Osaka Gas Visualizes the Impact of Prolonging Mid-season Drainage in Paddy Rice Cultivation on Biodiversity

—Contributing to the Creation of Japan's First Rice Paddy J-Credits with Added Value Related to Biodiversity—

December 15, 2025
Osaka Gas Co., Ltd.

Osaka Gas Co., Ltd. (Representative Director and President: Masataka Fujiwara; hereinafter "Osaka Gas") has been working to prolong mid-season drainage in paddy rice cultivation [*1,*2] in order to reduce emissions of methane, a greenhouse gas. As part of this effort, Osaka Gas conducted a survey on the impact of the prolongation on biodiversity using environmental DNA[*3] and succeeded in visualizing the impact. The value determined based on the survey results will be added to the J-Credits for prolongation of mid-season drainage in paddy rice cultivation (hereinafter the "rice paddy J-Credits"), which are scheduled to be issued in 2026 by Green Carbon, Inc. (CEO: Jun Okita; hereinafter "Green Carbon").

■ Background

Reducing methane emissions by prolonging mid-season drainage in paddy rice cultivation was approved as a methodology for the J-Credit Scheme in 2023. Since then, the volume of the rice paddy J-Credits being traded has been increasing, and is expected to grow to approximately 30–40% of the total volume of J-Credits issued.[*4]

In Japanese rice cultivation, paddy fields are typically drained mid-season. Prolonging the drainage period to reduce methane emissions has raised concerns that this could lead to an unconventional paddy environment and have an impact on the ecosystem that exists there. Therefore, in addition to the positive effects of reducing methane emissions from rice paddies, there is also a need to resolve and minimize the risk of impacts on biodiversity.

■ Survey Details

In the survey of impacts on biodiversity, water samples were taken from some of the Green Carbon-managed rice paddies (in four prefectures), where mid-season drainage was prolonged, before mid-season drainage and after the prolonged drainage, and Osaka Gas analyzed traces of genetic information (environmental DNA) of organisms that live in the rice paddies, such as dragonflies and frogs, to assess the impact on biodiversity. Similar assessments are currently being conducted on rice paddies in other prefectures.

By comparing the species before mid-season drainage and after the prolonged drainage, it is possible to analyze the impact on ecological information and biodiversity, which can lead to prioritizing conservation activities and verifying the effectiveness of environmental measures.

■ Future Initiatives

The biodiversity-related value visualized by the results of this survey will be added to the rice paddy J-Credits, which are scheduled to be issued around the spring of 2026 and sold by Green Carbon. Visualization of the impact on living organisms will enable customers to trade the rice paddy J-Credits with peace of mind based on an understanding of the environmental value.

Going forward, we aim to conduct more detailed analysis and expand the scope of our research in order to provide information that better meets actual needs, and to expand the rice paddy J-Credits with added value related to biodiversity.

The Daigas Group, under the "Energy Transition 2050" initiative announced in February 2025, remains committed to developing technologies and services that contribute to a decarbonized society and solving social issues, including climate change, in order to become a corporate group that contributes to the "further evolution" of customers' lives and businesses.

*1: Mid-season drainage is the process of draining rice paddies once during the rice cultivation period before the ears of rice emerge to dry the paddy surface, thereby preventing excessive tiller (branching from the base) and controlling growth.
*2: Prolongation of mid-season drainage in paddy rice cultivation is a methane-emission-reducing methodology approved under the J-Credit Scheme. Generally, water-filled rice paddies are prone to methane production, so it has been confirmed that prolonging the conventional mid-season drainage in rice paddies by seven days can reduce methane production by 30%.
*3: A general term for DNA released into the environment, such as water, soil, and air
*4: Our estimate based on individual companies' project plans published in the J-Credit Scheme Registry

<Corporate Profiles>

Company name	Osaka Gas Co., Ltd.
Head Office	4-1-2 Hiranomachi, Chuo-ku, Osaka, Japan
Representative	Masataka Fujiwara, Representative Director and President
Established	April 1897
Business description	Production and sale of gas, generation and sale of electricity, etc.

Company name	Green Carbon, Inc.
Head Office	9F Hanzomon PREX North, 2-3-2 Kojimachi, Chiyoda-ku, Tokyo
Representative	Jun Okita, CEO
Established	February 2019
Business description	Generation and sale of carbon credits, agriculture-related business, environment-related business, other related businesses, and ESG consulting business