Information system for adaptation

III. The 2nd National Climate Change Adaptation Plan

4. Direction and Goals, Focused Initiatives

Part one : Expanding the knowledge base

1. Lay foundation for scientific climate change risk management system

“Strengthen scientific basis for monitoring, forecasting, scenario development, and vulnerability assessment”

1. Improve climate change monitoring and forecasting abilities

- Launch of the “Cheollian 2” satellite for weather, ocean, and environmental monitoring (2019).
- Introduction of long-range forecasts (1-3 years) of extreme weather events including heat wave, cold wave, and drought (2017).

2. Lay foundation for development and utilization of climate scenarios tailored to Korea

- Develop a climate scenario tailored to Korea* and upgrade integrated climate and atmospheric modeling (2020).
- Climate scenario based on other nations (Current) → Climate scenario tailored to Korea based on AR6 (2020).
- Use the climate scenario for forecasting the future climate, atmospheric conditions, and marine environment of the Korean Peninsula.



3. Monitoring the effects of climate change on ecosystem and public health

- Monitoring biota by region and surveying natural habitats including rivers*.
- * (River) Flow, evapotranspiration / (Soil) Materials that cause acidification and sensitivity / (Coastal region) Level of shore erosion.
- Establish and operate climate change health impact monitoring systems for diseases associated with heat wave and cold wave.
- * Monitoring centers for climate change and vector-borne diseases (Centers operated in 62.5% of regions in 2015 to be expanded to 100% by 2020).

4. Integrated climate change vulnerability evaluation and management of social and economic risks

- Development of an integrated evaluation model* for a unified assessment of the vulnerabilities of various sectors (from 2014).
- * MOTIVE: Model On inTEgrated Impact and Vulnerability Evaluation.
- Development and dissemination of risk management tools for adaptation of industries and provision of additional support (from 2013).

III. The 2nd National Climate Change Adaptation Plan

4. Direction and Goals, Focused Initiatives

Part two : Society

Division	Contents
Vision	Build a society safe from climate change
Specific goal	<ul style="list-style-type: none"> • (2020) Welfare for the vulnerable • (2035) Improve social system through mainstreaming adaptation
Planning indicator	<ul style="list-style-type: none"> • Reduce health damage due to abnormal temperature • Reduce facility damage due to climate change
Focused initiatives	<ul style="list-style-type: none"> 2-1. Protecting the vulnerable to climate change 2-2. Preventing from and managing risks on health 2-3. Managing vulnerable regions and facilities 2-4. Enhancing disaster management

III. The 2nd National Climate Change Adaptation Plan

4. Direction and Goals, Focused Initiatives

Part two : Society

2. Build a society safe from climate change

“Establish a management system that prioritizes vulnerable groups and regions and a preemptive response system for effective health and disaster management”

1

Protect and support groups that are vulnerable to climate change

- Implement projects to provide health-related support to vulnerable groups, such as the elderly (from 2017).
- Investigate climate change adaptation status of public infrastructure used by vulnerable groups and devise guidelines for vulnerable groups (from 2016).

2

More effective prevention and management of the health impacts of climate change

- Promote co-benefit projects* for addressing climate change and promoting health (from 2017).
- * Establishment of urban green spaces, projects to improve insulation, etc.
- Leverage centers for environmental health as hubs for providing services related to diseases affected by climate change.



3

Minimize regions vulnerable to climate change and impacts to facilities

- Designate and manage primary management regions* such as districts for natural disaster risk reduction.
- * Number of primary management regions to be increased from 32 in 2014 to 92 by 2022.
- Analysis of flood vulnerability in coastal areas and generation of flood inundation maps* (2018-2019).
- * Based on coastal inundation maps illustrating the potential impact of sea-level rise (generated between 2011 and 2015 at 157 locations).

4

Strengthen natural disaster management system

- Formulate urban planning standards capable of preventing natural disasters (2017-2019).
- Develop technologies to mitigate the impact of natural disasters such as flood, wildfire, and landslide*.
- * Comprehensive disaster prevention systems in urban areas, remote UAV monitoring of landslides, and establishment of coastal forests for natural disaster mitigation.

III. The 2nd National Climate Change Adaptation Plan

4. Direction and Goals, Focused Initiatives

Part three : Economy

Division	Contents
Vision	Strengthen industrial competitiveness
Specific goal	<ul style="list-style-type: none"> • (2020) Enhance production-based economy to prevent abnormal weather • (2035) Switch to climate change adaptive production system
Planning indicator	<ul style="list-style-type: none"> • Domestic adaptation industry market share
Focused initiatives	<ul style="list-style-type: none"> 3-1 Strengthening industry-specific adaptive capacity 3-2. Expanding adaptive infrastructure 3-3. Developing climate change adaptation technology 3-4. Making inroads into foreign markets for adaptation industry

III. The 2nd National Climate Change Adaptation Plan

4. Direction and Goals, Focused Initiatives

Part three : Economy

3. Strengthen industrial competitiveness by turning climate change risk into opportunity

“Strengthen adaptation capabilities of industries and develop new engines for national growth by seeking business opportunities around the world ”

1 Enhance adaptation capabilities of the primary, secondary, and tertiary sectors of the economy

- [Primary sector] Agricultural production systems that are flexible to extreme weather events.
 - Develop varieties of rice, beans, and corn that are highly adaptive to climate change (147 varieties in 2015 → 200 varieties in 2020).
- [Secondary sector] Customized consulting for small and medium enterprises that are sensitive to climate change (From 2016).
- [Tertiary sector] Add natural disaster insurance products and formulate plans for the tourism industry that are sensitive to climate change.
 - Agricultural disaster insurance products : 43 for crops and 16 for cattle (2014) → 59 for crops and 16 for cattle (2020).



2 Expand infrastructure for adaptation in each industry

- [Water resources] Customized measures against drought and plans to secure drinking water sources.
- [Energy] Establish and implement energy supply and demand management plans* by considering climate change.
 - * Master Plan for National Energy, National Plan for Energy Supply and Demand, Basic Plan for Renewable Energy.
- [Infrastructure] Build disaster-resistant farming and fishing infrastructure (reservoirs and seawalls) based on Information and Communications Technologies(ICT).

3 Lay foundation for the export of adaptation technologies and services

- Formulate plan to foster the climate change adaptation industry (2016).
- Develop and support resident income generation projects in developing nations.
- Conduct international cooperation projects* using adaptation technologies owned by the public sector.
 - * Investigate overseas demand under UNFCCC's technical assistance programs and facilitate partnership with Korean companies.

III. The 2nd National Climate Change Adaptation Plan

4. Direction and Goals, Focused Initiatives

Part four : Environment

Division	Contents
Vision	Sustainable management natural resources
Specific goal	<ul style="list-style-type: none"> • (2020) Ecosystem stabilization under abnormal weather • (2035) Improve ecosystem service through biodiversity management
Planning indicator	<ul style="list-style-type: none"> • Number of identified biological genetic resources • Protected areas
Focused initiatives	<ul style="list-style-type: none"> 4-1. Species conservation and management 4-2. Ecosystem restoration / habitat management 4-3. Ecosystem climate risk management

III. The 2nd National Climate Change Adaptation Plan

4. Direction and Goals, Focused Initiatives

Part four : Environment

4. Sustainably manage natural resources

“Formulate restoration and conservation plans by focusing on species and ecosystems vulnerable to climate change”

1

Conservation and management of species

- Build a database of indicator species vulnerable to climate change*.
 - * Korean fir, Korean spruce, Halla dendranthema, Byeonsan winter aconite, etc.
- [On-site conservation] Establish and implement plans related to forest protection areas.
 - * Master Plan for Forest Biodiversity (2018-2022), Mater Plan for Protection of Baekdudaegan Area (2016-2025).
- [National conservation] Add national arboreturns and build the Central Seed Bank of Asia.
 - * [Northern temperate zone] Baekdudaegan Arboretum (2016 in Bonghwa, Gyeongbuk Province).
 - [Central temperate zone] Central Arboretum (2021 in Sejong).
 - [Westcoast] National Saemangeum Arboretum (2025 in Saemangeum, Jeonbuk Province).



2

Ecosystem restoration and management of natural habitat

- Monitoring, restoration, and conservation of ecosystems in vulnerable regions such as coastal areas and wetlands.
 - (Forest ecosystem) Expand afforestation areas of broad-leaved trees
 - (Aquatic ecosystem) Preserve habitat for sedentary fish.
- Connection and restoration of alienated or destroyed forest ecosystems in areas including Baekdudaegan*.
 - * Restoration of forest ecosystems: 365 ha in 2015 → 515 ha in 2020.

3

Management of climate impacts to ecosystems

- Additional designation of potentially harmful alien species (100 species by 2018) and strengthened network for monitoring their introduction.
- Formulate plan to mitigate algal bloom and minimize impact.
- Modernize forest disease and insect pest prediction systems to monitor diseases such as pine wilt*.
 - * UAV monitoring and installation of electronic prediction boxes.

III. The 2nd National Climate Change Adaptation Plan

4. Direction and Goals, Focused Initiatives

- Part five : Institutional and cultural basis

Division	Contents
Vision	Cooperative adaptation
Specific goal	<ul style="list-style-type: none"> (2020) Adaptation that people can participate in (2035) Internationally cooperative climate change adaptation
Planning indicator	<ul style="list-style-type: none"> National adaptation awareness Climate change education beneficiary countries
Focused initiatives	<ul style="list-style-type: none"> 5-1. Strengthening the effectiveness of adaptation policies 5-2. Promoting regional adaptation activities 5-3. Strengthening international cooperation on adaptation 5-4. Strengthening PR & education on adaptation

III. The 2nd National Climate Change Adaptation Plan

4. Direction and Goals, Focused Initiatives

Part five : Institutional and cultural basis

5. Work to ensure successful execution and effectiveness of adaptation measures at national and international levels

“Realign legislation, government budgets, and related systems for climate change adaptation, and strengthen regional and international cooperation”

1

Enhance viability of adaptation policies

- Strengthen legal foundation related to climate change adaptation (From 2016).
- Raise adaptation fund and carry out projects.
 - * UK and Japan have already introduced a climate change levy on fossil fuels.
- Develop ways to link climate change adaptation policies with environmental impact assessments.

2

Promote adaptation activities at the regional level

- Help local governments establish and implement adaptation plans and realign feedback systems (2016-2018).
 - * Provision of the Vulnerability Assessment Tool to Build Climate Change Adaptation Plan (VESTAP).
- Develop and implement representative adaptation projects by region* (from 2017).
 - * Develop business models for regional adaptation based on climate change adaptation.



3

Strengthen international cooperation for climate change adaptation

- Establish a roadmap for supporting developing nations and develop and carry out assistance programs*.
 - * (Vietnam) Project for modernization of the meteorological disaster monitoring system.
 - (Indonesia) Deforestation prevention project.
- Strengthen cooperation among international organizations including United Nations Environment Programme (UNEP) and with global adaptation networks*.
 - * Asia Pacific Adaptation Network (APAN), Global Adaptation Network (GAN), etc.

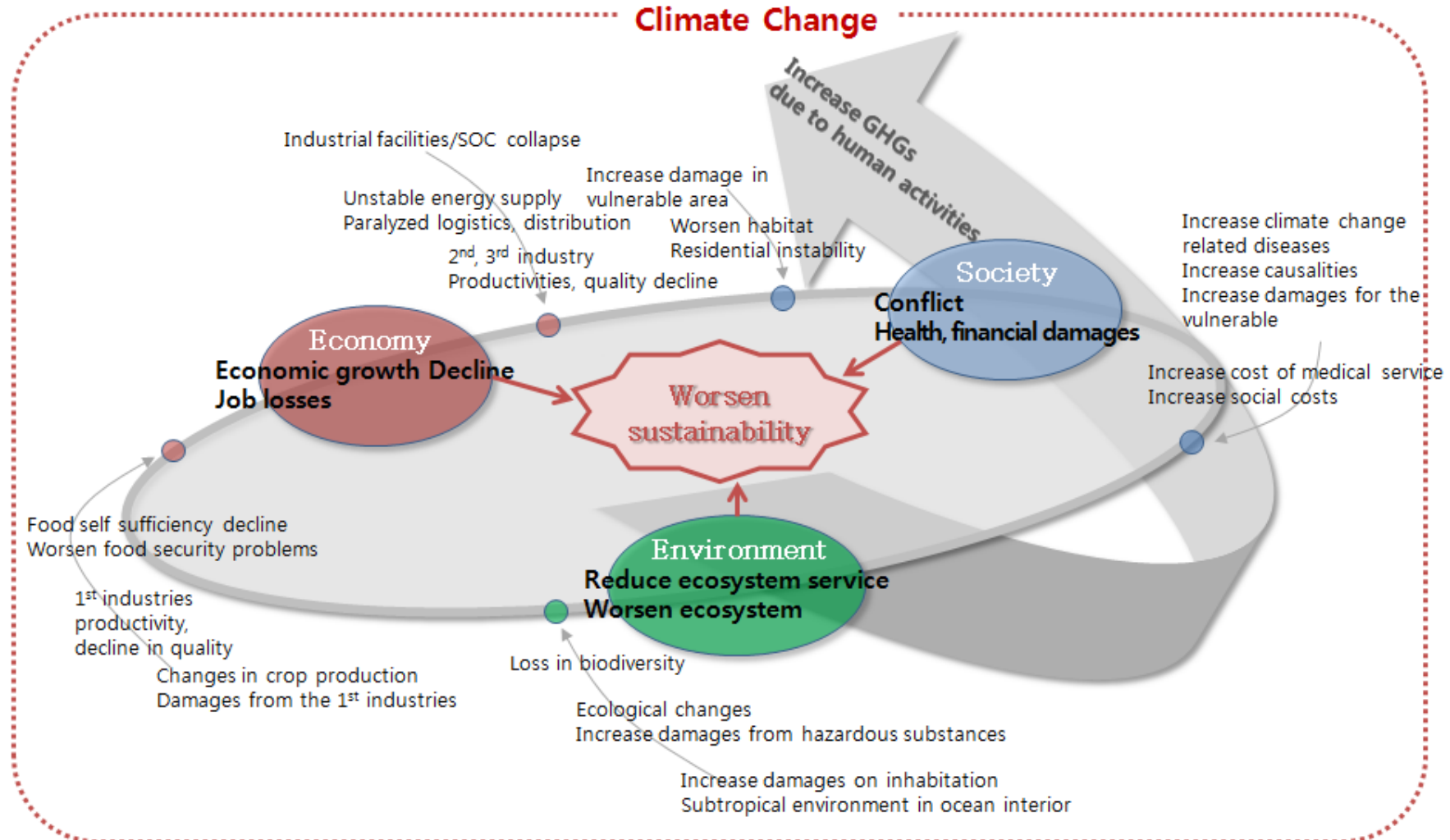
4

Raise awareness of the importance of adaptation in daily lives

- Provide and promote user-oriented adaptation information and train climate experts.

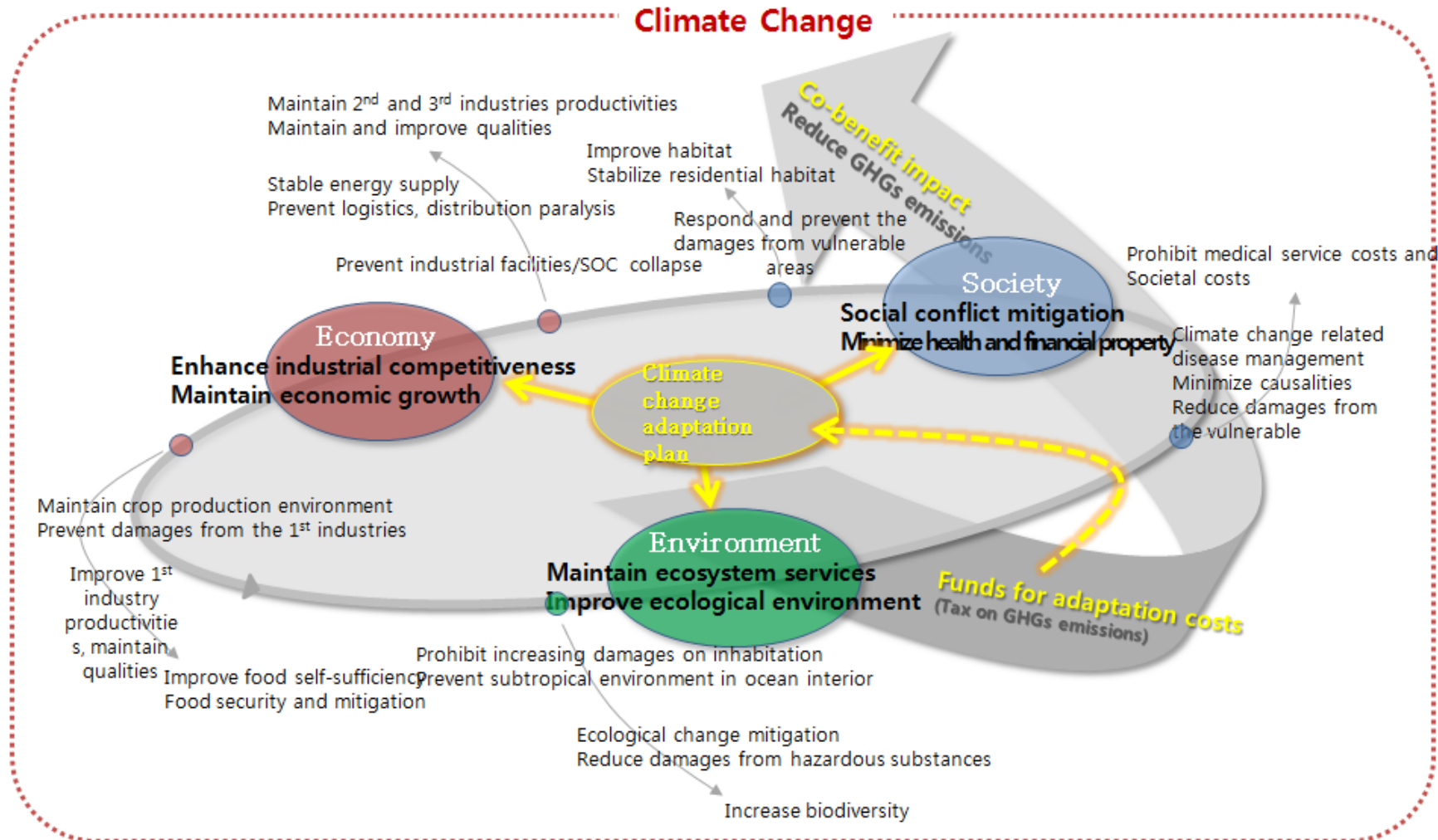
III. The 2nd National Climate Change Adaptation Plan

5. Effect through the 2nd Adaptation



III. The 2nd National Climate Change Adaptation Plan

5. Effect through the 2nd Adaptation



IV

Conclusions and Suggestions

IV. Conclusions and Suggestions

- **Improvement of the national adaptation capacity through previous national adaptation planning experiences (2 cases) .**
- **Formulation of a comprehensive operation system by establishing sectoral, regional and municipal–level implementation plans.**
- **Ongoing implementation of ‘Monitoring and evaluation’ in Korea.**
- **Development of the 3rd NAP to protect and safeguard the country from climate change.**
- **Requirement of a global arena to share the experiences with diverse countries to successfully implement the NAP.**

Thank you very much
for your attention
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