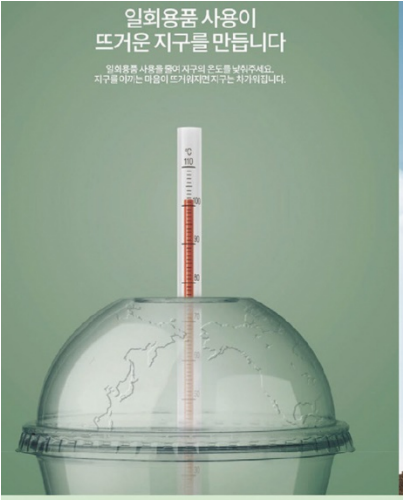
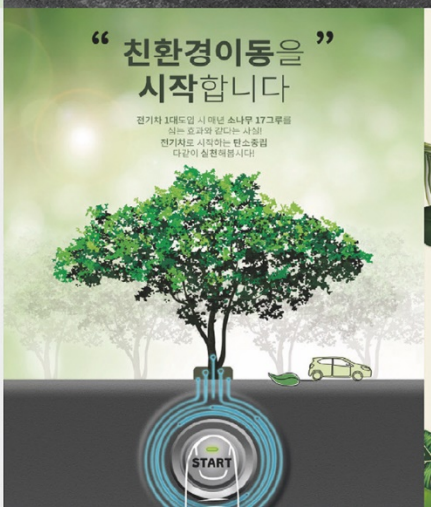


The Enhanced 3rd National Climate Crisis Adaptation Plan

2023. 6.

The Government of the Republic of Korea



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Acknowledgement

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I. Overview

A. Background

A.1 Escalating global damage from exacerbating climate crisis

A.1.1 ***(Acceleration of Climate Crisis)*** The global average temperature has increased by 1.09°C compared to pre-Industrial Revolution levels; Projections suggest that the estimated timeline for a 1.5°C* global temperature increase has advanced by over 10 years, from 2052 to before 2040(IPCC 6th Assessment Report).

* 1.5℃, the temperature limit that humans can endure (Paris Agreement); projections indicating the extinction of all species globally if the temperature increases by 6℃

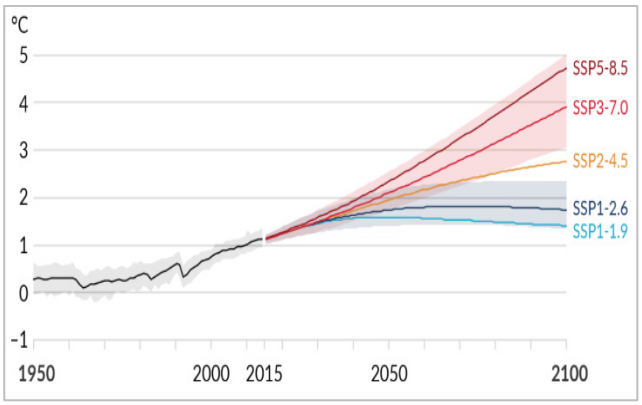

Figure 1 Global average surface temperature change

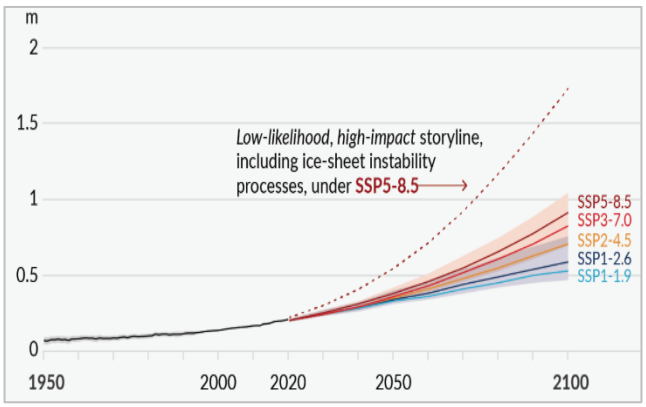

Figure 2 Global average sea level change

※ If the current trend of GHG emissions continues, it is estimated that global average surface temperature will increase by 4.4℃ by 2100 compared to the temperature prior to the Industrial Revolution and a 0.63~1.01m sea level rise.

A.1.2 ***(Global Damage)*** (Pakistan)Floodings in the one-third of Pakistan's national territory due to prolonged heavy rainfall (from June to September 2022); (Spain)Deaths of more than 500 people because of 45℃ heatwaves; (Germany)Disruption of Rhine river shipping because of a rapid decrease in water levels on the river

A.2 Climate-related disasters faced by Korean citizens

A.2.1 ***(Heavy Rainfall·Typhoon)*** Urban flooding due to the heavy rainfalls concentrated in the Metropolitan area (August 2022); ceasing of operations of main industrial facilities due to typhoon-induced flooding of the Nangcheon Stream in Pohang-si (September 2022)

A.2.2 ***(Drought·Wildfire)*** The longest period of drought in history in Jeollanam-do·Gwangju-si continued until spring of this year; the largest area of wildfire damage in Uljin·Gangneung (2022); increase in wildfire frequency*

* (Frequency of events) annual average 535 events → 740 events in 2022 (+38%); (damaged area) annual average 3,558 ha → 24,782 ha in 2022

☞ Limitation with the currently implemented「the 3rd National Climate Change Adaptation Plan (2021~2025)」in preventing and mitigating the damage from the exacerbating climate crisis

⇒ Complementary measures for the national adaptation plan are necessary, such as strengthening action plans applicable on the ground and upgrading adaptation infrastructure in all societies.

B. Current Climate Crisis and Projection in Korea

B.1.1 ***(Temperature Rise)*** Increased by 1.6℃ over the last hundred years; and projected 6.3℃ increase by late 21st century (2081~2100) if the current trend of greenhouse gas (GHG) emissions continues

B.1.2 ***(Heatwave·Heavy Rainfall)*** With the current emission trend, projections indicate an annual number of heatwave days of 8.8 days (2000~2019) → 79.5 days (2090), 9 times; 100-year extreme precipitation increase by 33~73%

B.1.3 ***(Epidemic)*** Forecasted indigenization of falciparum malaria with stronger symptoms and aftereffects instead of malaria with milder symptoms

C. Underlying Legislation

C.1.1 ***(Underlying Act)*** Article 38 of「Framework Act on Carbon Neutrality and Green Growth for Coping with Climate Crisis」and Article 41 of its Enforcement Decree

C.1.2 ***(Plan Duration)*** 2023~2025 (3 years) ※ (1st plan) 2011~2015, (revised 1st plan) 2013~2015, (2nd plan) 2016~2020, (3rd plan) 2021~2025

C.1.3 ***(Related Plans)*** 「The 1st National Carbon Neutrality and Green Growth Basic Plan (2023~2042) 」(higher level plan) and broad-area·basic local government climate crisis adaptation plans (lower level plan)

D. Implementation Progress

D.1.1 ***(Experts)*** Created and operated the Review Committee with sectoral experts (1st~4th forum); risk re-evaluation of the current 3rd Adaptation Plan; and preparation of complementary measures by sector (November 2022 ~ April 2023)

D.1.2 ***(Line Ministries)*** Adaptation Committee meeting (Ministry of Environment, April 20th, May 9th), line ministries meeting (Secretariat of the Presidential Commission on Carbon Neutrality and Green Growth, June 12th, and 14th)

D.1.3 ***(Presidential Commission on Carbon Neutrality and Green Growth)*** Working group pre-review (February 28th, April 5th, May 16th) and Sub-commissions' reporting (May 18th, June 15th)

D.1.4 ***(Opinions from adaptation stakeholders)*** Opinions from adaptation stakeholders, including local governments, youth organizations, civil society organizations, public institutions, and industries (May 19th, 22nd, and 23rd); and the Public Discussion (June 13rd)

II. Evaluation of the Current 3rd Adaptation Plan

A. Major Outcomes

A.1 Introduction of implementation evaluation engaging with citizens

A.1.1 Created and operated the Public Review Panel of 50 citizens as direct parties of climate crisis adaptation (2021~); and strengthened a bottom-up evaluation·feedback system

A.2 1st step for mainstreaming adaptation in Korean society

A.2.1 Laid the basis for adaptation mainstreaming by putting Climate Change Impact Assessment in force (May 2022), and obligating public institutions to develop adaptation plans (April 2022)

A.2.2 Developed customized damage prevention measures* based on the evaluation of climate change risk levels by sector (water management, land, agriculture, health, etc.)

* (Water management) increased small-sized precipitation radars and flood information collection sensors, (Land) conducted vulnerability assessments of coastal areas in 27 cities, (Agriculture) expanded early warning areas of agricultural meteorological disasters 40 → 60 areas, (Health) published the 1st Climate Health Impact Assessment Report

B. Limitations

B.1 Complementary adaptation measures needed in accordance with new climate change projection

B.1.1 Need to reflect the projection indicating accelerated future climate changes and more extensive damages* in the adaptation plan

* Projected more severe extreme weather events and global damages than the projection of AR5 (IPCC AR6, 2022)

B.2 Insufficient adaptation infrastructure and information utilization for preventing damages from climate-related disasters

B.2.1 Inadequate consideration of future climate change risk level in adaptation infrastructure design standards, including dams, sewerages, and breakwaters, and insufficient adaptation infrastructure to respond to the climate crisis

B.2.2 Scattered adaptation information in each institution*, requiring integrated information provision; and insufficient information utilization by local governments and public institutions due to expert-centered information provision

* (e.g.) ▲MOE[1] : water management, atmosphere ▲MOLIT[2] : spatial information ▲RDA[3] : damage from disease and harmful insects ▲MOF[4] : marine environment

B.3 Insufficient systems for integrating adaptation plans and communications between adaptation stakeholders

B.3.1 Not integrated Climate Crisis Adaptation Plan into national administration plans; and insufficient adoption in the budgeting

B.3.2 Inefficiency in implementing the adaptation plan because of insufficient collaboration and communication between ministries and adaptation stakeholders

1 MOE: Ministry of Environment
2 MOLIT: Ministry of Land, Infrastructure, and Transport
3 RDA: Rural Development Administration
4 MOF: Ministry of Oceans and Fisheries

III. Basic Directions and Measures

A. Basic Directions

A.1 Advancing the scientific basis of climate observation·prediction and adaptation

A.1.1 **Advance future climate change predictions** by considering socioeconomic shifts or changes, such as population and economic growth rate; and provide climate change information that is easily understandable to the public

A.1.2 Integrate adaptation information produced by each ministry; **visualize climate risk maps** and **establish an integrated platform** aimed at improving citizens' utilization

A.2 Creating a safe society capable of tackling climate disasters and risks

A.2.1 **Redesign adaptation infrastructure** (dams, sewerage, breakwaters, etc.) reflecting the risk level of future climate change

A.2.2 **Enhance pre-forecasting·warning systems**, including flood forecasting, heatwave·cold-spell forecasting, and early wildfire warnings, to **ensure timely responses** to climate-related disasters

A.3 Establishing a societal foundation adaptive to climate crisis

A.3.1 **Improve housing vulnerable to disasters** such as **semi-basement flats** and enhance maintenance of social overhead capital (SOC), including urban planning and road·railway·harbor infrastructure, to ensure the safety of public living spaces from climate crisis

A.3.2 Strengthen adaptive capacities of agriculture and fisheries, including the **development of climate-resilient crop varieties and cultivation technologies**; and expanding biodiversity prediction·monitoring·restoration efforts to ensure ecosystem stability

A.4 Implementing climate adaptation with broad stakeholder engagement

A.4.1 Enhance underlying legislations for adaptation plans; and prepare measures for collaborative efforts of central-local governments and industry-finance sectors as well as measures to support vulnerable groups

IV. Major Enhancing Policies

1. Advancing the scientific basis of climate observation, prediction and adaptation

1-1. Enhance climate crisis observation and prediction systems

A.1 Advance climate change prediction considering socioeconomic factors

A.1.1 ***(Socioeconomic Based Prediction)*** Predict future climate elements (temperature, precipitation, etc.) considering not only GHG concentration (RCP*) but also trends of future population·energy consumption, etc. (SSP**)

* RCP: Representative Concentration Pathway **SSP: Shared Socioeconomic Pathway

- Provide climate change situation maps downscaled to high resolutions (1km) and eup·myeon·dong levels (2023~)

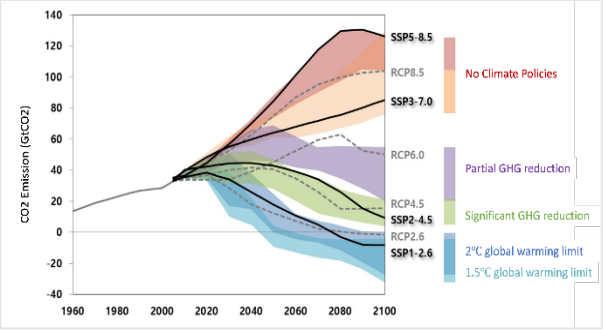

Figure 3. 2100 GHG emission trends by SSP scenario

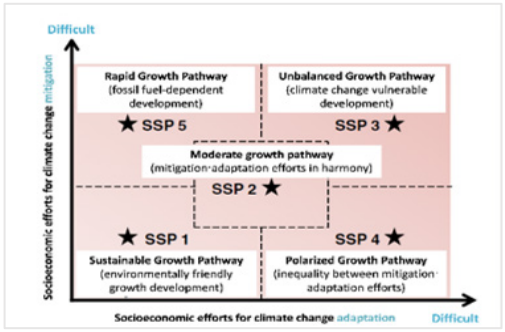

Figure 4. Features by SSP scenario

Source: South Korea Enhanced Climate Change Projection Report (2020, KMA)

A.1.2 ***(Near-term Prediction System)*** Develop a climate prediction system to provide near-term (1~10 years) climate prediction information*(2024~)

* (Present) 1 month, 3 months prediction → (Revised) 1~10 year(s) near-term prediction

A.2 Establish Solid GHG Observation Networks for Mitigation·Adaptation Assessment

A.2.1 ***(Solid Observation Networks)*** Build solid observation networks from ground level to satellite by expanding insufficient observation networks* for climate change observation and GHG emission calculation verification**

* (On the ground) 5 in 2022 → 14 stations in 2025 (utilizing and associating with the existing atmospheric observation networks)/ (Satellite) Utilizing Geostationary Orbit and Low Earth Orbit

** Measuring GHG concentrations around the high GHG emission areas such as industrial complexes and cities; and verifying national GHG inventory calculations for annual reports to the international society

1-2 Promote climate crisis adaptation information production and technology development

B.1 Visualize and provide the integrated adaptation information

B.1.1 ***(Climate Risk Map)*** Visualize climate crisis risks by risk factor and create nationwide climate risk maps* aligning with the maps prepared by each ministry

* Create climate risk maps by risk factor such as localized rainfall, drought, typhoon aligning with the existing maps prepared by each ministry (urban flooding, flood risk·drought vulnerability, heatwave·cold spell, landslide risk, coastal flooding forecast, etc.)

B.1.2 ***(Integrated Platform)*** Prepare a standard classification system* of adaptation information to help local governments and citizens rapidly and easily use the adaptation information scattered in each ministry (~2024); and establish an integrated platform** (2025~)

* Provide production·management formats compatible in accordance with impact relationship by category to integrate and use adaptation information

** Embed vulnerability assessment tools, provide total adaptation information by ministry, and publish the guidelines for public actions at each climate crisis stage

B.2 Promote adaptation technology development across all processes of observation·prediction and response

B.2.1 ***(Technology Development)*** Systematize, for the first time, a technology development roadmap across all adaptation processes* through the 1st climate technology basic plan (December 2022), in which technology development was previously focused on GHG reduction

* (Adaptation Technology) Climate risk assessment technology → damage reduction and resilience enhancement technology → adaptation effectiveness assessment technology, etc.

B.2.2 ***(Adaptive Bio-Resources)*** Ensure climate adaptive biological resources (autogenesis microorganism) by conducting research on biological resources that rapidly adapt to climate change such as absorbing GHGs (2023~)

* Three utilization sectors: methane reduction, CO_2 reduction, disassembly·resource management of waste resources

2. Creating a safe society capable of tackling climate disasters and risks

2-1 Enhance water management to prepare for flooding and drought

A.1 Ensure timely responses to extreme flooding and enhance infrastructure

A.1.1 ***(Strengthening forecasting·warning)*** Improve promptness of forecasting·warning systems (3 hours → 6 hours prior to event) to ensure timely responses to flooding; and establish an AI urban flooding forecasting center (2025~)

※ Increase flooding forecasting locations (75 → 223 locations, ~2024) and small-sized precipitation radars (2 → 9 radars, ~2025)

A.1.2 ***(Enhancing infrastructure)*** Improve and expand climate crisis adaptive infrastructure** considering future climate risk levels*** to respond to exacerbated and extreme floods

* (Past) Based on the past precipitation and flood data → (Future) Consider changes in precipitation and others affected by future climate change

** Urban waterfront, rainwater harvesting facilities, deep tunnel, AI·ICT-based smart dam, waterworks·sewerage, etc.

*** Increase small-sized river design frequency to enhance the capacity of flood defense (100-year → 200-year frequency)

A.2 Strengthen response capacity to prolonged and recurrent droughts and advance water management

A.2.1 ***(Improving Information Services)*** Establish a national drought information service (one-map) integrating drought information scattered in each ministry; and provide nationwide drought vulnerability map service*, seasonal meteorological drought, etc.**

* Computerize the nationwide eup·myeon·dong unit drought vulnerability map (~2023) → national drought information portal service (2024~)

** Currently, 1~3 month(s) meteorological drought forecasting →expanding to seasonal meteorological drought forecasting for 3 months or more

A.2.2 ***(Drought Response Roadmap)*** Establish long-term water supply plans for Han River·Geum River·Nakdong River basins (~'23) and provide stable water services that are not affected by extreme droughts

Yeongsan River·Seomjin River long-term drought plans (April 2023)

- (Phase 1, Maximum drought) Provide maximum 450,000 ㎥/day (Associating with Jangheung Dam-Juam Dam water pipelines, wastewater reuse in Yeosu, desalination, etc.)
- (Phase 2, Extreme drought considering future climate change) Additionally provide 160,000 ㎥/day or more (using dam emergency·dead storages)

※ (Island area plan) Provide underground water dam (increasing underground water level by installing watertight walls in the underground aquifer) and mobile desalination facilities (container type)

A.2.3 ***(Aligning Dam-Reservoir-Estuary Dike)*** Align and scientifically operate dam-reservoir-estuary dike considering meteorological conditions to efficiently and systematically respond to exacerbating drought situation due to climate change

2-2 Prevent forest disasters such as landslide·wildfire

B.1 Prepare a preemptive response system against the increasing frequency and size of wildfires

B.1.1 ***(Strengthening Forecasting)*** To preemptively respond to wildfires, advance wildfire risk forecasting systems, such as mid- to long-term wildfire prediction (2024~) *, based on meteorology·satellite big data** and advanced sensor (drone, CCTV, etc.)

* Secure meteorological data and enhance precision by advancing sensors, including expanding mountain weather observation networks and soil moisture sensors

** (Current) Short-term (3 days prior to event) →(Revised) Mid-term (7 days prior to event), long-term (1 month prior to event), and seasonal risk prediction information

B.1.2 ***(Rapid Extinguishing System)*** Develop a rapid wildfire extinguishing system with additional high-functioning ground and aerial fire fighting equipment*(2023~)

* Deploy reconnaissance drones for night surveillance, high-functioning wildfire extinguishing vehicles, and wildfire disaster special extinguishing teams in local governments; increase super large helicopters and night extinguishing helicopters; introduce large capacity extinguishing drones, etc.

B.2 Early warning·intensive management in landslide-vulnerable areas

B.2.1 ***(Precise Risk Map)*** Improve low-precise landslide risk maps by expanding to the level of forest watershed* by administrative unit (eup·myeon·dong) (2025~)

* Downscaling the mountains in the country to 620,000 zones along water streams

B.2.2 ***(Landslide Prevention Team)*** Actively utilize Landslide Prevention Teams* for landslide vulnerable area inspection, damage prevention measures, and emergency evacuation broadcast

* (Operation period) 6 months (May 15th~October 15th, operation flexible depending on the circumstances) / (Size) 760 people across the country (190 teams × 4 people/team)

2-3 Strengthen precautionary measures on health damages to prepare for extreme temperatures such as heatwave·cold-spell

C.1 Monitor heatwave·cold-spell and minimize damages

C.1.1 ***(Survey·Response)*** Survey climate disaster damage types (outdoor worker, elderly people, etc.) through emergency medical centers (500 centers across the country) *(2022~); monitor the state of damage; and promote preventive measures

* Collect and analyze data a wider range of sensitive/vulnerable groups, including elderly people living alone, low-income groups, people with disabilities, and pregnant individuals

C.1.2 ***(Heatwave·Cold-Spell Impact Forecasting)*** Provide impact forecasting using multiple media channels* for a more effective broadcasting of impact information by vulnerable group (outdoor worker, elderly people in rural areas, elderly people living alone, the disabled, etc.)

* (Current) Simple village-level broadcasting → (Revised) Text village broadcasting contents to the village members' mobile phones (preemptive identification of vulnerable groups and sharing pinpoint information, 2023~)

C.1.3 ***(Monitoring·Management of Intensive Management Areas)*** Inspect intensive management areas (Hot Spot)*; and expand adaptation infrastructure such as shade·waterway

* Conduct heatwave·cold-spell vulnerability assessments downscaling to the units smaller than administrative areas (eup·myeon·dong) considering floating population based on traffic in wireless communications, shadows by building and by time, etc

C.2 Strengthen a protection basis against increasing damages of health sensitive groups

C.2.1 ***(Survey·Response)*** Predict the burden of disease considering both the climate and the population (2023); and provide support for psychological relief as well as physical damage of those affected from climate disasters*

* Support psychological counseling through mental health specialists from the National Center for Disaster and Trauma (2018~, 30 people, operated by MOHW), mental health welfare centers (local governments), and Mind Relief Buses

3. Establishing a societal foundation adaptive to climate crisis

3-1 Strengthen disaster response capacities of housing·cities·SOC on climate crisis

A.1 Improve disaster vulnerable housing by stages

A.1.1 ***(Housing Improvement)*** Improve housing gradually and step by step to reduce damages of disaster-vulnerable houses such as half-basement flats (flood prevention facilities, etc.)* (2023~)

* (Current) Wallpapering, flooring, insulation, heating, etc. → (Revised) Prioritize the installation of flood prevention facilities (flood-prone homes)

A.1.2 ***(Resettlement Support)*** Provide interest-free loans to residents living (for 3 months or more) in Jjokbang (slice rooms)·half-basement flats in case moving into private housing (KRW 50 million, 10 years); and expand public rental housing supply with priority (7,000 flats in 2022 → more than 10,000 flats in 2023)

A.1.3 ***(Underground Parking Lot)*** Integrate flood prevention·response measures for underground parking lot into the multifamily housing safety management plans; and inspect·maintain underground parking lot during the safety diagnosis in summer monsoon season

A.2 Enhance climate adaptation-related urban planning and SOC management

A.2.1 ***(Urban Disaster Response Plan)*** Improve guidelines* for city-level (si·gun) basic plans by requiring the conduct of disaster vulnerability assessments and develop disaster prevention plans for buildings, etc. giving priority to the areas of disaster vulnerability level 1·2

* Revise guidelines for development of si·gun basic plans and si·gun management plans (~2023)

A.2.2 ***(Facility Management with Nature-based Solutions)*** Implement a low-carbon green industry complex project applying NbS* (2023~, 5 complexes); and develop evaluation·management technologies for ensuring urban climate resilience**(~2028)

* Improve environments and prevent flooding by creating bioretention, LID-parks using rainwater, etc. in old industry complexes (5 complexes in Busan, etc.)

** Establish a quantitative effectiveness evaluation system and assist policy development for adaptation projects (including green walls), green infrastructure, etc.

A.2.3 ***(SOC)*** Conduct research to improve design standards for national roads, railroads, etc. to consider climate risk factors (heavy rainfall, heatwave, etc.) when constructing SOCs

3-2 Establish climate crisis adaptive harbor·marine-spaces

B.1 Enhance harbors and improve design standards to prepare for coastal disasters

B.1.1 ***(Safety Maintenance Enhancement)*** Enhance facilities in harbors (breakwater, etc.); and install flooding prevention facilities in hinterlands (protection wall, disaster prevention hill, etc.) to prepare for sea-level rise, typhoon and other future climate change impacts (2023~)

※ Enhance breakwater·shore protection in 17 locations in 11 harbors; and improve flood prone areas in 9 locations in 6 harbors

- Create Public Relief Coasts to ensure buffer areas (eco-friendly parks, etc.) by purchasing lands in the areas highly susceptible to disaster (2025~)

B.1.2 ***(Design Standard Improvement)*** Revise harbor·fishing port design standards* by reflecting local coast features**, wave height, cycle, wind direction, etc. to construct harbor infrastructure tailored for Korea (~2026)

* For designing counter facilities, a design wave frequency was enhanced 50-year →100-year and already reflected in design standards (2021~)

** (e.g.) (East Sea) Relatively high wave height, (West Sea) large tidal range

B.1.3 ***(Safety Accident Prevention)*** Expand safety facilities (intelligent CCTV, etc.) in harbors·fishing ports to prevent safety accidents due to storms, etc. (~2024)

B.2 Expand coast·harbor disaster prevention research facilities and strengthen forecasting·warning

B.2.1 ***(Coast·Harbor Disaster Prevention Research Center)*** Establish a disaster prevention research center equipped with the largest experiment facilities* in the country to effectively respond to maritime disasters (~2027)

* Enhance research on the safety of disaster prevention facilities by establishing large laboratories that can minimize the shortcomings of small-sized experiments

B.2.2 ***(Forecasting·Warning)*** Develop AI-based forecasting·warning systems* (2024~) and establish a rapid operating system of disaster prevention facilities to quickly respond to disasters such as storm surge, typhoon, etc.

* Shorten prediction cycle (3 hours → 30 minutes); and improve precision (city·province → eup·myeon·dong)

3-3 Establish sustainable agriculture and fisheries environments

C.1 Advance agricultural weather information and prevent disasters such as drought, flood, and water temperature anomalies

C.1.1 ***(Early Warning)*** Improve agricultural weather information resolutions to eliminate blind spots of agricultural and fishery-related disasters*; expand coverage of early warning system services**; and extend real-time coastal water temperature observation networks***

* 5㎞ → 30~270m, ** (2022) 60 → (2025) 155 cities·guns, *** (2022) 140 → ('25) 200 networks

C.1.2 ***(Agricultural Infrastructure)*** Expand flood control capacities not only for large reservoirs (reservoir capacity 5 million ㎥ or more) but also for middle and small reservoirs (reservoir capacity 0.3 million ㎥ or more) to prepare for extreme flooding*

* Complete 47 large reservoirs by 2025; and implement middle·small reservoirs after feasibility study (late 2023) (39 reservoirs)

C.1.3 ***(Aquatic Life Diseases)*** Investigate actual conditions of major aquatic life diseases related to high water temperature and operate an aquatic life disease information sharing platform for those dedicated to aquaculture to prevent damages by high water temperature caused by climate change (2023~)

C.2 Expand provision of climate change-responsive new varieties and smart greenhouses

C.2.1 ***(Varieties)*** Develop climate adaptive varieties and cultivation technologies* to ensure stable food production despite of climate change

* (Agriculture) Develop new climate adaptive crop varieties / (Fishery) Develop climate change responsive eurythermal varieties of aquacultured lavers and aquaculture technologies for subtropical fish

C.2.2 ***(Facilities)*** Extend transition* to smart greenhouses·livestock barns to minimize climate impacts and improve productivity

* Smart greenhouse supply target: (2022) 7,000 ha → (2027) 10,000 ha/Smart livestock barns supply target: (2021) 6,000 units → (2027) 11,000 units

C.3 Expand assistance for disasters in agricultural·fishery sectors and enhance food supply chain

C.3.1 ***(Disaster Response)*** Extend assistance of agricultural crops·aquaculture-related disaster insurance and disaster preparedness measures·restoration

※ Revise regulations to include agricultural crops livestock damages in special disaster criteria (Article 5 of the「Regulations on

natural disaster relief and restoration cost liability standards, etc.」); increase assistance unit cost for disaster preparedness measures, etc.

C.3.2 ***(Supply Chain)*** Enhance responsive capacities by increasing public stockholding* and assisting private sectors in ensuring foreign supply chain**, etc.

* Public stockholdings of domestic wheat·bean(wheat/bean, thousand tons): (2023) 20/25 → (2025) 30/45 → (2027) 50/55

** Extend utilization of foreign grain distribution facilities that can ensure food in emergency situations: (2022) 2 → (2027) 5

C.4 Establish·operate an institution specializing in climate change response for agriculture sector

C.4.1 ***(Specialized Institution)*** Establish a 'Center for Agri-Food Products Climate Change Response' with aims to assist climate change response policies; circulate and promote agricultural research information; enhance farmers' adaptive capacities, etc. (in Haenam, Jeollanam-do, ~2026)

3-4 Maintain ecosystem stability

D.1 Advance biodiversity monitoring and response

D.1.1 ***(Loss Prediction)*** Predict nationwide loss of terrestrial ecosystem biodiversity* caused by climate change and create a biodiversity risk map** with an aim to conserve biodiversity based on scientific data (~2024)

* (Current) Predict plant species in some island areas (Jeju, Ulleung, etc.) →(Revised) Predict loss of plant species in terrestrial·island areas across the country

** Prepare lists of prioritized species to protect and vulnerable species; provide PD and potential loss in number; and select vulnerable areas

D.1.2 ***(Marine Species Conservation·Restoration)*** Establish a National Center for Marine Species Restoration (in Yeongdeok, Gyeongsangbuk-do); and expand projects* of artificial propagation·restoration to conserve marine habitats and strengthen expertise in rescuing marine animals

* Develop technologies for artificial propagation of marine protected life: (2022) 12 →(2030) 30 species

D.1.3 ***(Forest Ecosystem Conservation)*** Conduct research on the change of relationships between forest plants·insects (2023~); and develop·measure indicators of urban forest management

D.2 Strengthen response capacities based on Nature-based Solutions (NbS) and public participation

D.2.1 ***(Integrated Adaptation-Mitigation Enhancement)*** Analyze adaptation-mitigation effects by land category and develop management technologies* based on NbS (2023~)

* Analyze the effects on mitigation (carbon sink) and adaptation by land category (forestry, grassland, etc.); and devise management measures to consider adaptation (biodiversity, etc.) when creating·managing forestry, grassland, etc.

D.2.2 ***(Private·Public Cooperation)*** By operating the National Protected Area Forum* with private·public·academic engagement (2023~, 4 or more times a year), strengthen private-public cooperation and expand the size of national protected areas**

* (Current) Council engaging with related institutions such as governments (2 times/year) → (Revised) Forum engaging with experts from government·academy·private sector·international organization (4 times/year)

** (Terrestrial) protected area target: (Previously) by 2025, approx. 17,851km2 → 18,051km2 (approx. 200km2 ↑, equivalent to 68 times the size of Yeouido)

4. Implementing climate adaptation with broad stakeholder engagement

4-1 Strengthen national protection for climate crisis vulnerable groups

A.1 Survey overall situation of climate crisis vulnerable groups

A.1.1 ***(Survey)*** Conduct the first survey on overall vulnerable groups, including distribution status by vulnerable group type, exposure situation, and level of adaptive capacity, to develop vulnerable group protection action plans (2024~)

(Provisional) Survey on Climate Crisis Vulnerable Groups

- (Method) Materialize vulnerable groups considering climate change trend and social·geographical characteristics of Korea; collect basic materials; and analyze threat factors affecting vulnerable groups
- (Timeline) Develop survey methodology, survey pilot areas (2024, MOE)
  ⇒ Develop guidelines for vulnerable group protection action plans based on survey results (~2025, MOE)
  ⇒ Replicate a survey by local governments (~2027)
- (Underlying Legislation) Define the term 'vulnerable group', survey, and lay a foundation for implementing protection measures

A.2 Alleviate the burdens on health care and energy for climate crisis vulnerable groups

A.2.1 ***(Health Care Service)*** Expand health care service* for climate crisis vulnerable elderly people by utilizing AI·IoT (remote monitoring of blood pressure and exercise volume using smart phone)

* (Elderly people health care project) 2022 86 locations → 2023141 locations

A.2.2 ***(Outdoor Worker Support)*** Develop and strengthen support for adaptation measures to prevent outdoor workers' damages (heat·cold-related diseases, health impairment) in preparation for the climate crisis (2024~)

A.2.3 ***(Energy Burden Alleviation)*** Provide energy vouchers*to assist vulnerable groups with cooling and heating needs

* Annual average amount of support per household in 2023: KRW 43,000 in summer, KRW 152,000 in winter (reviewing additional increase)

A.3 Assess vulnerable area risk level and prepare support measures

A.3.1 ***(Vulnerable Area Survey·Assessment)*** Implement pilot projects for risk level assessment of the important and old industrial complexes, areas vulnerable to climate crisis, such as flooding (~2025)

4-2 Enhance response capacities to prepare for climate disasters

B.1 Establish a rapid·precise disaster information sharing system

B.1.1 ***(Data-based Safety Management)*** Establish a platform for sharing disaster safety data from responsible institutions to establish a scientific disaster safety management system (~2024)*

* Establish DB by listing data by disaster types from 58 institutions (198 systems) responsible for disaster management, including MOLIT

B.1.2 ***(Strengthening Information Communication System)*** KMA[5] directly sends* local residents disaster safety texts in order for the citizens to quickly obtain disaster information

※ Current transmission system: KMA → MOIS·local governments → citizens

* KMA: (Current) Earthquake, storm surge, volacno information → (Revised) Include unforeseen·extreme heavy rainfall (June 2023~ pilot projects in metropolitan areas, 2024~ across the country)

5 KMA: Korea Meteorological Administration

B.2 Establish a field-focused disaster response system

B.2.1 ***(Underground Space)*** Strengthen underground space flooding prevention measures by revising Countermeasures Against Natural Disasters Act* (2023~)

* Establish a basis of regulations for assisting in expanding the application of flood control standards of railroad facilities to urban railroad (metro) and installing underground space flooding prevention facilities in existing buildings

B.2.2 ***(Field-Focused Response)*** Decide on a support system for restoration of disaster areas and establish a field-focused disaster response system

- Allocate the appropriate and necessary resources in the right place of disaster areas by creating and operating local 「Integrated Volunteer Support Group」 and 「Integrated Management Center for Disaster Management Resources*」

* Operate regional centers to rapidly assist and respond to disasters occurred in si·gun·gu under the jurisdiction of si·do (~2023, 17 cities and provinces (si·do))

B.2.3 ***(Strengthening Local Govenments' Safety Investment)*** Identify total amount of budget·settlement of account for local governments'disaster safety projects by implementing a disaster safety budget pre-review system; and reflect it in the granting standards* of fire security tax

* In 2024, reflect the increased 'disaster safety budget' in the granting standards; and from 2025, improve by applying based on the settled accounts

4-3 Implement adaptation governance engaging the public

C.1 Enhance legislative·cooperative foundations for adaptation and implement them in collaboration between sectors and in conjunction with mitigation efforts

C.1.2 ***(Law·Budget)*** Enhance the incorporation of adaptation plans into administrative plans; strengthen legislative foundation such as vulnerable group survey·support; and conduct research on measures to consider climate change risk levels during budget review

C.1.2 ***(Alignment between Sectors·with Mitigation)*** Devise measures to associate between sectors*in adaptation plans; and develop methodologies to assess adaptation-mitigation co-benefits** considering the interrelationships between mitigation and adaptation plans

* (In-Sector) In water sector, interchangeable supply measures between domestic water, agricultural water, and industrial water

(Between Sectors) Link water sector to land sector by applying water circulation techniques in urban planning

** (Co-benefit) Carbon sequestration and disaster prevention by creating disaster prevention forests; and response to extreme cold events by strengthening building insulation

C.2 Strengthen and solidify the adaptive capacities of all adaptation stakeholders

C.2.1 ***(State)*** Through the National Government Adaptation Committee (1 time/semester), monitor* and provide feedback on the level of reflection of the concept and plans of climate adaptation in the relevant administrative plans with an aim to improve the compatibility between climate adaptation and administrative plans

* Develop an adaptation effectiveness diagnosis technology to assess policy effectiveness and cost-benefit analysis of existing adaptation plans (MOE, MSIT)

C.2.2 ***(Local Governments)*** Prepare measures* for promoting active participation of residents in the development of local governments' adaptation plans

* Operate resident support groups consisting of local residents·experts, etc.

C.2.3 ***(Alignment of State·Local Governments)*** When developing national·local adaptation plans in the future, enhance the collaboration between central governments and local governments by program to strengthen the linkage between national-local adaptation plans

(Provisional) Measures for Strengthening the Alignment of State-Local Governments Adaptation Plans

- (Current) When developing adaptation plans, insufficient linkage between state and local governments as well as between the subproject-related ministries and related departments of local governments
- (Revised) When developing national adaptation plan, devise alignment measures, such as developing plans through the discussion between the subproject-related ministries and local government

C.2.4 ***(Industry·Finance Sectors)*** Develop a climate risk-related response system* for financial institutions beyond mitigation-focused response; and provide adaptation information** to prepare for ESG disclosure (~2030)

* Develop 'Guidelines for Climate Risk Management' for financial institutions; and create a working group of climate-economic scenarios, engaging with banks·insurance companies

** Conduct trainings on the use of existing climate change risk level assessment tool; and develop a loss of assets-based risk assessment methodology

V. Implementation and Monitoring System

A. (Implementation Plan) Establish the Enhanced 3rd Adaptation Action Plans by line ministry

B. (Monitoring and Evaluation) Monitor implementation progress based on key sector-specific indicators; and establish and operate an adaptation governance engaging with all adaptation implementing parties

B.1 The minister of environment to monitor adaptation plan and its action plans annually and submit the results report to the Presidential Commission on Carbon Neutrality and Green Growth for review

B.2 Conduct a comprehensive evaluation of the performance of complementary adaptation measures (5th year, MOE)

The Enhanced 3rd National Climate Crisis Adaptation Plan

The Government of
the Republic of Korea