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Green Earth Institute Co., Ltd.

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NEWS RELEASE

GEI Selected for the Tokyo Metropolitan Government's "Support Program for the Development of Naphtha Alternative Materials" ~ Expanding the Use of Woody Biomass from Fuels to Chemical Feedstocks ~

Green Earth Institute Co., Ltd. (hereinafter "GEI") announces that its project proposal to develop bio-isobutanol production technology using woody biomass as a feedstock has been selected for funding under the Tokyo Metropolitan Government's "Support Program for the Development of Naphtha Alternative Materials". (See the Tokyo Metropolitan Government's press release)

Under this project, GEI aims to establish a technology for producing bio-isobutanol from woody biomass by leveraging its fermentation and purification expertise developed through its bioethanol business.

◆ Replacing Naphtha-Based Chemicals with Biomass-Based Alternatives

Petroleum-derived naphtha is currently used as a feedstock for a wide range of chemical products. The bio-isobutanol developed through this project will be produced from renewable woody biomass and is expected to serve as a bio-based alternative to naphtha-derived chemicals.

In addition to its direct use as a solvent, isobutanol is readily converted into isobutylene through dehydration, enabling the production of a broad range of chemicals, including MMA (methyl methacrylate), polyisobutylene, and butyl rubber. Isobutanol therefore has the potential to serve as a platform chemical for a diverse portfolio of downstream products beyond a single end-use application.

◆ Expanding GEI's Bioethanol Technologies to Bio-Based Chemicals

GEI has been developing bioethanol production technologies based on woody biomass, including its GWE Process[1], and has built up extensive expertise in commercialization-oriented fermentation and purification processes such as continuous fermentation and vacuum extraction.

In this project, GEI will leverage these technologies and expertise to advance the development of bio-isobutanol through the following activities:

- ✓ Evaluation of fermentation conditions for bio-isobutanol production
- ✓ Development of integrated processes combining fermentation, separation, and purification
- ✓ Estimation of manufacturing costs for future commercialization

- ✓ Establishment of a business development framework with chemical manufacturers, materials companies, and end users

By the end of the Japanese government's fiscal year 2028, GEI aims to obtain bio-isobutanol product samples and estimate manufacturing costs at commercial scale. Based on the "Medium- to Long-Term Vision" announced on July 15, 2026[2], GEI also aims to establish a business collaboration framework to support the transition to the commercial demonstration phase.

Looking ahead, GEI aims to realize a domestic biorefinery enabling the integrated production of bioethanol and bio-isobutanol from woody biomass, thereby contributing to the chemical industry's transition away from petroleum, the achievement of carbon neutrality, and economic security through a stable supply of chemical feedstocks.

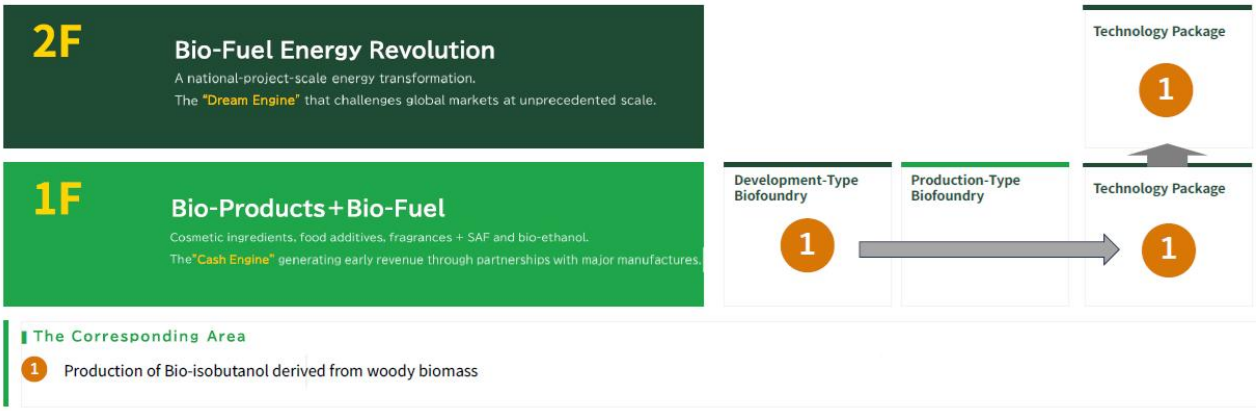
The impact of this matter on GEI's financial results is minor. GEI will promptly disclose any matters that require disclosure should they arise.

[1] GWE (GEI Wood to Ethanol) Process

A bioethanol production process independently developed by GEI that uses woody biomass-derived pulp as a feedstock. It uses wood pulp produced by paper manufacturers as feedstock and employs a "Continuous Simultaneous Saccharification and Fermentation" process (Continuous SSF process) — which recycles the enzymes that saccharify the pulp and the yeast that converts sugars into ethanol—as its core technology. A key feature of this process is its extended continuous operation period. Compared to conventional batch processes, this significantly reduces the frequency of cleaning and preparation steps required between equipment startup and shutdown, enabling extended continuous operation and maximizing the number of operating days per year. As a result, this achieves: (1) an increase in annual bioethanol production, (2) a reduction in enzyme usage, and (3) a reduction in total production costs through lower utility consumption (electricity, steam, water, etc.).

[2] Positioning of This Project in GEI's Medium- to Long-Term Vision

GEI aims to become an "Integrated Industrial Platformer in Biomanufacturing" and is advancing a "Two-Tier Growth Engine" strategy designed to achieve both a sustainable earnings base and large-scale social implementation. This project will begin as part of GEI's "Development-type Biofoundry" business, which corresponds to the first tier of the strategy. Upon establishing a technology package, GEI aims to transition the project into the "Bio-Fuel Energy Revolution," which constitutes the second tier of the growth strategy.



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