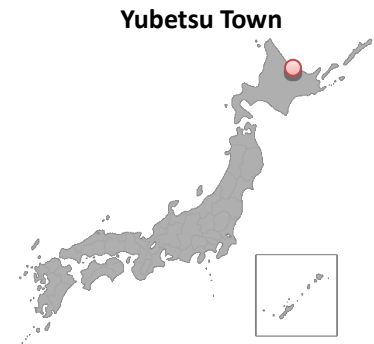


Establishing an environmentally friendly Sound Material-Cycle Society in which the whole community work in unison



Background and Reason for the Project

In dairy farming which is the key industry of this town, the number of dairy farmers with a large herd size farm has been on the rise due to the modern mechanization and division of labour. Inappropriate disposal of livestock excrement due to labour shortage of dairy farmers has become an issue, and the foul odour from the piled-up manure and the spill of the manure to rivers due to heavy rain have become problematic. Therefore, a survey to understand the possibility of installing biogas plants using livestock excrement as a raw material was implemented for every household in the town for two years between 2018 and 2019, with the aim of conducting the appropriate disposal of livestock excrement.

The results of the survey showed 23 dairy farms out of 120 wished for a centralized biogas plant, and 6 of them wished to employ an individual biogas plant. Following these results, in order to aim to establish an environmentally friendly Sound Material-Cycle Society on which the whole community work in unison, the Yubetsu Town Biomass Industrial City Scheme was established in 2020 in Yubetsu Town. As its first step, Okhotsk Yubetsu Biogas Inc., a special purpose company (SPC) was founded in November 2021 for the installation of a concentrated biogas plant to utilise the renewable energy.

Project Aims

1. Appropriate disposal of livestock excrement and labour burden reduction for dairy farmers

2. Supplying electricity to evacuation shelters in the case of disasters by utilising energy generated by the plant
3. Achieving a considerate plant design to the environment as the town is located in the vicinity of Lake Saroma and the Sea of Okhotsk
4. Use of digestion effluent for the preservation of sea plants and for the production of field crops with the collaboration of crop farming and dairy farming
5. Branding of cultivated crops such as fruits produced by the waste heat generated from the plant



Image of the use of digestion effluent with a collaboration of crop farming and dairy farming

Project Outline

Company name: Okhotsk Yubetsu Biogas Inc.

Members: JA Yubetsu-cho (JA: Japan Agricultural Cooperative), Yubetsu Town, JA Enyu, Yubetsu Fishery Cooperative, Biomass Research &

Development, Co., Ltd., Biostock Inc., 23 participant farms

Construction details: A set of centralized biogas plant facilities (A size equivalent to process 3,400 cattle)

Throughput per day: 290 tonnes

Okhotsk Yubetsu Biogas Inc. is going to research business profitability and to apply for the subsidized company and the Feed-in Tariff (FIT) scheme for renewable energy. Tests and research to utilise renewable energy will be reviewed for implementation, collaborating with related organisations.



Completion drawing of the centralized biogas plant

- Scheduled to complete in 2025

Features and Innovations

1. It is a SPC (special purpose company) that consists of administration, agricultural organisations, a fishery organisation and private enterprises. Opinions based on the perspectives of each organisation have been exchanged to achieve the same goal. In particular, we request the fishery organisation to check together whether livestock excrement can be processed appropriately and make the best of inventiveness to eliminate a negative impact on the fishery system.
2. To realize the establishment of a power supply base in the case of disasters.
3. To preserve sea plants and recover fishery resources by utilising digestion effluent.
4. To brand cultivated crops such as fruits produced by protected horticulture under the agriculture-social welfare collaboration.



Image of the use of electricity in emergency shelters

- The photo is an emergency shelter during a blackout

Results of the Project

1. Approximately 60 per cent of cattle's excrement in the town would be processed in the biogas plants including those processed in the existing individual biogas plants. This would result in a large reduction of the issues such as odour, overfertilisation and river pollution.
2. Provision of electricity generated by the plant to every single household with the aim of the elimination of the use of fossil fuel in the whole town in the future would realise decarbonisation.
3. It has been confirmed that climate change in recent years has been causing a sharp drop of sea plants and loss of habitat of fish and seashells. Preserving sea plants by securing the habitat of fish and seashells through ocean fertilising with digestion effluent would enable fishery resources to recover, which would not be affected by climate change.
4. The plant could be used as one of the energy supply bases in the case of disasters.

Issues, Problems and Responses

1. Discharge of solid excrement (long straw is used for litter beds) by most farmers may cause problems for plant machines; however, it will be

resolved by installing crushers made by an overseas manufacturer, which has not been used in Japan yet.

2. Although a wide range of digestion effluent usage has been explored, there are lots of unclear matters such as the negative effect of overfertilisation and impact to environment. Therefore, we will collaborate with specialised agencies to implement the project.
3. There is the possibility that a large amount of expenses such as installing private electric power cables to supply electricity to the residents in the town and the lease of existing electric power cables in the future. How to fund such costs is a great task. Also, legal issues which need the amendment of the law will require time.

Future Developments (expected effects and project vision and issues)

1. We have been planning to implement a protected horticulture under the agriculture-social welfare collaboration by utilising waste heat, and have been conducting a survey questionnaire for high school students to ask what they would like to plant.
2. We have been looking into the instalment of electric car charging points in the plant site to supply electricity to emergency shelters by using electric vehicles. We need to research and review the number of cars required to cover all emergency shelters and how to use the cars at ordinary times.

Reference URLs

Yubetsu Town's website:

<https://www.town.yubetsu.lg.jp/>

JA Yubetsu-cho's website: <http://www.ja-yubetsu.org/>

JA Enyu's website: <https://www.ja-enyu.com/>

Yubetsu Fishery Cooperative's website:

<http://www.hkyubetsu.if-net.ne.jp/>

Biomass Research & Development, Co., Ltd.'s website:

<https://biomass-research.net/>

Biostock Inc.'s website: <https://biostock.co.jp/>

Contact

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