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Fully Committed to Establishing a System for Water Disaster Preparedness in 2025

- Establishing a seamless flood defense system, ensuring stable water supply, and strengthening water quality safety management

The Ministry of Environment (Minister Kim Wansup) announced that this year (2025), it will thoroughly establish a preparedness system to protect the lives and property of citizens from water-related disasters such as floods, droughts, and water pollution, and will swiftly execute the water management budget for the first half of the year.

Last year, the Ministry of Environment strengthened flood responses by introducing AI-based smart flood forecasting* for the first time, upgrading 20 local rivers to national rivers, and scientifically analyzing flood risk and water shortages by region to announce candidate sites for climate response dams. To ensure efficient water supply, a legal basis for the integration of water supply projects was established in the “Water Supply and Waterworks Installation Act,” and a plan for integrated water supply due to the creation of a semiconductor national industrial complex in Yongin was prepared. In addition, 10 groundwater reservoir dams** were designed and constructed to ensure stable water supply in preparation for drought and new water demand. Finally, to create a safe and clean water environment, the number of algae removal boats was increased from 13 to 29, and management of compost piles was strengthened to include the other major rivers besides the Nakdong River, thereby implementing focused measures for algae management***.

- * An operational system where artificial intelligence (AI) automatically predicts river water levels every 10 minutes and issues risk alerts, which are then verified by flood forecasters before issuing flood advisories (flood watches and warnings)
- ** Construction of new intake facilities and pipelines to supply 1.072 million tons per day of industrial water to the Yongin National Industrial Complex and Yongin General Industrial Complex
- *** Installation of cut-off walls in groundwater layers in water-scarce areas such as islands and inland areas to collect groundwater for supply during times of water shortage

The Ministry of Environment will intensify its efforts to disseminate its achievements and establish a safe society against water-related disasters by actively promoting tasks for 2025. In particular, the ministry plans to proceed as follows in terms of 1) Establishing a seamless flood defense system, 2) Ensuring stable water supply, and 3) Strengthening water quality safety management.

① Establishing a Seamless Flood Defense System

For climate response dams, the ministry will determine candidate sites where local consensus has been established, followed by subsequent procedures such as basic planning and feasibility studies, and will continue communication with regions that have opposition. Meanwhile, to ensure effective support for the area during dam construction, the “Enforcement Decree of the Act on Construction and Management of Dams and Assistance to their Environs,” will be amended and announced in March, 2025 to include a plan to double the budget for the projects on improvement of dam environs*.

- * Projects on Improvement of Dam Environs: Projects implemented to promote the economy and improve the living conditions of the environs of the dam during its construction, including production infrastructure development projects (such as agricultural land development and improvement, markets, public warehouses, etc.), welfare and cultural facility projects (such as health clinics, sports facilities, parks, etc.), and public facility projects (such as river maintenance, roads, and water supply and drainage systems, etc.)

For the 20 rivers that have been upgraded to national rivers* during the period from October 2024 to January 2025, maintenance efforts will also be actively initiated. For rivers that have been designated as national rivers, flood control measures such as levee reinforcement and drainage facility improvements will be implemented to ensure safety even during floods with a return period of 100 years or more. A total of KRW 53.5 billion in maintenance budget will be focused on the upgraded rivers, such as Dongchangcheon (Cheongdo, Gyeongbuk) and Byeongcheoncheon (Cheongju, Chungbuk). The plan involves strengthening cooperative systems with local governments in preparation for flood season and conducting intensive inspections of vulnerable river facilities. In addition, about 400 closed-circuit television (CCTV) units will be installed in the upgraded rivers before this year's flood season (June 21 to September 20) to minimize flood damage. Furthermore, the construction projects for washlands along the rivers such as Mokgamcheon (Gwangmyeong, Gyeonggi) and Wonjucheon (Wonju, Gangwon), which began in 2024, will also be actively advanced.

* October 2024: (New: 8 rivers) Samcheok Osipcheon, Hantangang, Yeonggang, Oncheoncheon, Changwoncheon, Hoeyagang, Ungcheoncheon, Suncheon Dongcheon / (Extension: 2 rivers) Jeonjucheon, Hwangnyonggang
January 2025: (New: 8 rivers) Jucheongang, Danjangcheon, Dongchangcheon, Wicheon, Byeongcheoncheon, Jocheon, Osucheon, Cheonmicheon / (Extension: 2 rivers) Gapcheon, Sapgyocheon

The artificial intelligence (AI) flood forecasting system, which was introduced in 2024 and played a crucial role in preventing human casualties, will be improved. Plans are in place to enhance forecasting accuracy by supplementing AI training data and to develop a three-dimensional flood forecasting system by incorporating digital twins (DT) and intelligent closed-circuit televisions. Utilizing digital twin technology, simulation results of flood situations based on dam discharge and expected rainfall information will be displayed in a three-dimensional virtual space, which will support the identification and inspection of vulnerable areas in advance and aid in the

establishment of response plans. In addition, intelligent closed-circuit televisions (approximately 1,000 units) that automatically recognize visitors will be piloted in national rivers to alert the site for floods and transmit notifications to local governments.

Urban flood response capabilities will be further strengthened through focused maintenance of sewage facilities and the expansion of infrastructure. The number of key management areas for sewage maintenance will be increased from the existing 210 to more than 220, and a total investment of KRW 313.8 billion is planned for expanding sewage infrastructure, including enlarging sewer pipes and constructing or expanding pumping stations and storage facilities by 2025. The construction of underground drainage channel in the Dorimcheon watershed and the main construction of deep underground rainwater tunnels in the Gangnam Station and Gwanghwamun areas of Seoul will begin in October 2025.

② Ensuring Stable Water Supply

In order to supply safe drinking water to the Nakdong River basin, the project to diversify water sources will continue to be promoted. Efforts will be made to finalize plans to supply 460,000 tons of water per day* to parts of Daegu and Gyeongbuk by utilizing the Andong Dam in the upper reaches of the Nakdong River. In the lower reaches of the Nakdong River, there are plans to develop riverbank filtered water and subsurface water in Changnyeong, Uiryeong, and Hapcheon to supply 900,000 tons of water per day to parts of Busan and Gyeongnam. To secure local consensus, the ministry will continue to consult with the community through various communication channels, including resident briefings and discussion meetings.

* The Nakdong River Water Commission Support Department under the presidential office is pushing for the approval of amendments to the “Integrated Water Management Plan for the Nakdong River” (First half of 2025).

Facilities for water supply will be established to ensure timely water supply for advanced industrial complexes such as semiconductors and secondary batteries. In 2025, the priority will be to commence the basic and detailed design for the first-phase section of the facility capable of supplying 1.07 million tons of water per day to the Yongin Semiconductor National Industrial Complex, for which feasibility studies were completed in December 2024 (national industrial complex, 310,000 tons/day). In addition, the basic and detailed design for the construction of water supply facilities with a capacity of 21,000 tons per day for the Pohang Secondary Battery Industrial Complex will be pursued. Detailed supply plans for the second phase (210,000 tons/day) of recycled wastewater for the semiconductor industrial complex in southern Gyeonggi will be finalized, and the recycled wastewater supply facilities for Yesou National Industrial Complex (50,000 tons/day) and Boryeong Central Power Generation (10,000 tons/day) are also scheduled to be completed by June 2025. Moreover, there will be additional expansions of regional water supply (8 locations^{*}) and industrial water supply (3 locations^{**}).

* Western Chungnam, Lower Han River (Phase 4), Southern Geumgang (Phase 2), Namhan River (Phase 3), Geumsan-Muju (Phase II) regional, pilot project for local regional water supply for cooperative water use, Chungju Dam (Phase III), and adjustment of the water supply system in Central Nakdong River (Phase 3).

** Water supply distribution for national industrial complexes [Dongducheon and Changwon], expansion of emergency and intake water supply facilities for drought preparedness in Gwangyang Industrial Complex, Phase 2 of Pohang Blue Valley.

To prepare for droughts and other challenges, facilities for alternative water resources (such as groundwater reservoir dams and seawater desalination) will be expanded to ensure stable water supply, and institutional improvements^{*} will be pursued to promote water reuse.

* Expansion of the scope of reuse of warm water from existing power plants to include all warm water sources, excluding only nuclear power plant warm water

In water-scarce areas such as islands and inland regions that are currently

experiencing drought, groundwater reservoir dams will be expanded. In 2025, a total of 12 groundwater reservoir dam installation projects will be promoted, including 4 design projects* and 8 construction projects**. Notably, in the Daesan coastal industrial area, where water demand is increasing due to factory expansions and the development of new industrial complexes, the country's largest seawater desalination facility capable of supplying 100,000 tons of water per day is scheduled to be completed by the end of 2025.

* [Design] 2 islands (Wido, Buan; and Cheongsan, Wando), 2 inland areas (Okryong, Gwangyang and Beolgyo, Boseong)

** [Construction] 3 islands (Yokji, Tongyeong; Deokjeok, Ongjin; Soan, Wando), 5 inland areas (Yangdong, Yangpyeong; Yeonggok, Gangneung; Sangchon, Yeongdong; Namyang, Cheongyang; Yeonghae, Yeongdeok).

In addition, support will be provided for the utilization of outflowing groundwater in 6 locations* for purposes such as landscaping, cleaning, and heating/cooling. Most of the outflowing groundwater generated from underground space development is typically discharged into rivers; however, by utilizing this water instead of wasting it, it is expected to reduce costs for water supply and wastewater treatment.

* [Target sites for utilization facilities installation] Seongdong-gu, Seoul (Majang Substation power tunnel, etc.), Busan (Sujeong Station, Yeonsan Station), Gwangju (ACC Cultural Center Station, Gakhwa-dong residential complex), Goyang-si, Gyeonggi-do (GTX-A section ventilation shafts).

[3] Strengthening Water Quality Safety Management

To respond to the intensification of algae blooms due to the climate crisis, concentrated management of high-concentration pollutants, such as livestock manure, will be implemented. The budget for public treatment of livestock manure has been allocated to KRW 116.7 billion in 2025, nearly doubling from KRW 59.4 billion in 2024. In addition, pilot projects to produce solid fuel using animal manure (cow dung), which is currently mostly composted, will be promoted in Gimje and Yeongju, diversifying the treatment methods for livestock manure. To effectively treat high-concentration agricultural and

livestock nonpoint source pollutants in the upper sources of water supply, integrated management projects for nonpoint source pollution reduction facilities, such as stormwater retention facilities and total phosphorus treatment facilities, will be carried out at Yeongju Dam, Namgang Dam, Pyeongnim Dam, and Anhari in Gimhae. To swiftly remove algae that occur around water intake sources, the number of algae removal boats will be increased from the existing 29 to 36.

To quickly and effectively respond to water pollution incidents, a Water Pollution Control Center, functioning as a command post for water pollution incidents, will be established within the Daegu National Industrial Complex. A budget of approximately KRW 6.6 billion has been secured for 2025, with plans to complete the design by October 2025, start construction in December 2025, and finish by 2027.

Management of industrial wastewater infrastructure to prevent water pollution incidents in industrial complexes will also be strengthened. To establish safe wastewater management infrastructure, the mandatory technical diagnosis of buffer storage facilities and wastewater pipelines in industrial complexes has been implemented since January 2025. Approximately KRW 37.8 billion is planned to be invested in diagnosing and upgrading aging buffer storage facilities and wastewater pipelines. In addition, to prevent contaminated water from flowing directly into rivers in the event of a water pollution incident, the budget for installing buffer storage facilities has dramatically increased to KRW 162.4 billion, approximately 3.2 times higher than 2024, to actively establish a response system for water pollution incidents.

To strengthen the management of trace pollutants, the water quality measurement center on the Nakdong River* will be also installed in the other major rivers. For the Yeongsan River, the center is scheduled for completion in August 2025, and for the Geumgang River, construction will begin in July. In addition, the basic and detailed design for the center for the Han River will also commence. The Nakdong River Water Quality Measurement Center plans to

increase the monitoring of trace pollutants in the Nakdong River basin from 98 types to 103 types, enhancing continuous surveillance.

* Waegwan (Chilgok-gun, Gyeongsangbuk-do) and Maeri (Gimhae-si, Gyeongsangnam-do) water quality measurement centers

To establish a resilient management system against water-related disasters, the Ministry of Environment plans to swiftly execute the relevant budget (44 projects, KRW 2.8 trillion) in the first half of the year. Accordingly, the budget for national river maintenance, sewage pipeline maintenance, groundwater management, and buffer storage facility installation will be executed promptly, with 44.1% (KRW 1.3 trillion) in the first quarter and 70.1% (2 trillion won) in the first half of the year.

Park Jae-hyeon, Deputy Minister of the Water Management Policy Office at the Ministry of Environment, stated, “We will thoroughly prepare for the increasing floods and droughts in the era of climate crisis, create a safe water environment, and do our utmost to ensure the safety and livelihoods of the people in the water sector in 2025.”