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Jeju Achieving Carbon Neutrality Producing Clean Hydrogen Using Biogas

- Ministry of Environment, Korea Environment Corporation, and Jeju Special Self-Governing Province sign clean hydrogen production project agreement
- Government to provide KRW 9.1 billion for bio-gas-based clean hydrogen production project by 2026

The Ministry of Environment (Minister Kim Wansup) and the Korea Environment Corporation (President Lim Sang-jun) announced that they will sign a business agreement with Jeju Special Self-Governing Province (Governor Oh Young-hun) on April 22 at the conference room of Korail Gwangmyeong Station (located in Gwangmyeong, Gyeonggi Province) to promote the 2025 Bio-Gas-Based Clean Hydrogen Production Project.

The Ministry of Environment has selected Jeju Special Self-Governing Province as the public sector operator for the 2025 Bio-Gas-Based Clean Hydrogen Production Project and will provide KRW 9.1 billion in government funding (70% of the total project cost of KRW 13 billion) by next year (2026).

This agreement was established to clarify the authority, roles*, and responsibilities between the Ministry of Environment, the Korea Environment Corporation, and Jeju Special Self-Governing Province regarding the installation and operation of Jeju's clean hydrogen production facility, and to pledge mutual cooperation.

* Ministry of Environment (supervisory agency): Provision of government subsidies, evaluation and settlement of project expenses, etc.

Korea Environment Corporation (responsible agency): Project progress monitoring and evaluation, performance management of tasks, etc.

Jeju Special Self-Governing Province (implementing agency): Project execution, progress reporting, safety management, etc.

The Bio-Gas-Based Clean Hydrogen Production Project has supported* the installation of two hydrogen production facilities each year since 2023 (one public and one private) to expand the supply of hydrogen vehicles by ensuring a stable supply of hydrogen for transport and promoting locally self-sufficient hydrogen production.

* Within the total project cost of up to KRW 13 billion, the government provides 70% of the funding for public sector projects and 50% for private sector projects.

This project produces hydrogen by refining (upgrading*) biogas (methane + carbon dioxide) generated from the treatment (microbial decomposition) of organic waste such as livestock manure and food waste into methane with a purity of over 95%, and then converting it (reforming**).

* Carbon dioxide (40%) in the biogas is removed to increase methane purity to over 95%.

** The refined methane is converted into hydrogen (Methane CH_4 + steam $2\text{H}_2\text{O} \rightarrow$ hydrogen 4H_2 + CO_2).

Jeju Special Self-Governing Province plans to produce 500kg of hydrogen, enough to fuel about 100 hydrogen passenger cars per day, starting in 2027, by utilizing 4,000 Nm^3 of biogas generated daily from the Jeju Metropolitan Food Waste Recycling Facility (located in Seogwipo, Jeju).

Meanwhile, the Ministry of Environment has supported approximately KRW 28.8 billion in government funding until last year to promote the installation of four* bio-gas-based clean hydrogen production facilities. Some of these facilities are expected to be completed and begin full-scale hydrogen production starting in 2026.

* Public sector: (Boryeong City) Government funding of KRW 8.4 billion from 2023 to 2025 / (Yeongcheon City) Government funding of KRW 9.1 billion from 2024 to 2025

Private sector: (Hyundai Motor Company) Government funding of KRW 5 billion from 2023 to 2025 / (Ecobio Holdings) Government funding of KRW 6.3 billion from 2024 to 2025

In addition, two new hydrogen production facilities will be supported each year, and by 2030, approximately 6,000kg of hydrogen will be produced daily, gradually improving the convenience of hydrogen vehicle charging.

Oh Il-young, the Director of Air Quality Policy Bureau at the Ministry of Environment, stated, “The stable production and supply of hydrogen for transport using biogas will contribute to the expansion of hydrogen vehicle adoption in Jeju.” He added, “We will continue to promote the Bio-Gas-Based Clean Hydrogen Production Project to achieve carbon neutrality in the transportation sector, build a locally self-sufficient hydrogen vehicle ecosystem, and establish a resource circulation system using biogas.”