

Livestock Sustainability Case Studies of NH Foods Group



Unleash new potentials for protein

NH Foods Group Vision 2030



NH Foods Ltd.

Sustainability Department

General manager :

KEIKO HARUHATA

Responsibilities :

**Planning and execution of Environmental,
Social, and Governance (ESG) strategies
ESG disclosure and promotion of awareness
both internally and externally**



My name is Keiko Haruhata. I am truly honored to have the opportunity to speak with you today. I currently serve as the General Manager of the Sustainability Department at NH Foods Ltd., In this role, I am responsible for formulating the sustainability strategy for the entire NH Foods Group, and I also serve as a liaison for communicating our sustainability initiatives not only within the company but also with external stakeholders, especially investors. Today, I would like to briefly introduce the NH Foods Group's sustainability efforts and our initiatives related to food supply. Thank you for your attention.



Unleash new potentials for protein

NH Foods Group Vision 2030

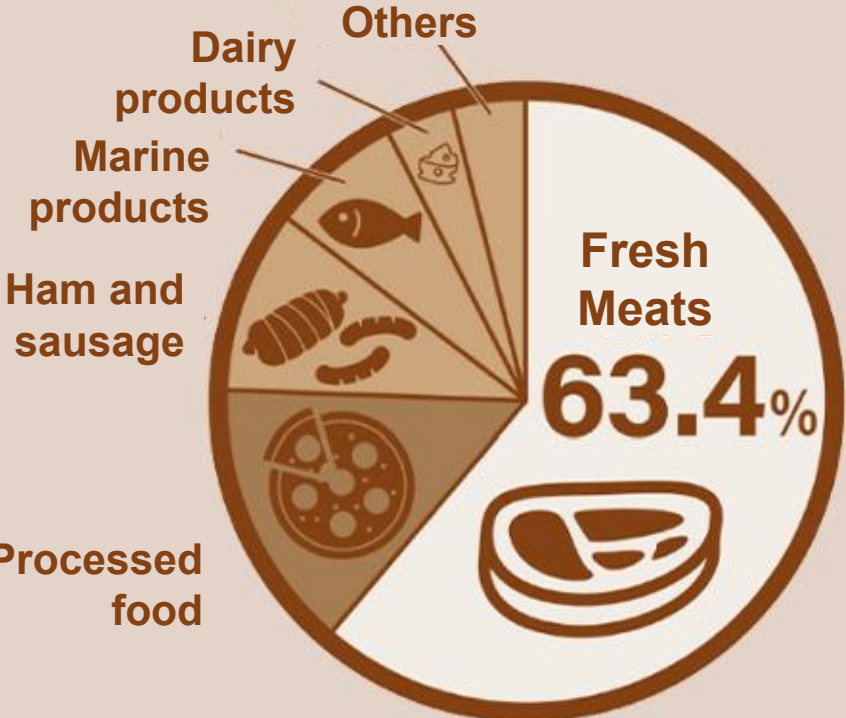
Working together to create value through protein

Company Name	NH Foods Ltd.
Headquarters	BREEZE TOWER, 4-9, Umeda 2-chome, Kita-ku, Osaka, Japan
President and CEO	Nobuhisa Ikawa
Date of Establishment	May 30, 1949
Net Sales	¥ 1,370,553million



This is a message from the President of the NH Foods Group, as currently presented on our website. We guided by our corporate philosophy of 'bringing joy through food, creating culture that defines the times, and contributing to society,' has long played a key role in the food infrastructure by delivering protein. Looking ahead, we are committed not only to ensuring a stable supply of protein, but also to creating new value for protein through collaboration with a wide range of partners.

Sales by product type



20%

of domestic sales in Japan



The NH Foods Group is a comprehensive food company that handles a wide range of products including processed foods such as ham, sausages, as well as seafood and dairy products. Among these, more than half of our sales come from fresh meat such as beef, pork, and chicken. In fact, one out of every five meals on the average Japanese dining table includes meat provided by the NH Foods Ltd,

Sales by product type



Fresh Meats



Ham and sausage



Processed foods



Processed marine products



Cheese



Fermented milk, lactic acid beverages



Allergy-friendly products



Frozen foods



Freeze-dried foods



Extract seasonings



Health foods



Allergen detection kits



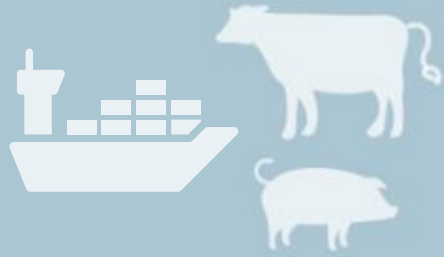
vendor business



Sports and Entertainment

Our business continues to expand beyond meat, and as a comprehensive food manufacturer, we are broadening our reach into various fields.

NHG



Trading
Production and breeding



Packing and
processing



Manufacturing

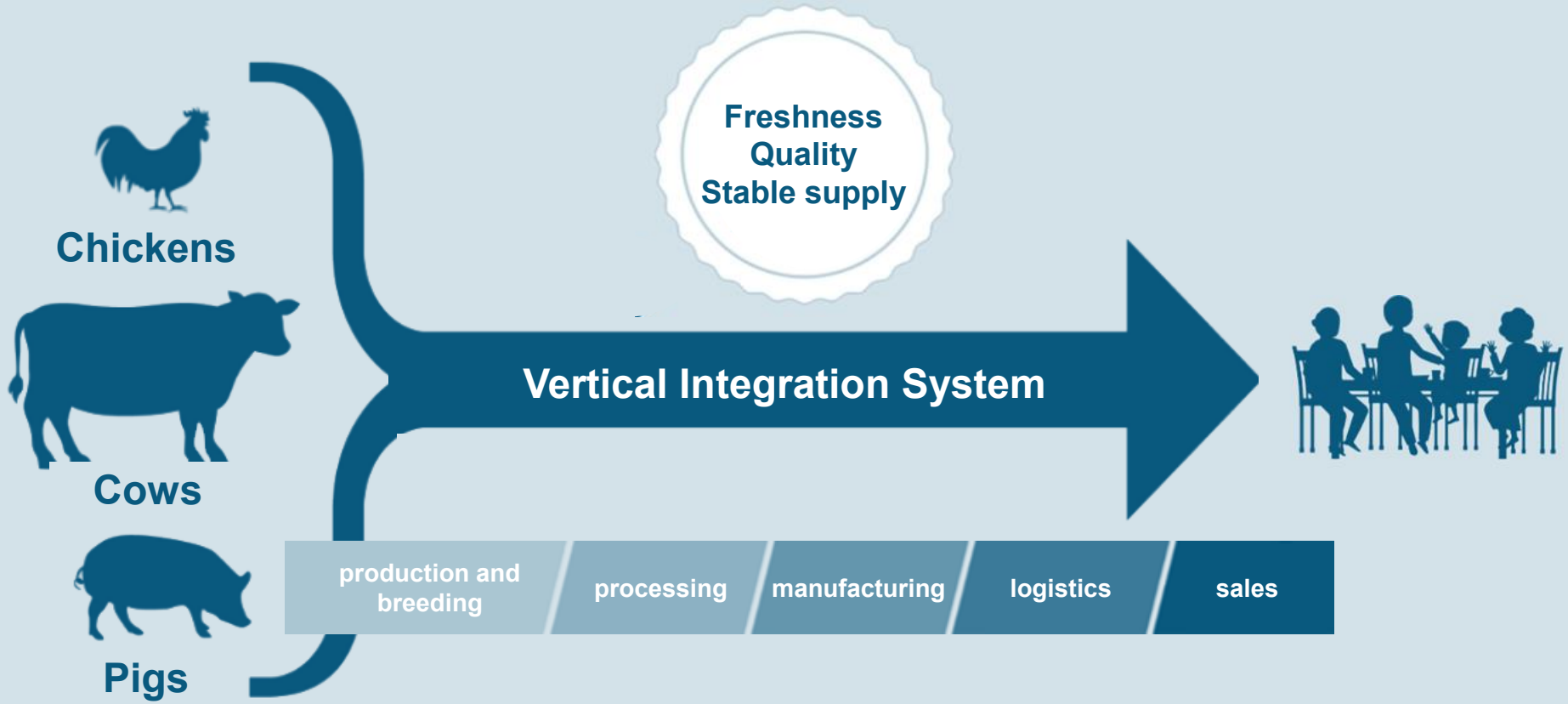


Logistics



Sales and
marketing

The NH Foods Group owns the entire value chain from production and breeding to delivery to consumers. This reflects our desire to deliver delicious products directly to our customers. We believe this level of vertical integration is exceptional globally, and especially unique in Japan at this scale.



At NH Foods Ltd, we refer to this fully integrated system—from production and breeding to processing, manufacturing, logistics, and sales—as our Vertical Integration System.

Overseas Business Division

64

business sites in

15

economies and regions



Farms

148



Logistics
Sales locations

242



Manufacturing
sites

83



Research
inspection centers


2

We operate in 64 locations across 15 economies and regions, including Asia, North America, and Oceania. In Australia, NH Food's Australia engages in cattle breeding, fattening, processing, sales, and export. In the United States, under the brand Day-Lee Foods, we promote the 'Taste of Japan' by bringing Japanese expertise and flavors to the American market.

Our value chain is supported by a wide range of facilities, including two research and inspection centers, 148 company-owned farms, 83 meat and processed food manufacturing sites, and 242 logistics and sales locations.



A unique feature of the NH Foods Group is our ownership of a professional baseball team—the Hokkaido Nippon-Ham Fighters. There are only 12 professional baseball teams in Japan, and we are proud to own one of them. Our founder, Yoshinori Okoso, believed strongly in contributing to society through food and sports. This spirit lives on today as we continue to promote physical and mental well-being. The team emphasizes community engagement and innovation, nurturing young talent and building new relationships with fans. We have produced star players such as Yu Darvish and Shohei Ohtani, and have won the Japan Series three times and the league championship seven times.

An aerial photograph of the ES CON Field Hokkaido stadium. The stadium is a large, modern structure with a prominent, dark, angular roof and a glass facade. It is surrounded by a well-maintained green landscape with several ponds and walkways. In the background, there are residential buildings, parking lots, and a highway. The sky is blue with scattered white clouds.

In March 2023, we opened ES CON Field Hokkaido in Hokkaido, a region with deep ties to the NH Foods Group. While major cities like Tokyo and Osaka continue to grow, rural areas face serious depopulation challenges. Through the development of the Fighters and the ballpark, we aim to contribute to sustainable community development in collaboration with local society. A new train station is also planned near the stadium by 2028, further supporting regional revitalization.

Sustainable Action



Research, development

- Potential of protein
- Health



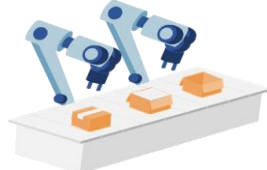
Production breeding

- Solving issues in the livestock industry



Processing manufacturing

- Environmental impact reduction
- Recycling



Logistics

- Efficiency of delivery operations



Sales

- Providing various values



As introduced earlier, NH Foods Group owns the entire value chain from research to sales, and we are implementing sustainable initiatives across all stages of this chain.

Sustainable Action



These are some of the images I mentioned earlier.

Sustainable Action



Research, development

- Potential of protein
- Health



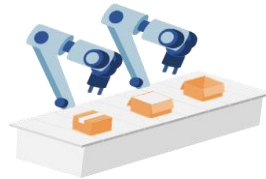
Production breeding

- Solving issues in the livestock industry



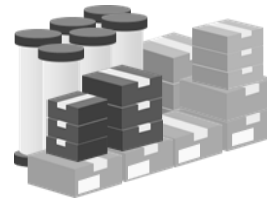
Processing manufacturing

- Environmental impact reduction
- Recycling



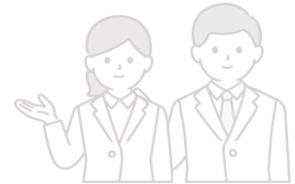
Logistics

- Efficiency of delivery operations



Sales

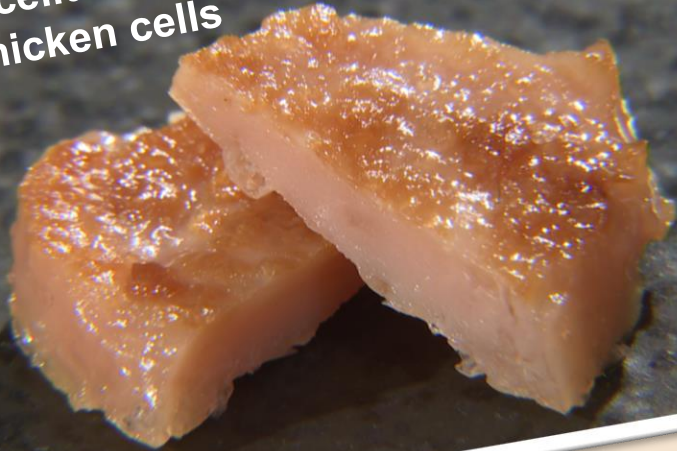
- Providing various values



Today, I would like to share a few examples from our research and development to processing operations

Cellular/ plant-based alternative food

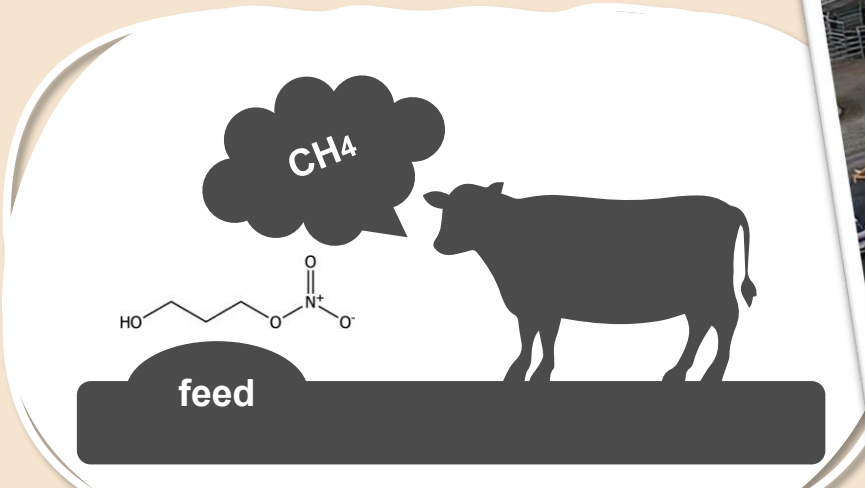
A cellular food made from cultured chicken cells



Tuna with dietary fiber

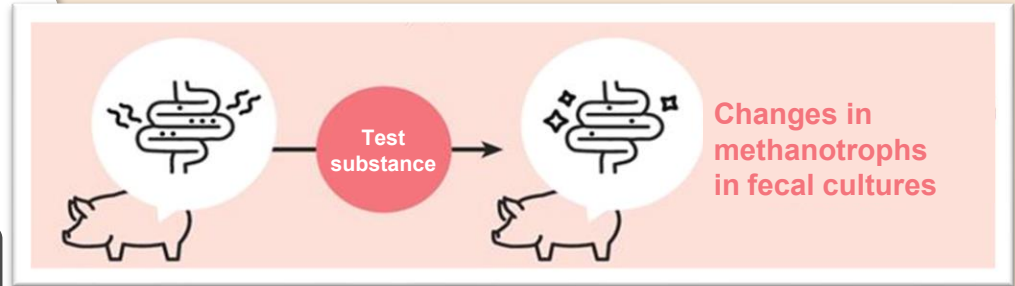
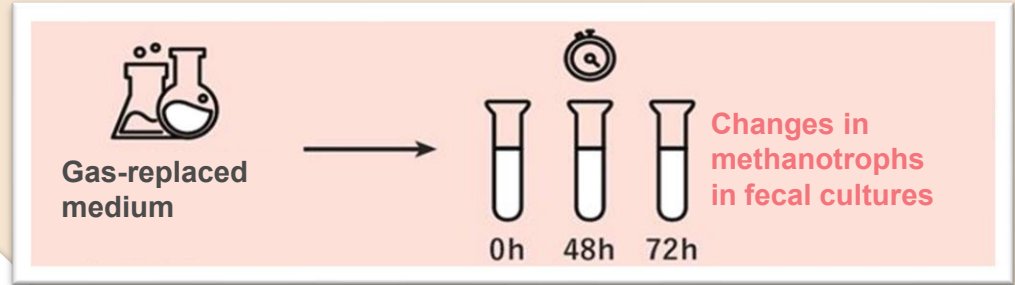
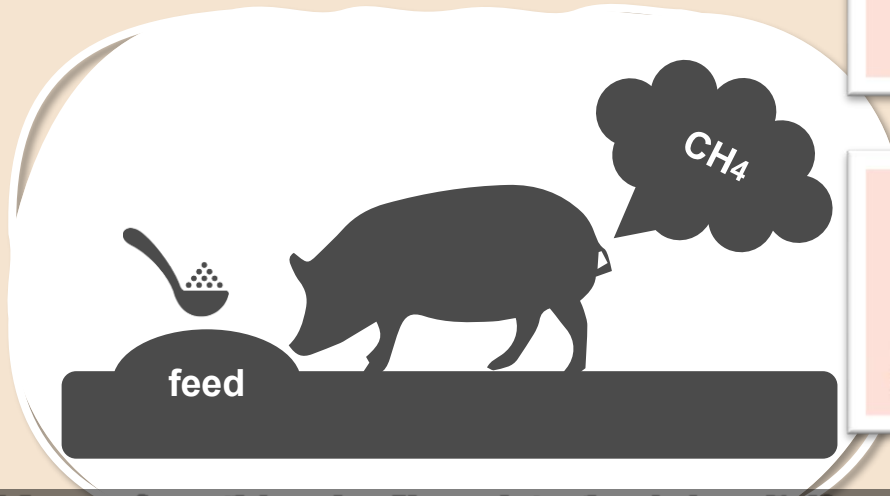
Globally, population growth is a major challenge, and it is said that protein shortages may occur in the future. To address this, NH Foods Ltd is actively engaged in the research and development of alternative proteins. We are developing both cell-based and plant-based protein products. Since 2019, we have been researching cell-based food made from cultured chicken cells without using animal serum. By using food ingredients in the culture medium, we have successfully reduced production costs. We are also developing meat and fish alternatives using protein-rich soybeans, as well as konjac and dietary fiber to replicate the taste and texture of fish. Our goal is to minimize environmental impact, ensure stable protein supply, and meet the diverse needs of consumers.

Methane Reduction in Cows



We are also addressing the unique challenges of the livestock industry in relation to climate change. In our production and breeding efforts, we are concentrating on reducing and utilizing methane generated from livestock and processing activities, while also focusing on increasing the animals' size through their feed. In Australia, where cattle farming is prevalent, we are running trials with feed additives aimed at suppressing methane emissions from cow burps. Moreover, we employ biogas plants to convert methane gas generated during processing into energy, subsequently using this energy as fuel for boilers and in various processing operations within our facilities.

Methane Reduction in Pigs

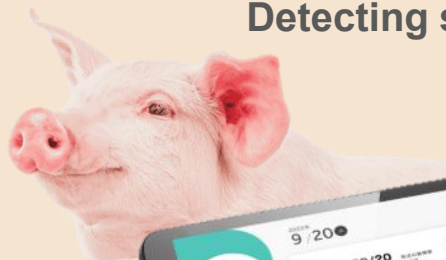


Methane gas from cattle burps is well-known, but methane is also emitted from pig manure and flatulence. In our domestic pig production operations, NH Foods Group is pioneering research to reduce methane generated from intestinal fermentation in pigs. This research is the first of its kind globally, and we are advancing studies in Japan where such knowledge was previously lacking.

Total Pig Farming Support System

PIG LABO[®] Breeding Master

Detecting sow estrus

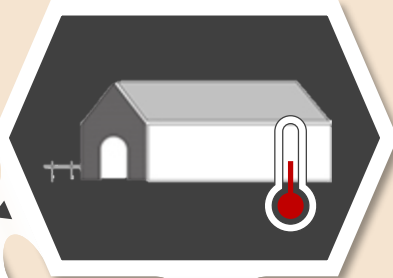


In Japan, a major issue is the shortage of livestock farmers. To address the various challenges in pig farming, NH Foods Group has developed a total solution service using digital technology. Digital technology collects data on pigsty environments and pig behavior, which is analyzed by AI using big data. This allows for enables high-precision management guided by AI that incorporates the expertise of veteran workers Demonstration tests have shown improved productivity and up to 79% reduction in workload. Our goal is to minimize human intervention to enhance biosecurity, reduce accidents, and further improve

Challenge to circular agriculture (Chickens)

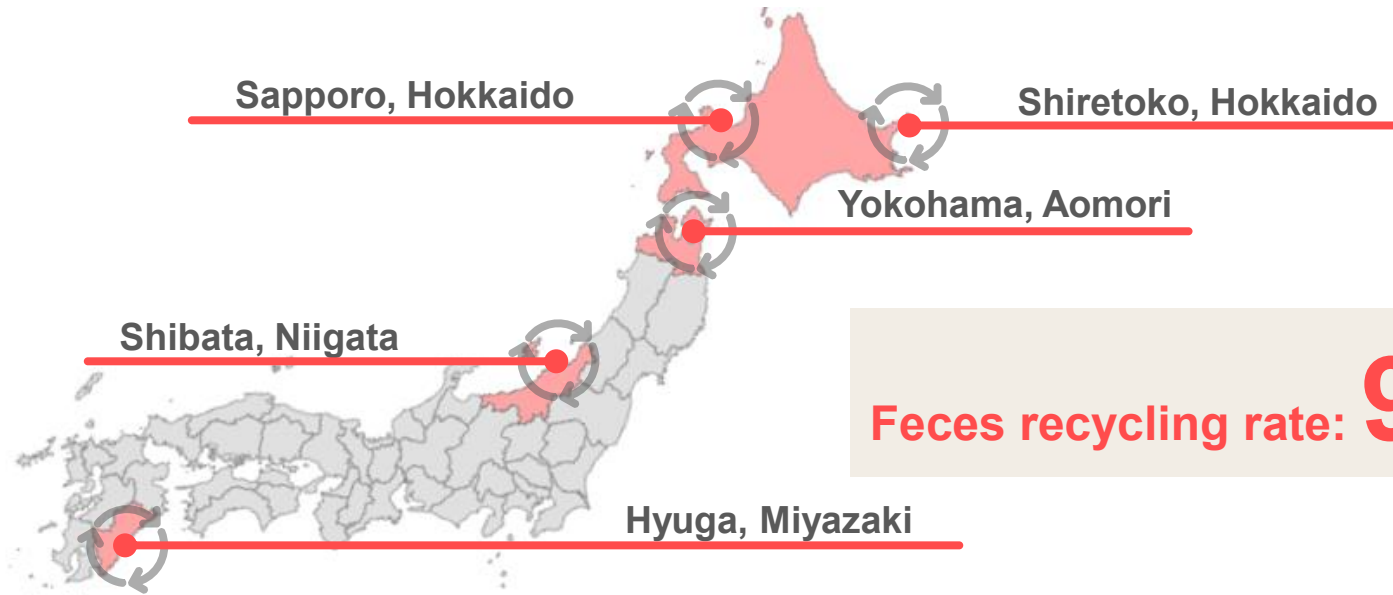
Fuel

Fertilizer



In chicken farming, most of the chicken manure generated is fermented and processed into compost and incinerated ash according to its intended use. The finished compost is commercialized and sold, and is used by local farmers to enrich their fields. Some manure that is not composted is burned in biomass boilers as renewable energy, providing heat for chicken house heating and hot water used during cleaning.

Challenge to circular agriculture (Chickens)



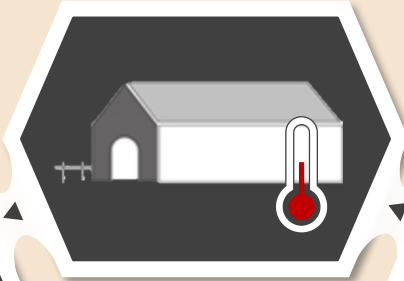
Feces recycling rate: **99%**

Through these efforts, approximately 99% of the chicken manure generated within our group is reused as fertilizer or fuel, demonstrating our commitment to the circular economy.

Challenge to circular agriculture (Pigs)

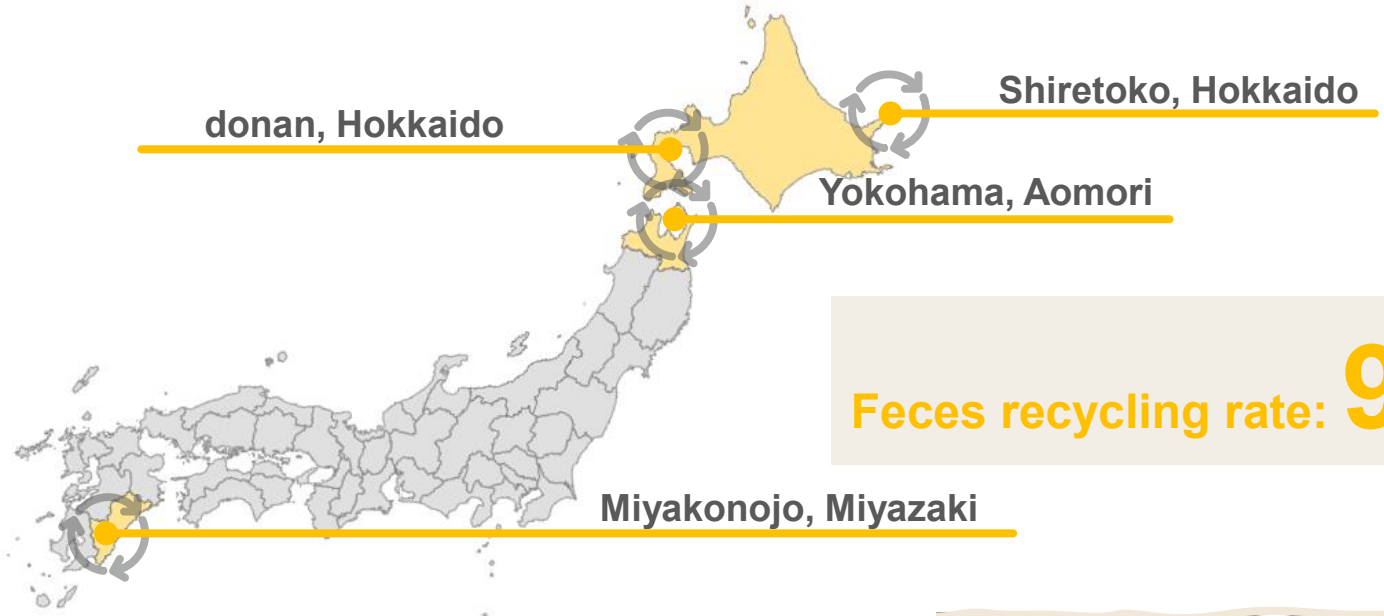
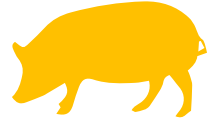
Fuel

Fertilizer



We also utilize pig manure and urine generated during pig farming. Pig manure is fermented and processed into compost according to its intended use. We use our own compost in vegetable cultivation. manure and urine is anaerobically treated, and the methane gas generated is recovered and used as boiler fuel. In Japan, where land is limited, we focus on utilizing manure rather than disposing of it. Compared to burning heavy oil, this reduces carbon dioxide emissions and contributes to reducing GHG emissions from livestock.

Challenge to circular agriculture (Pigs)



Feces recycling rate: **99%**

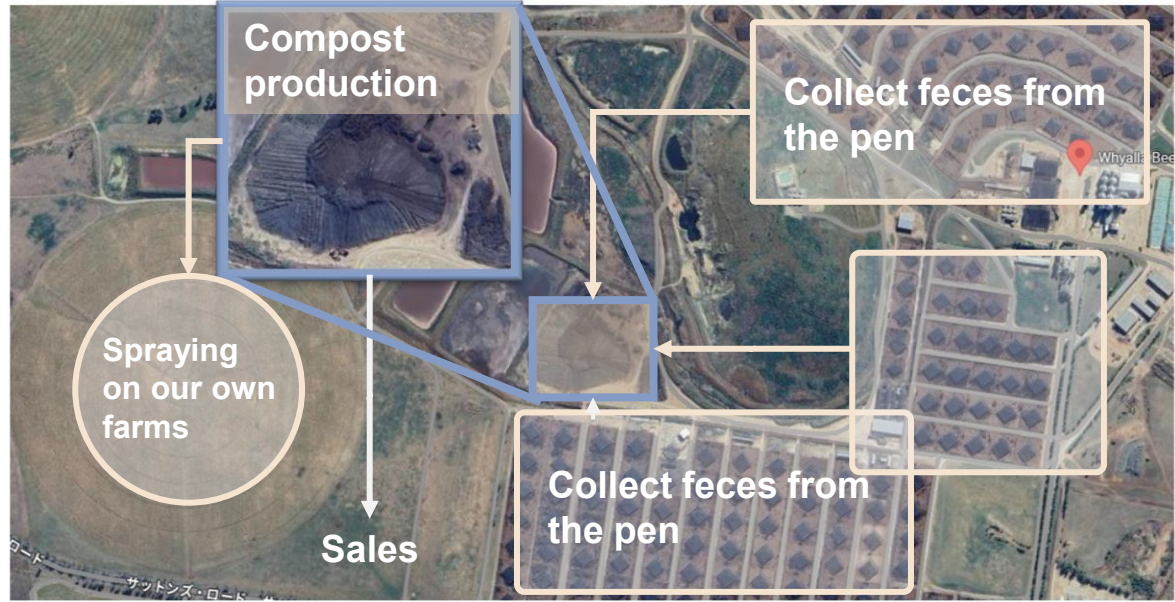
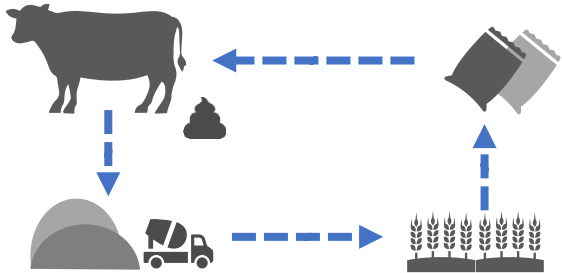
Like chicken manure, approximately 99% of the pig manure generated within our group is composted or converted into fuel, contributing to the circular economy in Japan.

Challenge to circular agriculture (Cows)

Queensland

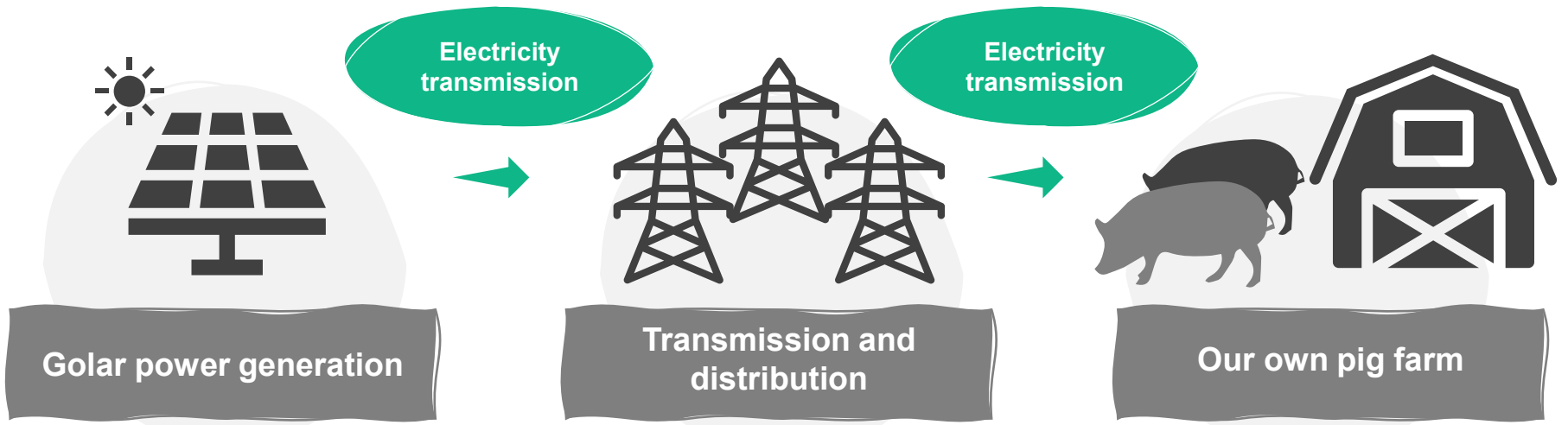
Feces recycling rate:

99%



At the Whyalla farm in Australia, where we raise cattle, nearly all manure is collected and fermented into compost, which is then provided to Local farmers.

The challenge of carbon neutral farming



We aim to operate farms in Japan with net-zero GHG emissions, including fuel, livestock-derived emissions, and electricity (including environmental facilities). We are working on energy self-sufficiency through solar power and improving equipment efficiency, and are also considering the use of carbon credits.

Effective use of unused and inedible



A new type of foie gras made with chicken liver

We are committed to valuing and utilizing limited resources.

When producing chicken and pork, various by-products are generated. we upcycle unused liver into a premium product that replicates the rich flavor and smooth texture of foie gras. For example, during the winter season in Japan when chicken liver is less in demand, This product, made from chicken liver instead of traditionally controversial foie gras, has gained international attention.

Effective use of unused and inedible



We also transform discarded bones into delicious ramen soup through careful selection and slow boiling. For example, pork bones are used to create tonkotsu soy sauce ramen, which is now popular worldwide. Even the bones after boiling are fully utilized through rendering, contributing to waste reduction and a circular society.

We are committed to addressing environmental challenges while striving to ensure the stable procurement and supply of protein.

