Data company for sustainable
Pork Ecosystem

Eco-Pork

# Impact Report 2025

## Eco-Pork co., ltd.

2025.2

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# CEO Message

“Eco-Pork” embodies our ambition to tackle environmental challenges related to meat production—starting with pig farming—while simultaneously fostering economic development to provide safe and prosperous lives for people around the world.

In pig farming, it is essential to properly manage complex rearing processes—from mating, reproduction, and lactation to fattening and shipment—on scales ranging from thousands to hundreds of thousands of pigs. As a data-driven company, we support pig farmers by visualizing and optimizing these processes to enhance productivity and resource efficiency. Moreover, we are expanding international partnerships as we take on the challenge of creating a sustainable meat culture.

A look into human history reveals that local, circular systems centered on pig once flourished across the globe. People organized their lives around the growth cycle of pigs. In ancient Japan, for example, the character for “house” (家) symbolized the presence of a pig under the roof, reflecting how deeply pigs were woven into daily life. People raised pigs on cooking scraps and leftovers, used their manure to enrich the soil for agriculture, and savored the mature pigs as a delicious meal.

Although in our highly civilized modern society the practice of keeping pigs under one’s roof is virtually unheard of, the circular pork economy we envision aims to reconstruct this age-old system using data to suit today’s world—all in the spirit of learning from the past to innovate for the future.

We are designing a comprehensive, pork-centered circular system that covers production, distribution, and consumption. In doing so, we are committed to carrying forward the cherished food culture into the future.

Please look forward to our forthcoming challenges and endeavors.

Founder and CEO
**Takashi Kambayashi**

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## Eco-Pork； Data Company for Sustainable Pork Ecosystem

# The World's Only Data-Driven Company Tackling Global Food Issues Through the Digital Transformation of Pig Farming

### —Striving for a Future in 2040 Where We Can Still Choose to Eat Meat—

Eco-Pork provides data-driven solutions that enhance productivity in pig farming while reducing environmental impact.
We are an impact-driven startup company committed to addressing the global protein crisis and mitigating environmental challenges in livestock industries.


J-Startup Impact

"J-Startup Impact" selected by METI

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# Vision

## Food is Life: Passing on the Genuine Meat Culture to the Next Generation

Humans have lived by taking the lives of various organisms, including animals, plants, and fungi.

Among these, the consumption of land animals has given rise to diverse cultural practices shaped by nations, religions, beliefs, and climates, including taboos and restrictions.

Today, this diversity of meat cultures is facing new challenges such as supply-demand imbalances and environmental issues.

As we strive to solve the sustainability challenges facing both humanity and the planet, can we pass on the rich and meaningful culture of consuming meat — a tradition as old as humanity itself — to future generations?

At Eco-Pork, we believe in creating a world where both the choice to consume meat and the choice not to are equally respected. By leveraging technology, starting with pig farming, we aim to realize a society that offers abundant options and the freedom to choose.

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# Mission

## Building a Data-Driven Circular Economy for Pork Production

Our mission is to build an ecosystem based on environmental sustainability and respect for food diversity. By leveraging data, we aim to improve every stage of the pork production and distribution process, ensuring the efficient use of limited resources. To achieve this, we will work hand in hand with everyone involved in the pork industry.

EcoSystem V1.0 Food Chain
= Individual Optimization

EcoSystem V2.0 Economic Chain
= Partial Optimization

**EcoSystem V3.0 Global Resource Chain**
**= Holistic Optimization**

**For People and Planets**
**well-being and Profitability.**

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# Company Profile

**Founded in 2017**

With offices in Tokyo and Kagoshima, the company currently has 24 employees

(as of January 2025).

**Founder’s Background**

Takashi Kambayashi, the founder of Eco-Pork, has been actively involved in addressing food security and environmental issues through his work with NPOs since his student days.

After graduating from university, he worked at a consulting firm where he developed AI-powered solutions.

His desire to "create something meaningful for the next generation" led him to establish Eco-Pork.



| | |
|---|---|
| **Company Name:** | **Eco-Pork co., ltd.** |
| **Established:** | **November 29 , 2017 (The date is symbolically chosen as “Good Meat Day”)** |
| **Locations:** | **Tokyo Office: 2F, 3-21-7 Kanda Nishikicho, Chiyoda-ku, Tokyo**<br>**Kagoshima Office: 1343 Minamimata, Takarabe-cho, Soo-city, Kagoshima**<br>**SHIFT0 Farm: Tahara-City, Aichi** |
| **Representative:** | **CEO Takashi Kambayashi** |
| **Capital:** | **150 million yen** |
| **Business Overview:** | **・Development and provision of DX solutions for pig farmers**<br>**・Pork distribution business**<br>**・Research related to pig farming** |
| **Financial Institutions:** | **MUFG, SMBC, Mizuho Bank, Shizuoka Bank, Shiba Shinkin Bank, Resona Bank, and Japan Finance Corporation** |
| **Patents held:** | **Over 20 patents ( international patent transfer in progress)** |
| **Product:** | Porker **"Porker," a pig farming management support system (14.6% domestic market share)** |

# Board Members

The board consists of three internal directors, three part-time directors, and a standing auditor.

Internal directors bring specialized knowledge in finance and business development from backgrounds in consulting firms and banks.

Additionally, the part-time directors, supported by three leading VC firms, contribute with expertise in deep tech startups and social impact initiatives.

Founder and CEO

## Takashi Kambayashi

Graduated with honors from the Master of Business Administration program at the University of Michigan. Began his career as a consultant at a global consulting firm, specializing in finance and business model development. After that he led the development of new solutions using statistical analysis and AI. Founded Eco-Pork on November 29, 2017 (Good Meat Day), with a vision to utilize technology to tackle environmental and sustainability challenges related to the livestock and meat industries.

Director

## Shinsuke Arafuka

Graduated from Keio University with a Master's in Biochemistry. After graduate school, he joined a foreign consulting firm, supporting major manufacturing equipment companies in business improvement and management strategy through data analysis using statistics and machine learning. Co-founded Eco-Pork in response to the protein crisis threatening global food security. To keep pork as a viable food option, he developed "Porker," a technology-driven solution for sustainable pig farming. He became a director of Eco-Pork in April 2021.

Director

## Kento Suzuki

Graduated from the Department of Mathematics, Faculty of Science, Tokyo Institute of Technology. He grew up in a family pig farming business in a region of Aichi Prefecture known for pig farming, up until high school. After university, he joined a megabank group, working in large corporate sales and M&A advisory at the group's securities firm. Driven by a desire to address the challenges in pig farming that he had observed since childhood, he joined Eco-Pork and was appointed as a director.

Part-time Director

## Sou Yanbe

Graduated from the Faculty of Economics at Tohoku University. After working in corporate planning at a semiconductor R&D venture, he joined Realtech Holdings in 2015. He focuses on solving global issues and revitalizing the local economy by investing in and supporting promising realtech ventures. He has served as an auditor for Eco-Pork since April 2021 and as a part-time director.

Part-time Director

## Hiroaki Ido

Graduated from the Faculty of Commerce at Chuo University. After working in corporate lending and sales at Nishi-Nippon City Bank, he joined QB Capital in 2021, focusing on investments in real tech ventures, including university-affiliated ones. In April 2024, he joined NCB Venture Capital as a Co-GP of QB Fund No. 2. Following QB Capital's lead investment in Eco-Pork in June 2023, he was appointed as a part-time director.

Part-time Director

## Naoto Tomono

Graduated from Keio University's Faculty of Economics. Worked in corporate RM and FX/bond sales & trading at MUFG Bank, then gained VC experience at SBI Investment. Later engaged in direct startup investments at SMTB, focusing on SaaS and deep-tech. Joined KII in 2023 and became a Part-time Director of Eco-Pork in January 2025.

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# Certifications and Awards / Major Investors

**< Certifications >**

Through demonstration projects led by the Ministry of Agriculture, Forestry and Fisheries and the Ministry of Economy, Trade and Industry, we have objectively verified the effectiveness of our DX solutions using data. At the same time, we are developing new technologies for the future.

**< Major investors >**

We have received investments from a wide range of organizations, including impact investors. Corporate venture capital (CVC) is also involved to support our long-term vision and synergies.



## Key Certifications and Awards

J-Startup Impact

2024: Selected for NEDO's Deep-Tech Startups Support Program (DTSU)
2023: Selected for the Ministry of Agriculture, Forestry and Fisheries' Innovation Promotion Project for SMEs (Phase 3 funding)
2023: Selected for METI's J-Startup Impact Program
2022: Selected for METI's Growth Research and Development Support Program for SMEs
2022: Selected for the Ministry of Agriculture, Forestry and Fisheries' Comprehensive Support Program for Startups
2021: Selected for METI's Global Startup Ecosystem Strengthening Program
2020-2024: Selected for the Ministry of Agriculture, Forestry and Fisheries' Smart Agriculture Demonstration Project

ICC KYOTO 2022 Catapult Grand Prix Finalist
Real Tech Venture of the Year 2020
ICC KYOTO 2019 Startup Catapult Finalist
TechCrunch Tokyo 2018 Runner-Up

## Major Investors

UntroD
QB Capital
KII
みらい創造機構 MIRAI SOUZOU
食の未来ファンド kemuri ventures
森久保薬品株式会社
Bell System24
future food fund
OKB グループ 株式会社OKBキャピタル
ENEOS
綿半
OKASAN CAPITAL PARTNERS
Leave a Nest CAPITAL

# Timeline

## 2017

11 Founded on "Meat Day" (29th) and experienced training at pig farms.

## 2018

4 Certified by the MAFF as an Advanced Cutting-Edge Technology Implementation Promotion Project.

10 Started providing "Porker"

11 Runner-up at TechCrunch Tokyo 2018

## 2019

4 Certified by the MAFF for the Agribusiness Development Support Project

8 First fundraising achieved

9 Participated in Leave a Nest tech grand prix

## 2020

3 Won the Real Tech Venture of the Year 2020

4 Selected for the MAFF's Smart Agriculture Demonstration Project

6 Raised Pre-Series A funding

8 Launched "Porker Sense"

9 Selected for the MAFF's University -launched Venture promotion project

## 2021

1 Selected for Google for Startups Accelerator Class 3

Google for Startups

7 Selected for the METI's global startup ecosystem strengthening project

7 Launched "ABC"

## 2022

3 Selected for the Thai smart agriculture demonstration project

4 Raised Series A funding

9 Ranked 4th at ICC KYOTO 4位

GRAND PRIX CATAPULT KYOTO 2022 SILVER


## 2023

3 OEM partnership with Marubeni Nisshin Feed co., ltd.

4 Started distribution business

6 Closed the 1st round of Series B Funding


10 Selected for METI's J-Startup Impact Program

## 2024

2 Published an impact report

6 Joined the impact startup association

**9 Launched the "J-Credit Creation Project"**

**11 Established Eco-Pork America**

12 Selected for NEDO's Deep-Tech Startups Support Program (DTSU)

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# 2 Impact Story

# Impact Story

※Target for 2027

Maximizing available capital, expanding product and solution development, promoting research and development, and implementing social initiatives contribute to solving social issues such as protein crises and the environmental burden of livestock farming. Through innovative efforts, we aim to inherit a sustainable meat culture and challenge ourselves to create a better future.

**VISION** — Passing on the Genuine Meat Culture to the Next Generation

**Impact**

Eco-Pork has set the following goals:

- Avoiding the protein crisis — Increasing pork production by 50%
- Achieving environment friendly livestock farming — Reducing feed use by 30%; Reducing antimicrobial use by 80%; Reducing GHG emissions by 25%

Engaging relevant stakeholders to achieve these goals

**Outcome**

- Improving productivity for pig farmers (increasing revenue, reducing costs)
- Suppressing GHG emissions from pig farming
- Suppressing resource usage (feed, antimicrobial)

**Output**

- Improved growth performance of pigs
- Additional income opportunities for farmers (J-Credit Program)
- Optimization of feeding and medication

**Activity**

- Development and provision of livestock DX solutions, expansion to overseas markets
- Building a Data-Driven Circular Economy for Pork Production through Research and Social Implementation

**Input**

### Intellectual Capital

**Patents / Know-how：** Over 20 patents related to pig breeding management and core technologies/algorithms for livestock DX
**R&D：** Engineers and researchers integrate cutting-edge technologies such as AI cameras and IoT sensors into practical solutions and products

### Human Capital

**Highly specialized team：** Experts from consulting firms, banking backgrounds, and deep tech ventures / Specialists in livestock industry and global business expansion
**Culture aiming to balance business & impact：** Considering impact perspectives in behavioral guidelines and evaluation

### Social Capital

**Collaboration with VC / CVC and government：** Broad collaboration including impact investors and government projects
**Industry Partnerships：** Capital and business alliances with companies addressing challenges in livestock DX and sustainability

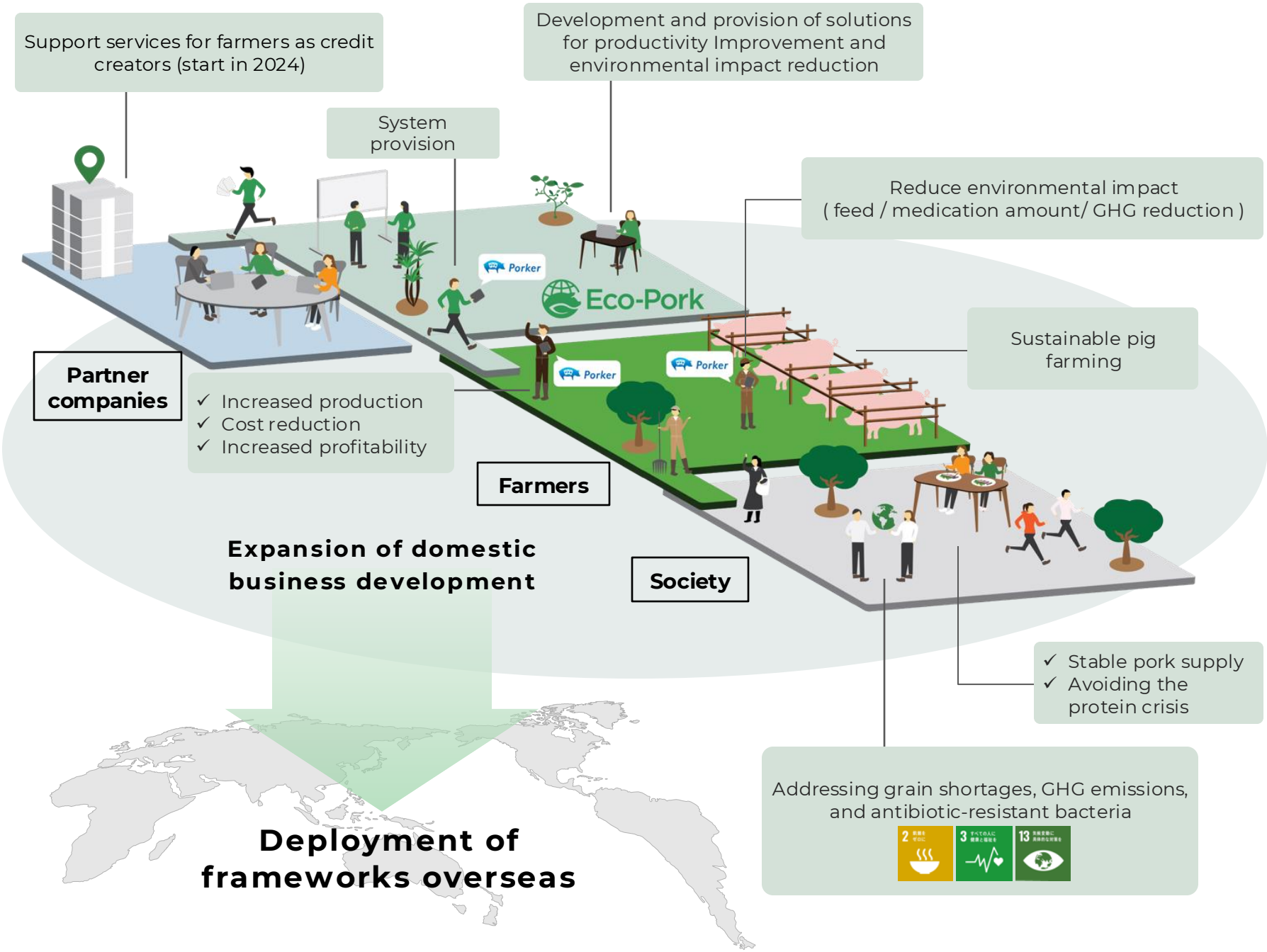
### Financial Capital

**Diversified funding sources：** Investments from impact investors and funding through SBIR projects, accelerating funding and verification

# Business Structure

Eco-Pork contributes to addressing key issues faced by both consumers and society, such as mitigating the global protein crisis and reducing environmental impact, by providing solutions that enhance productivity and lower environmental burdens for pig farmers. These solutions improve the sustainability of pig farming operations.

Starting in 2024, Eco-Pork, in collaboration with ENEOS, will launch a project that positions pig farmers as J-Credit creators. This initiative aims to further enhance the social value and sustainability of pig farming.



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# Intellectual Capital

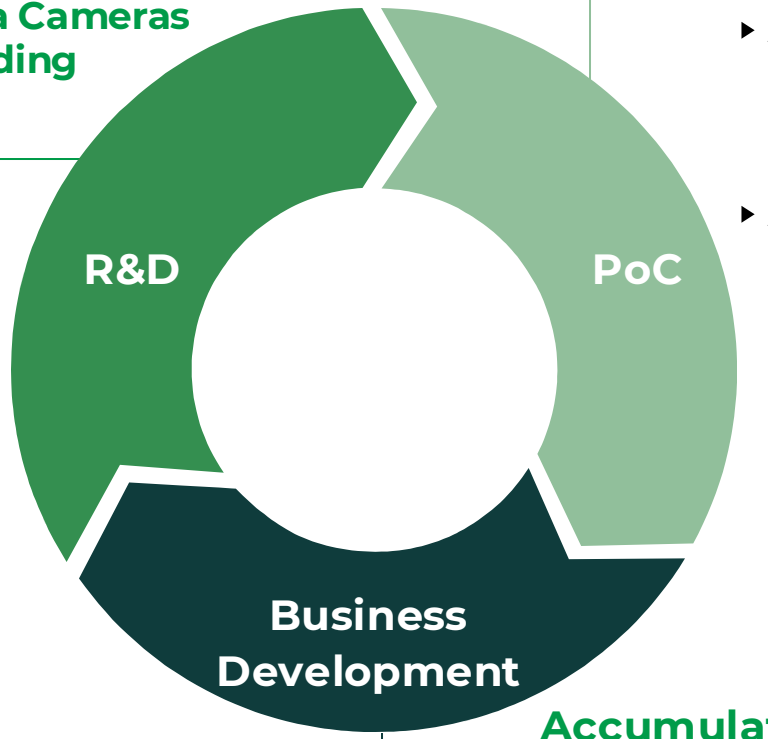
Engineers and researchers develop livestock solutions using cutting-edge technologies like AI Buta cameras to automate breeding, weight measurement, and disease management.

Through continuous implementation and refinement with Porker-adopting farmers, we have accumulated business know-how and obtained 20+ livestock DX patents. Efforts are accelerating to integrate research, proof-of-concept, and business development.

With global expansion in mind, we are strengthening development frameworks domestically and internationally.

## Development of AI Buta Cameras and AI-Integrated Breeding Management Systems

- Developing proprietary products, including AI pig cameras and AI-integrated breeding management systems, for business growth.
- Conducting joint research and proof-of-concept experiments with data scientists, machine learning engineers, and experts in pig farming operations.




## Technical PoC through Porker-Adopting Farmers

- As of October 2024, approximately 14.6% of domestic pork is produced using Porker.
- A large customer base supports the development and PoC testing of Porker and related products.

## Accumulation of Knowledge and Patent Acquisition

- Accumulating technical development and PoC results as business know-how and securing patents for useful technologies to enhance business resilience.
- Already obtained over 20 domestic patents related to livestock DX and promoting international patent acquisition for overseas expansion.

# Human Capital

To achieve our Vision and Mission and contribute to a sustainable society, we have established Value as our guiding principle.

Those who embody Eco-Pork's Value are individuals who build connections through ambition and action, shaping the future together—they are Eco-Porkers. A diverse group of professionals with various backgrounds come together, each taking initiative to tackle global protein crises and environmental challenges.

To foster this diversity and collaboration, we integrate an impact perspective into our behavioral guidelines and HR evaluations, ensuring a system that keeps the social value we create at the forefront of our actions.

## Accelerating Co-Creation with Talent

| | |
|---|---|
| **Opportunities for Challenge & Growth** | Driving large-scale projects such as the SBIR program by the MAFF, and global expansion including the U.S. market.<br>Advancing our mission of passing on the meat culture to the next generation on a global scale. |
| **Eco-Pork's Unique Diversity & Expertise** | Integrating livestock knowledge, AI/IoT technology, business strategy, and global expansion expertise.<br>Accelerating the development of proprietary products like "Porker" and "ABC" |
| **Corporate Culture Rooted in Business & Social Impact** | A balanced approach that integrates business success with solving social challenges.<br>Establishing an Eco-Porker evaluation system that assesses both business performance and social impact, guided by our core Values. |

**Our Assets since Founding**

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# 3 Social Issues Related to Pig Farming

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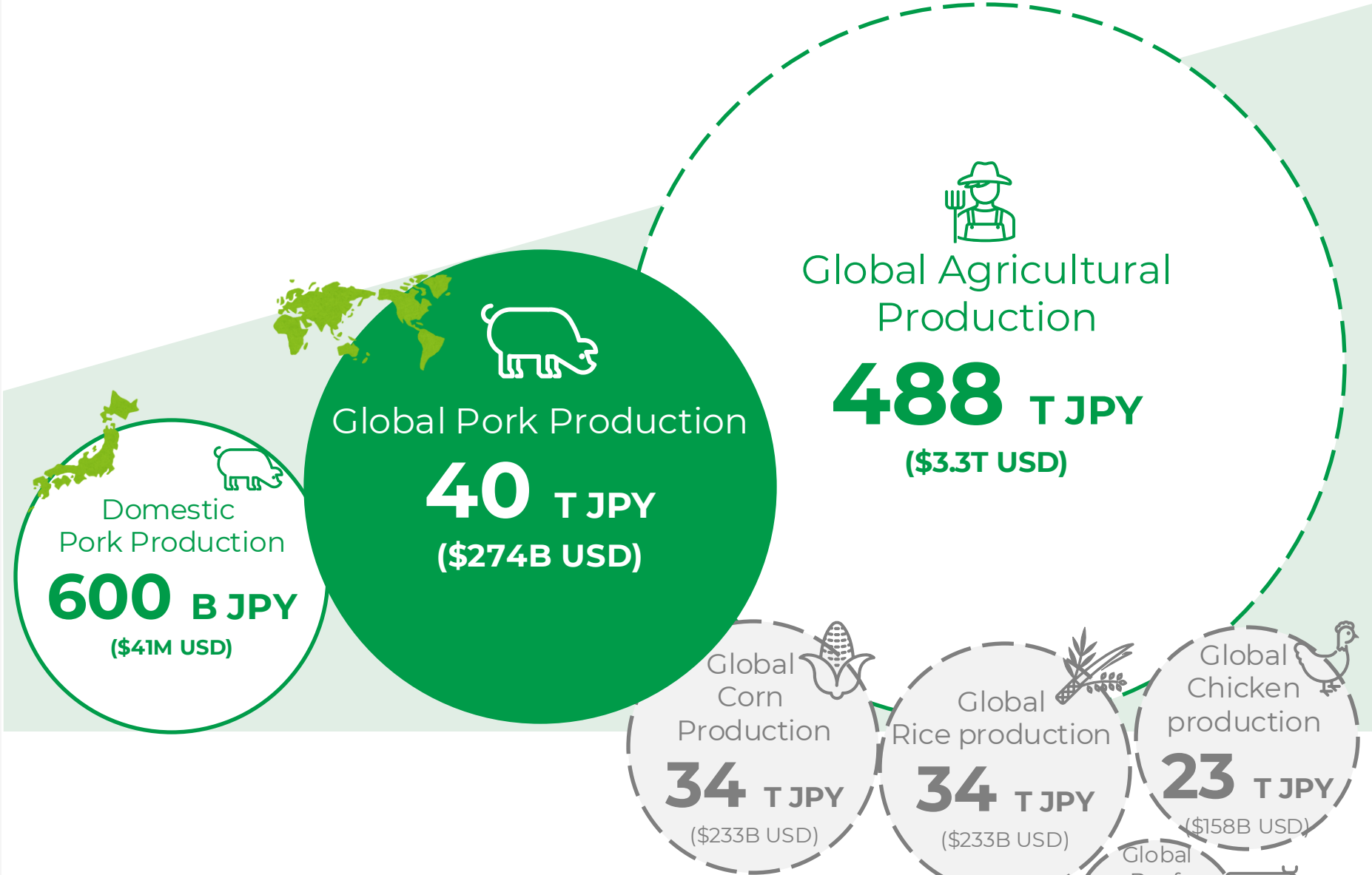
# Pig Farming: The World's Largest Primary Industry Worth 40 Trillion Yen

In Japan, the pig farming industry generates approximately 600 billion yen, while globally, it is a massive 40 trillion yen industry.

The total value of global agricultural production was about 488 trillion yen in 2021, and among various sectors, pig farming surpasses other crops such as corn and rice, as well as other livestock products like beef and poultry, making it the largest industry.

From this, it can be concluded that pig farming holds the largest market size among all primary industries worldwide.




Source: Ministry of Agriculture, Forestry and Fisheries, FAOSTAT
1 USD = 146 JPY

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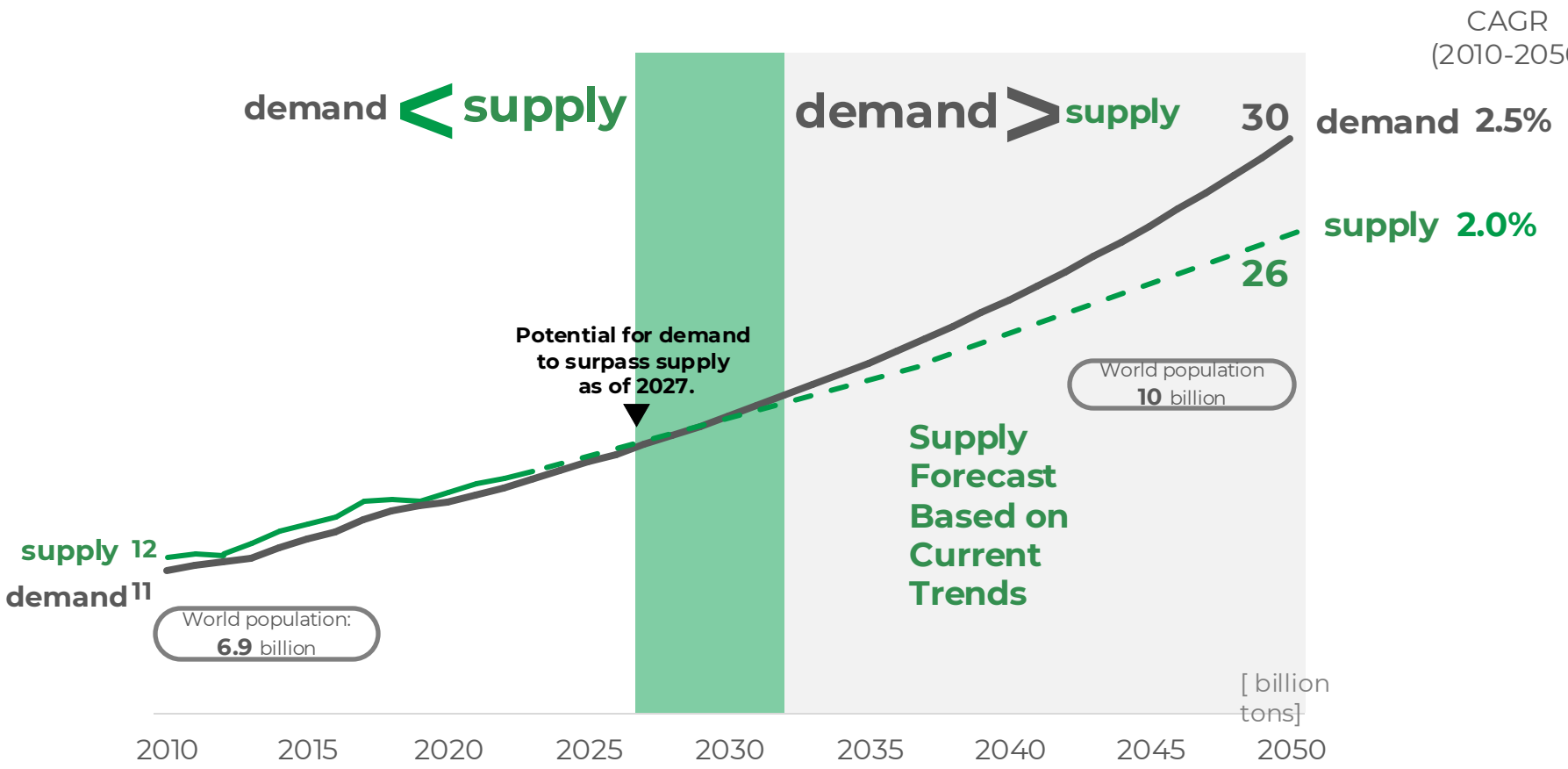
# Social Issue 1: The Protein Crisis Projected for 2027–2032

The current global population is around 8 billion, and it is expected to reach approximately 10 billion by 2050.

As economies grow wealthier, people tend to shift from carbohydrate-based diets to those rich in animal products such as meat and fish, leading to an increase in protein consumption.

The term "protein crisis" refers to the imbalance between protein supply and demand in the future due to this growing population. This crisis is expected to become a significant social issue as early as 2027–2032.

## Global Demand and Supply of Protein-Rich Agricultural Products




The global population grew from 6.9 billion in 2010 and is projected to reach **10 billion** by 2050.

**By 2027, demand could exceed supply.**

By 2050, demand for protein-rich agricultural products will be **2.7 times higher** than in 2010.

Source: Based on the 2022 FAO/OECD report, FAOSTAT (Production, Food Balances), and UN "World Population Prospects 2019," with estimates by our company.
Agricultural products included in the estimate: Plant-based proteins (soybeans) and animal-based proteins (meat, fish, eggs, dairy).
For the supply side, projections are calculated based on current growth rates, without factoring in potential technological innovations in production systems.

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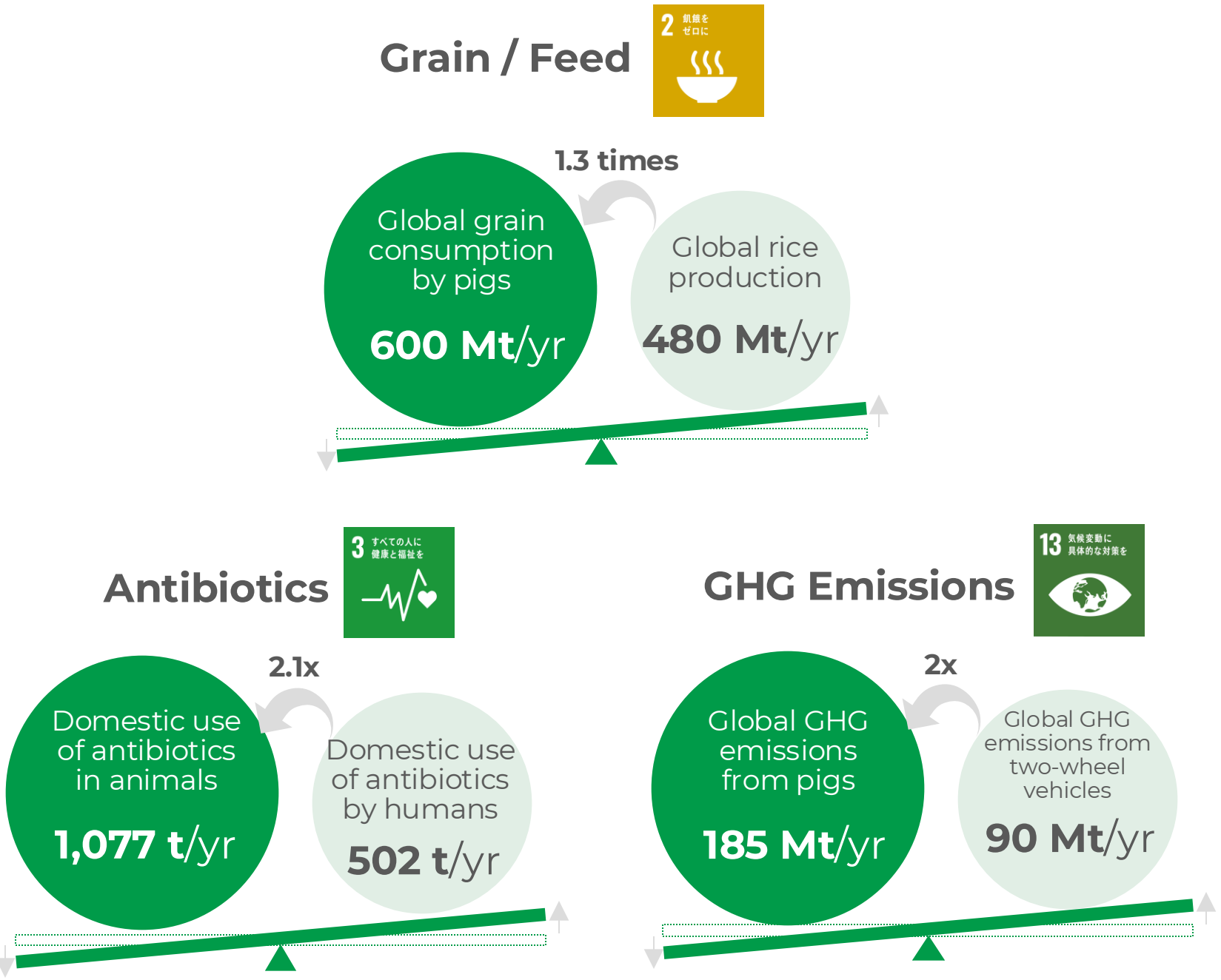
# Social Issue 2: The Environmental Impact of Pig Farming

Globally, the consumption of 600 million tons of grain per year, the emission of 185 million tons of greenhouse gases (GHG), and the use of antibiotics at 2.1 times the rate of human use (based on domestic data) are contributing to issues such as grain shortages and the rise of antibiotic-resistant bacteria.

These factors are seen as threats to the United Nations' Sustainable Development Goals (SDGs), including "Goal 2: Zero Hunger," "Goal 3: Good Health and Well-Being," and "Goal 13: Climate Action."




Source: FAOSTAT , AMR One Health Trends Survey

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# Social Issue 2: The Environmental Impact of Livestock (Future Outlook)

To avoid the crisis, increased livestock production will be necessary, but it is crucial to consider the environmental impact.

Looking at the global meat market, research and development of environmentally friendly alternatives such as plant-based and cell-cultured meats are advancing, and the market size for these alternatives is expected to grow.

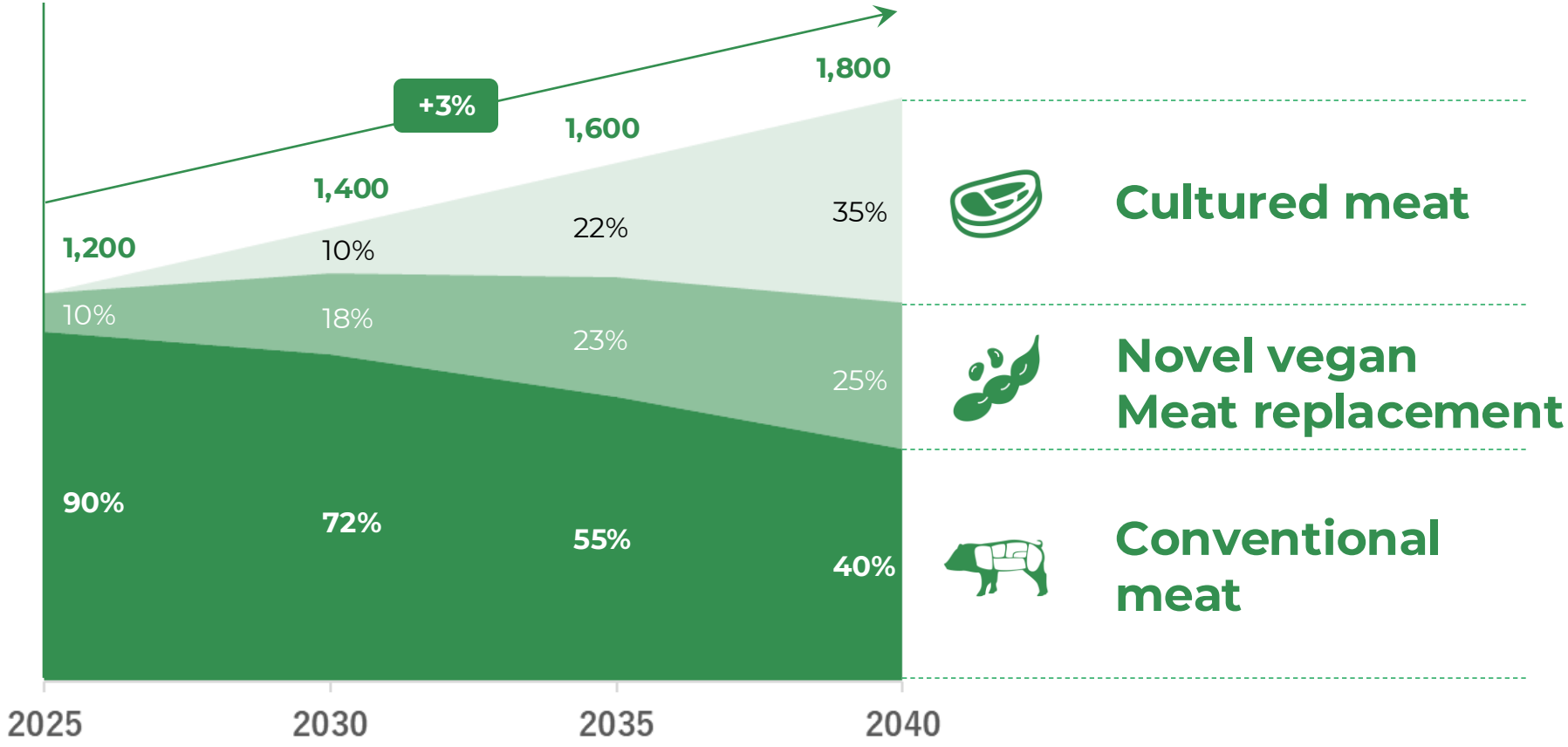
If the environmental impact of livestock remains high, these alternatives are likely to replace traditional meat production.

Improving the resource efficiency of livestock farming is essential to preserving the culture of pork consumption for future generations.



**By 2040, the share of livestock-based meat (traditional animal-derived meat) is expected to decrease to 40%**

## Global Meat Market Outlook (in $ bn, global)




Source: AT Kearny " How will cultured meat and meat alternatives disrupt the agriculture and food industry" 2019

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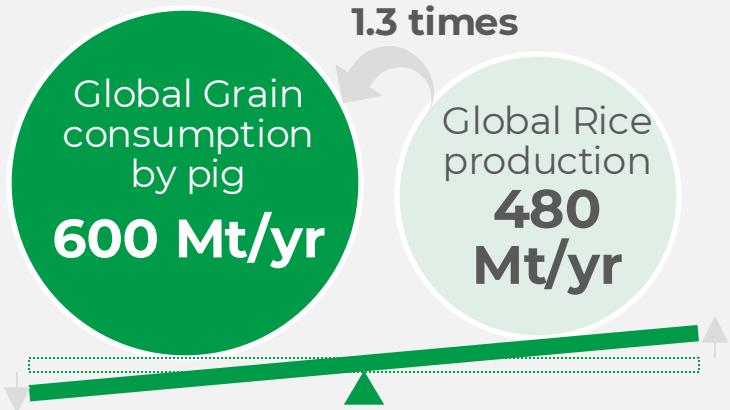
# Social Issue 2-1: Environmental Impact of Feed and Increasing Food Demand

It is said that one pig consumes about 300kg of feed before it is shipped, and globally, pigs consume approximately 600 million tons of feed annually, exceeding the global production of rice.

At the same time, the world's population is rapidly expanding and is expected to reach about 10 billion by 2050, which suggests that food demand will continue to increase.

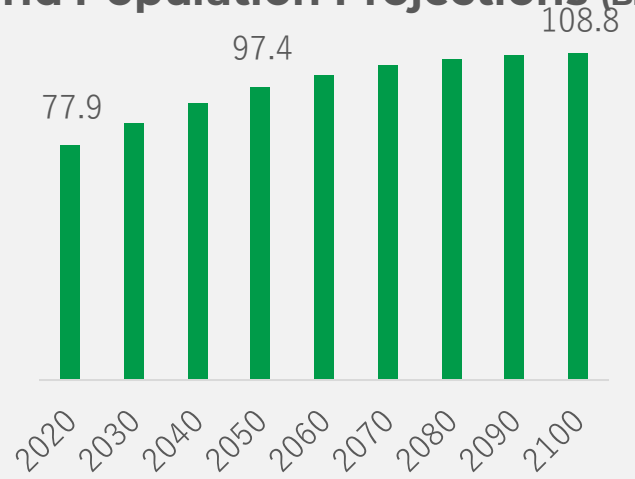
This could potentially lead to competition for food between humans and livestock.

## Pig grain consumption exceeds global rice production.




## The world's population is expected to approach 10 billion by 2050, leading to an increase in food demand.

**World Population Projections (Billions)**




**The issue of grain competition between humans and pigs leading to a food crisis.**

Source: FAOSTAT , United Nations "World Population Prospects 2019 "

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# Social Issue 2-2: Antibiotics and Antimicrobial Resistance

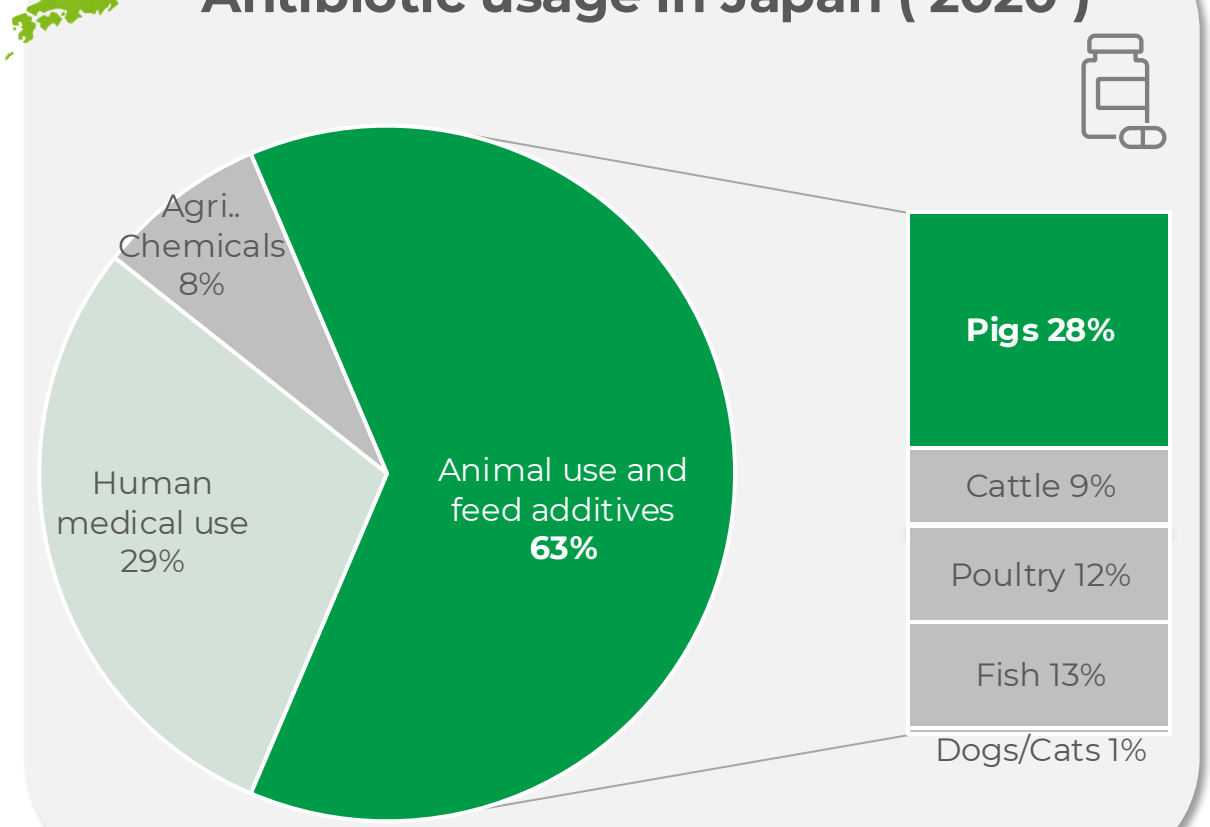
As antimicrobial-resistant bacteria increase, infections that could previously be treated effectively may become more severe, potentially leading to higher mortality rates.

If measures such as reducing the use of antibiotics are not implemented, it's estimated that by 2050, approximately 10 million people could die from these infections, surpassing the current annual death toll of 8.2 million from cancer.

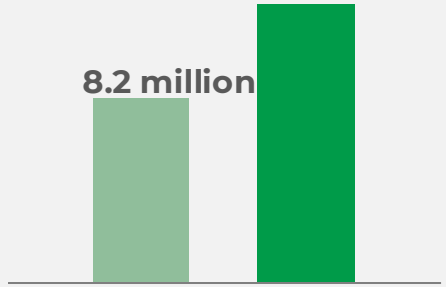
Japan has one of the highest detection rates of antimicrobial-resistant bacteria globally, with approximately 63% of antibiotics used for animals, which is about 2.1 times the amount used for humans. Among animals, the pork industry uses the most antibiotics, making reduction efforts a critical and urgent issue.



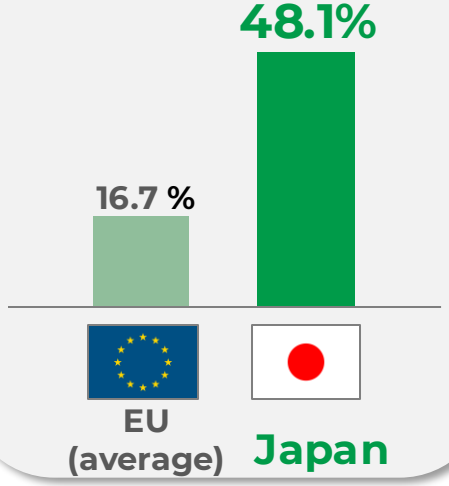
## Antibiotic usage in Japan ( 2020 )




## Estimated number of deaths caused by AMR* (2050)




## "International Comparison of Antibiotic Resistance Rates (2020)(Methicillin-resistant Staphylococcus aureus)"




Source: AMR One Health Trend Survey, Ministry of Health, Labor and Welfare, WHO
* AMR: Antimicrobial Resistance .

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# Social Issue 2-3: GHG Emissions from Pig Farming (Emissions from Livestock)

The global GHG emissions are estimated to be approximately 52 billion tons CO2-equivalent (average between 2007-2016), with the agricultural and forestry sectors accounting for about 12 billion tons, representing roughly one-quarter of the total. Of this, emissions from pig farming alone are estimated to contribute around 185 million tons of CO2.

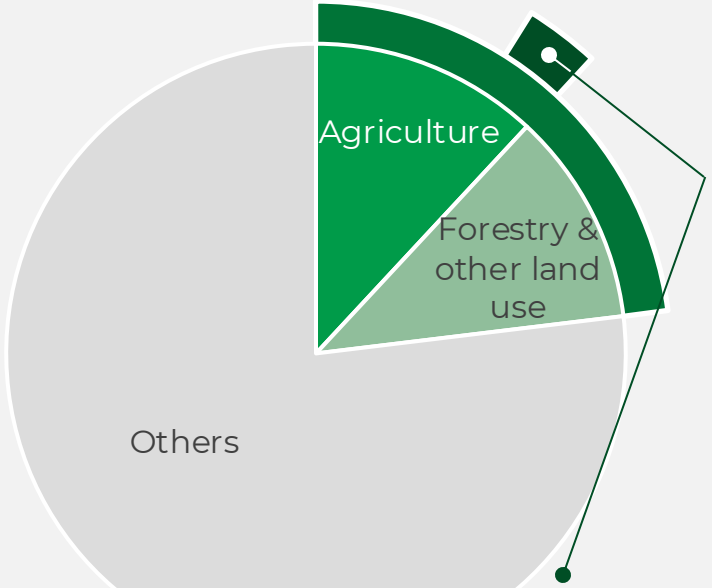
In Japan, the GHG emissions from the agricultural, forestry, and fisheries sectors amounted to about 47.47 million tons in 2019, with 13.58 million tons of CO2 emissions coming from livestock, which represents about 29% of the total.

Furthermore, CO2 emissions from pig farming alone accounted for 1.74 million tons, representing 13% of total livestock emissions.



## Global GHG emissions (2007-16 average, billion t-CO2/year)

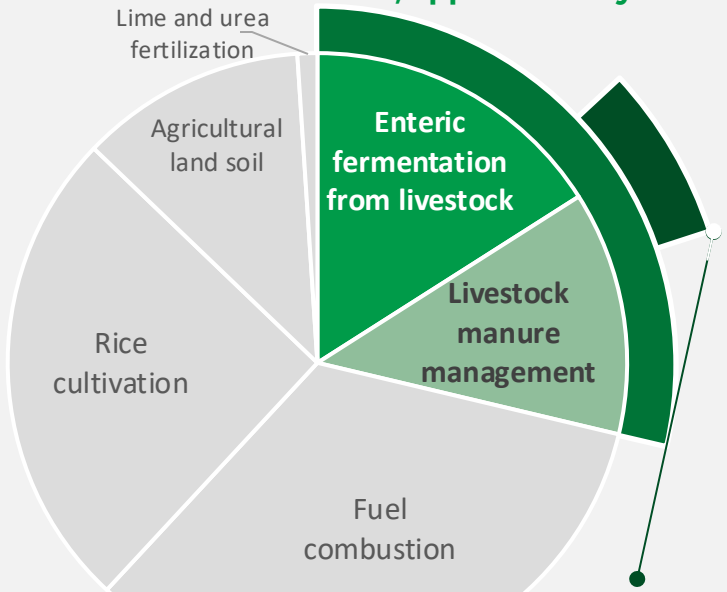
**Agriculture and forestry total 12 billion t-CO2, Approximately... 23%**




**GHG emissions from live pigs: approximately 185 million t-CO2**

## Domestic GHG emissions from the agricultural, forestry, and fisheries sector (2019, ten thousand t-CO2/year)

**GHG emissions from livestock: 13.58 million t-CO2, approximately...**




**GHG emissions from live pigs: approximately 185 million t-CO2**

**Approximately 13% of livestock production ( 3.8% of total production )**

Source: IPCC , FAOSTAT , Office of the Greenhouse Gas Inventory

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# Environmental Impact of GHG Emissions

The GHG emissions (in CO2 equivalents) from pig farming shown on the previous page — 185 million tons globally and 1.74 million tons domestically — are emissions directly related to the pigs themselves.

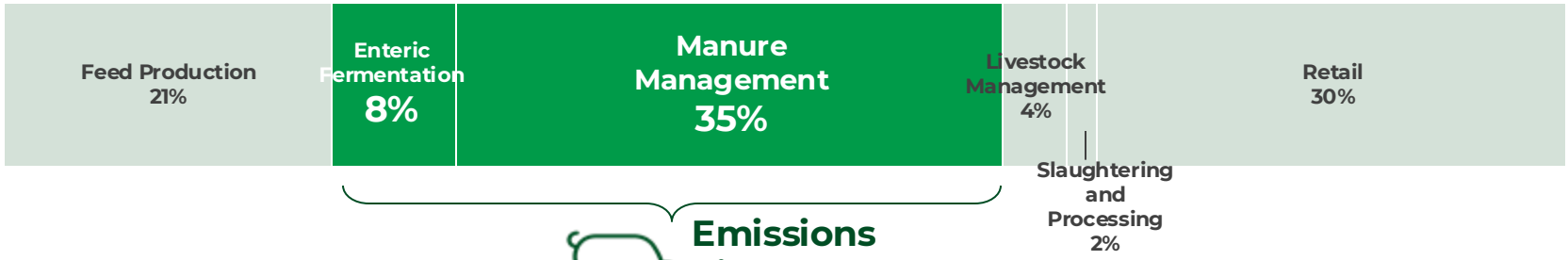
In addition to this, when we consider the entire lifecycle of pig farming, including feed production, energy use in the production process (electricity, LPG, etc.), livestock management, slaughtering, processing, and retail, the total emissions are estimated to reach approximately 430 million tons globally and 4.05 million tons domestically.

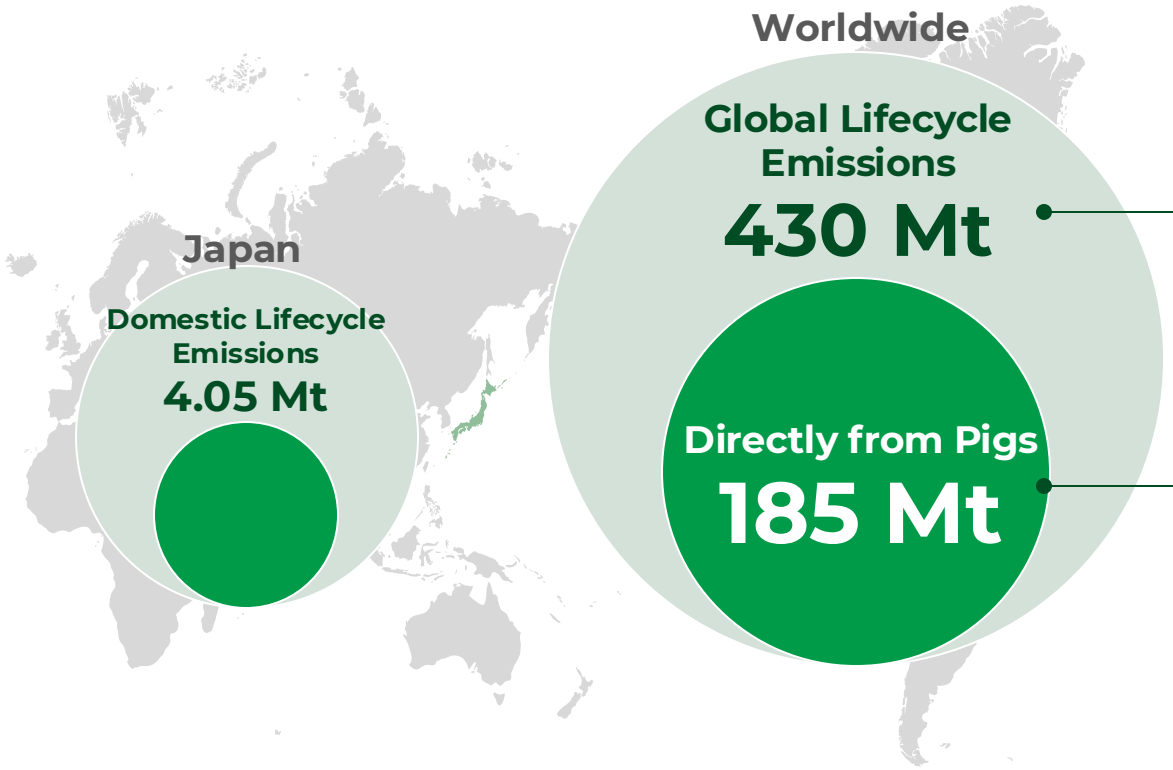
These figures are several times higher than the global GHG emissions from motorcycles, suggesting that global regulations and rules for the livestock and pig farming industries may be established in the future.



## CO2 Composition Across the Entire Pig Farming Lifecycle (Estimates)

### (Based on the Scope Defined by the Ministry of Agriculture, Forestry, and Fisheries)




Global GHG emissions from motorcycles

**90** million tCO2/ year

**4.8** more emissions than motorcycles

**2.0** more emissions than motorcycles

Source: Hishinuma (2015) " Estimation of greenhouse gas emissions associated with pork production systems using LCA methodology" Composition ratio Based on the above, estimates were made from GHG emissions

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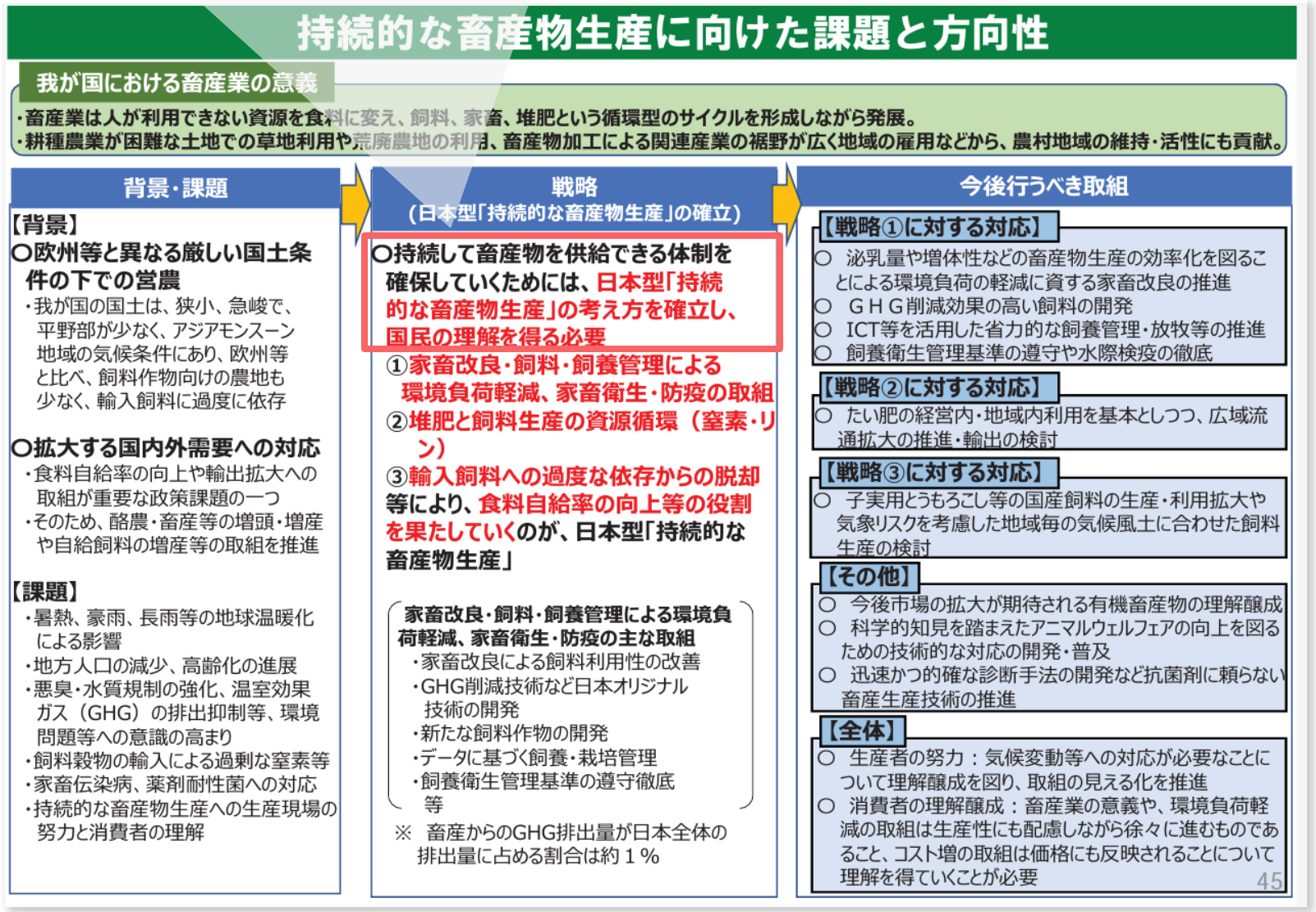
# [Reference] MAFF “Green Food System Strategy"

Due to limited farmland for feed crops and specific climate conditions, Japan is currently overly reliant on imported feed. As domestic and international demand continues to grow, it is necessary to establish a sustainable livestock production system, including resource circulation in livestock management, composting, and feed production.

This was outlined in a document by the Ministry of Agriculture, Forestry and Fisheries on May 12, 2021.

In order to ensure a sustainable supply of livestock products in Japan, it is necessary to **establish a uniquely Japanese concept of "sustainable livestock production" and gain public understanding**.
(Ministry of Agriculture, Forestry and Fisheries, May 12, 2021)




Source：MAFF Website (www.maff.go.jp/j/kanbo/kankyo/seisaku/midori/attach/pdf/index-10.pdf)

Eco-Pork

# 4 Eco-Pork’s Initiatives

Eco-Pork

# Automation in Pig Farming

By combining the Porker pig farming management support system with various IoT sensors and pigsty environment controllers, Eco-Pork aims to automate pig farming. Traditionally, improvements in productivity and production volume have been achieved through the expertise of specialized trainers.

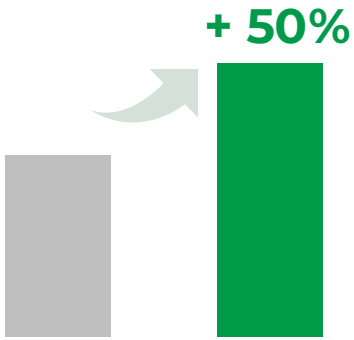
With the automation of pig farming, we can increase pork production while simultaneously improving productivity. This also leads to a reduction in feed consumption, GHG emissions, and the use of medication, contributing to the reduction of environmental impact.

## Automation of Pig Farming
### Using Data from ICT/IoT/AI and Pig Farming Equipment

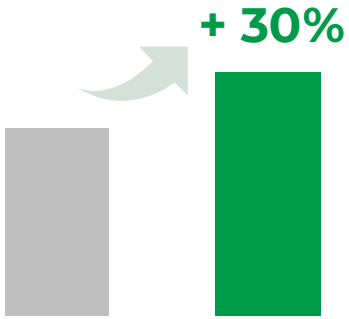

Monitoring and Control of:

- ✓ **Pig Status**
- ✓ **Feed**
- ✓ **Water**
- ✓ **Breeding Environment**

## Expected Benefits of Pig Farming
### Automation & environmental impact

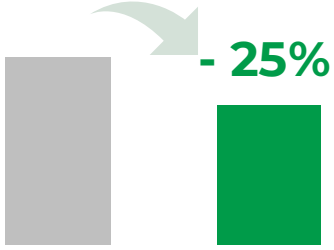



①Pork Production Vol.




②Feed efficiency


③Medication Use



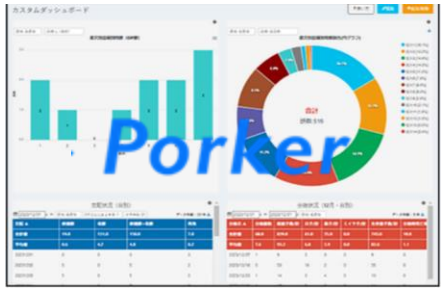

④GHG emissions

Eco-Pork

# Core Products

Currently, we are developing solutions centered around two products, "ABC" and "Porker," to support farmers in improving productivity.

ABC enables optimal shipping timing by measuring weight using AI cameras. Porker facilitates high-precision production management by accumulating, visualizing, and analyzing pig farming data.



| | ABC | Porker | DX Pig Farm |
|---|---|---|---|
| Product | | | |
| Technology | **Biometric Data Acquisition Technology** | **Data Analysis & Production Management Technology** | **Breeding & Control Automation Technology** |
| Issues | The key goal (KGI) of accurately measuring pig weight is not achieved, making it difficult to ship pigs at the appropriate weight. | Management relies on intuition and experience, leading to a lack of data accumulation and visualization regarding productivity and the environment. | Due to the decline in the number of pig farmers and an increase in the number of pigs per farm, workloads within the pig farm have increased. |
| Solution | AI cameras measure weight and body size, enabling optimal shipping timing and supporting farmers' productivity. | By visualizing data, identifying issues, and optimizing management, it enhances productivity and profitability for farmers. | By automatically collecting and controlling various farm data, including ABC/Porker (e.g., air conditioning), labor-saving and productivity improvements are achieved. |
| Achievements | Adopted by major food processing manufacturers and national agricultural organizations (as of 2024). | Domestic adoption rate: 14.6% (as of October 2024). | Under demonstration in a MAFF project (since 2023). |

Eco-Pork

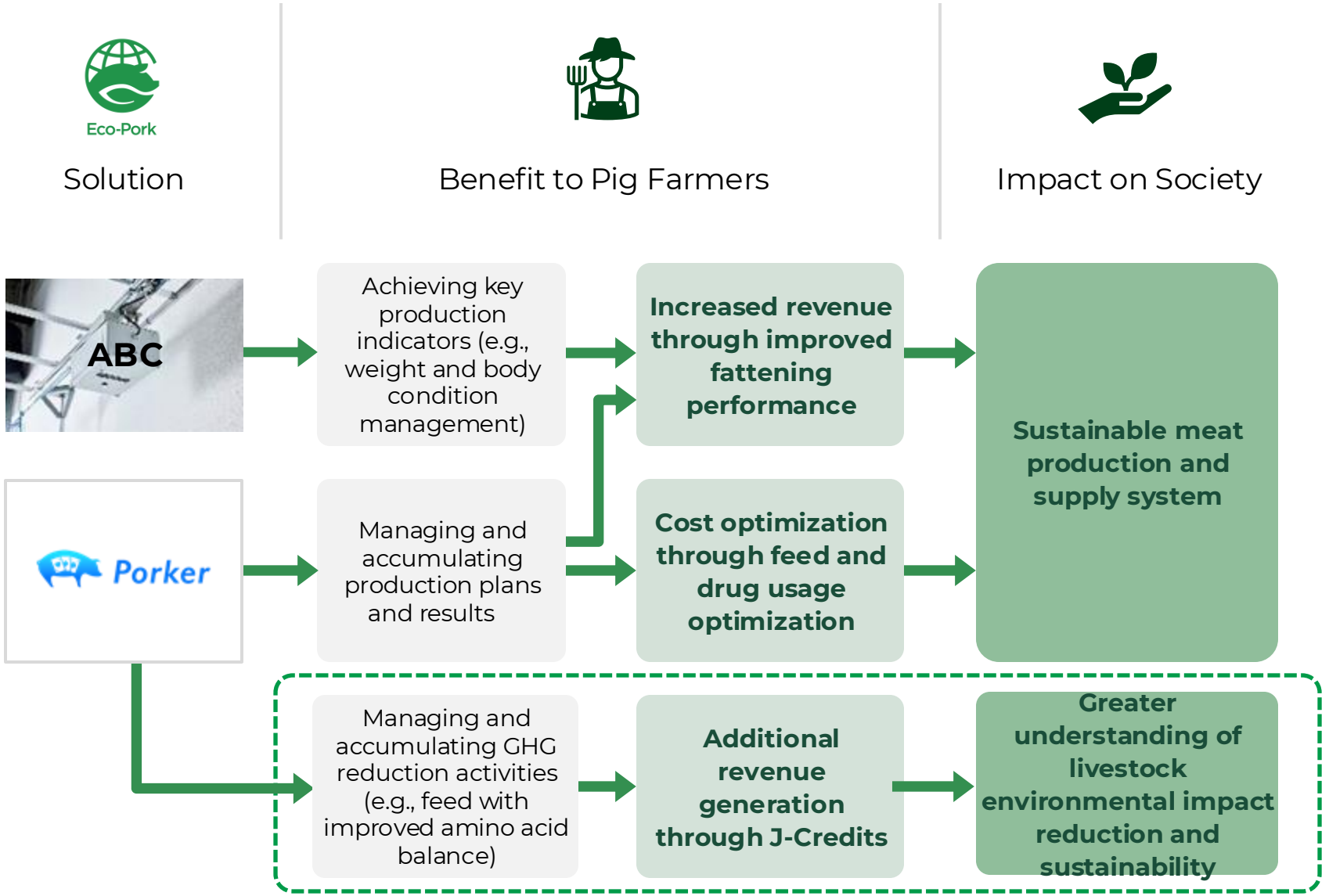
# Revenue Return to Farmers Through Environmental Impact Reduction

In 2024, we launched Japan's first initiative to create J-Credits in pig farming.

Through Porker, we support farmers in monitoring GHG reduction activities and handle procedures such as credit certification applications on their behalf.

By utilizing Porker, farmers can visualize not only production management but also GHG emission reductions, enabling them to earn additional income through J-Credits.

Eco-Pork helps ensure farmers' investment capacity, contributing to the sustainable improvement of farm management.




**Utilizing the J-Credit Creation Project, we establish a framework to support further farm management improvements and secure investment capacity for farmers.**

Eco-Pork

# [Reference] Methodology of J-Credit AG-001

J-Credit is a system recognized by the government that certifies the reduction or absorption of CO2 and other emissions as credits. In the pig farming industry, a method applicable under this system is registered as AG-001.

By replacing conventional feed with amino acid balanced feed that has a lower CP (crude protein) content, the amount of amino acids (nitrogen compounds) that cannot be digested in the body and are included in manure is reduced. This helps suppress N2O (nitrous oxide) emissions during manure processing.

Credits can be obtained for the difference in GHG emissions between using conventional feed and using amino acid balanced feed.

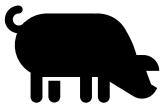


## AG-001 "Feeding Amino Acid Balanced Feed to Cattle, Pigs, and Broilers"

**Conven-tional feed supply**

feed

**Conventional feed**
CP (Crude Protein) content rate：14.5%

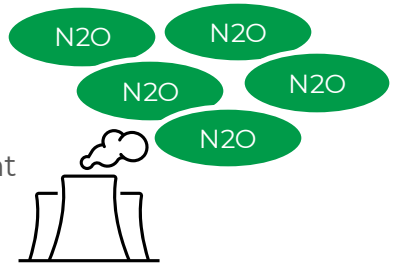


Digestion and Decomposition

manure


Undigested amino acids (nitrogen compounds) are included in the manure.

manure management



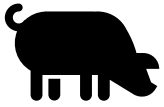

N2O is emitted during manure processing.

−

**Amino acid balanced feed supply**

feed

**Amino acid balanced feed**
CP (Crude Protein) content rate：**12.75%**

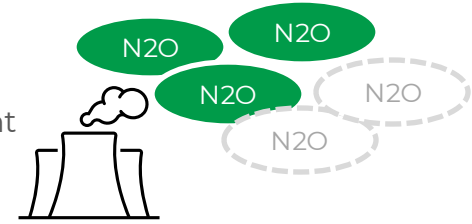


Digestion and Decomposition

manure


**Reduction** in undigested amino acids (nitrogen compounds) **in manure.**

manure management

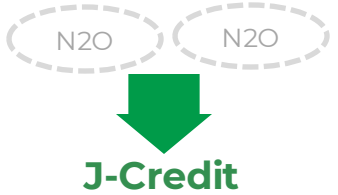



**Reduced N2O emissions** during manure processing.

∨

**Reduction by AG-001**

Credits are awarded for the reduction in GHG emissions achieved by feeding amino acid balanced feed compared to conventional feed.



Eco-Pork

# Our Products' Alignment to Animal Welfare

FAIRR, a global livestock initiative, emphasizes the need to address animal welfare, citing risks such as the global spread of infectious diseases and a decline in growth and reproductive abilities due to improper livestock management.

Our products comply with the basic policies outlined in animal welfare guidelines. By offering the Porker system, we help farmers implement and track specific activities related to animal welfare, supporting their efforts to achieve better practices.

## FAIRR's Evaluation Criteria for Animal Welfare and Eco-Pork's Product Alignment

- FAIRR considers animal welfare to be a significant risk factor and evaluates policies and performance related to it.
- Eco-Pork provides product solutions that align with each of the evaluation criteria.

| FAIRR Evaluation Criteria | | Specific details | Corresponding Eco-Pork products and initiatives |
|---|---|---|---|
| Policy (Recognition and Reflection of the Five Freedoms ) | Hunger, Malnutrition, and Thirst | • Provide animals with continuous access to fresh water and a diet that maintains health and vigor. | • **AI Pig Camera (ABC):** Utilizes weight verification and appropriate feeding |
| | Heat Stress or Physical Discomfort | • Ensure proper shelter and a comfortable resting area.<br>• Maintain appropriate ventilation, temperature, and humidity. | • Temperature and Humidity Sensors (Porker IoT): **Controls the pigsty environment.** |
| | Pain, Injury, and Disease | • Disease prevention/health management<br>• Appropriate diagnosis and treatment | • **Porker IoT:** Monitors health conditions and reduces the accident rate. |
| | Express Normal and Natural Behavior | • Provide sufficient space, proper facilities, and the company of the animal's own kind to allow for natural behavior. | • **Development of individual identification and disease detection technologies to enable free-stall breeding.** |
| | Fear and Distress | • Identifying signs of stress, etc.<br>• Appropriate response | • **Porker IoT** : Monitors health conditions and reduces the accident rate |
| Performance | | • Specific actions and activities related to welfare improvement. | • **Data accumulated on Porker** makes it possible to quantify |
| Certification | | • Animal welfare certification based on performance. | • Providing "**Eco-Pork Certification"** considering animal welfare. |

Eco-Pork's unique certification is given

Eco-Pork

# 5 Progress

Eco-Pork

# Progress Summary

As of October 2024, Porker's market share expanded from 11.0% to 14.6% compared to the previous year, with an estimated ¥7.08 billion increase in sales for pig farmers.

Additionally, in 2024, we launched a program utilizing J-Credits to reduce GHG emissions. While improving productivity and reducing environmental impact in Japan's pig farming industry, we also aim to expand this initiative globally.

Furthermore, we continue large-scale domestic trials to optimize feed efficiency and drug use, verifying their effectiveness.

| Social Issues | Impact Goals | Current Progress | Future Initiatives |
|---|---|---|---|
| Avoiding the protein crisis  | 1 Increasing pork production by 50% | ✓ Verified 21% increase in production through Smart Agriculture Demonstration Project Report (FY2020-2021)<br>✓ Estimated ¥7.08 billion sales boost for Porker users | ✓ Expand farmer adoption to meet 50% production increase target by 2027<br>✓ Expand Porker/ABC to international markets |
| | 2 Reducing feed use by 30% | ✓ Verified 5% improvement in efficiency through Smart Agriculture Demonstration Project Report (FY2020-2021) | ✓ Further trials in SBIR project (2023-2028) |
| Achieving environment friendly livestock farming  | 3 Reducing antimicro-bial use by 80% | ✓ Developing and testing DX Pig Farm in SBIR project (2023-2028) | ✓ Further trials in SBIR project (2023-2028) |
| | 4 Reducing GHG emissions by 25% | ✓ J-Credit program launched in 2024, utilizing ABC for optimized feed composition and GHG reduction | ✓ Expand participating farmers and explore global expansion toward the 25% reduction target by 2027 |

Eco-Pork

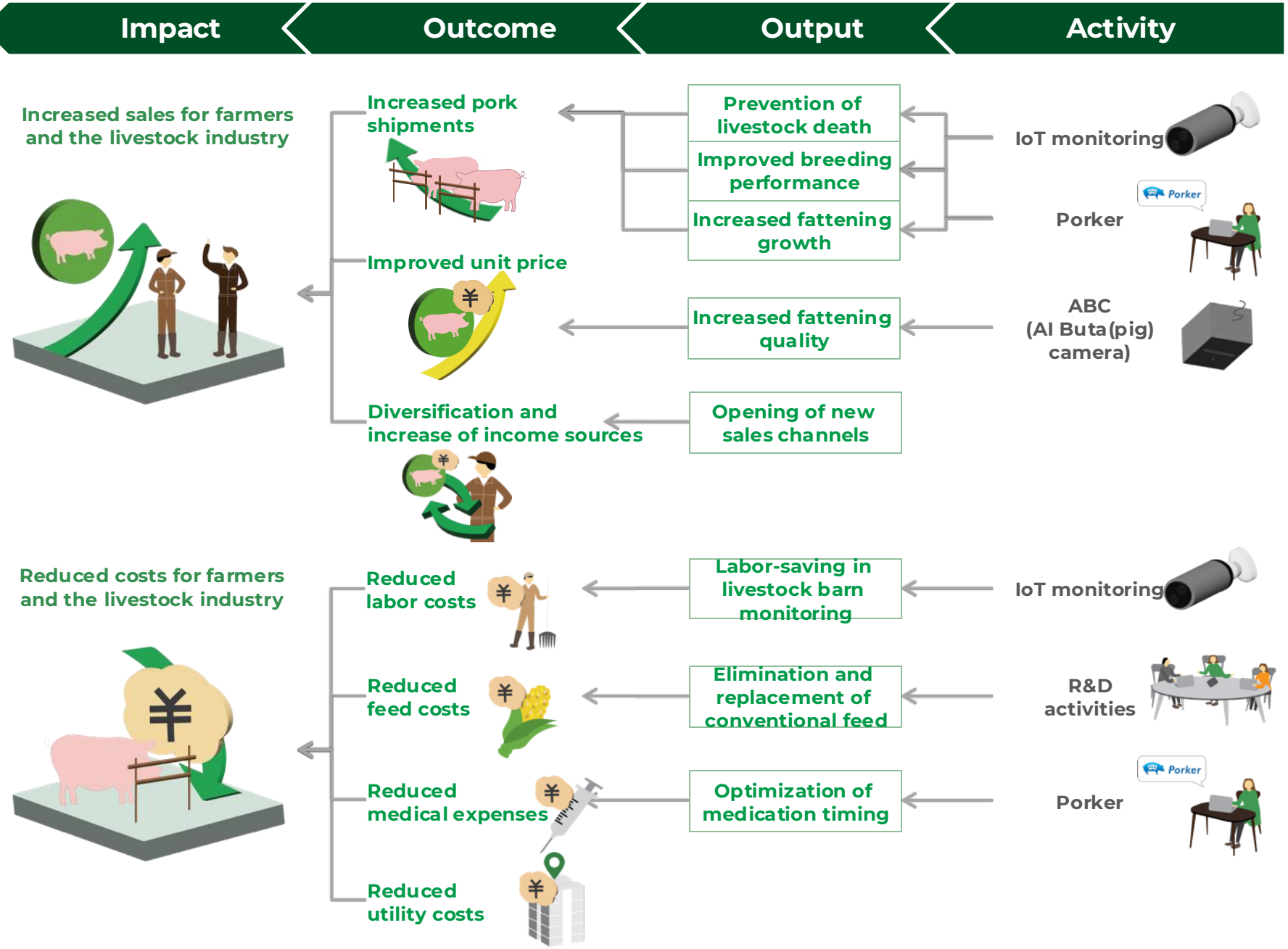
1

# Logic Model for Improving Productivity of Pig Farmers

We created a logic model that analyzes productivity into aspects of sales and costs and organized related activities accordingly. By introducing Porker, our farmer support solution, into farming operations, we help improve pig farming performance, increase shipment volumes, and contribute to higher sales for farmers.

Additionally, our AI pig camera accurately measures the pigs' body weight, enabling precise feeding, improving feed efficiency, and enhancing weight gain, which can lead to increased unit prices.

Our IoT monitoring solutions further contribute to enhanced productivity by optimizing farm operations through continuous monitoring of livestock and housing conditions.



Eco-Pork

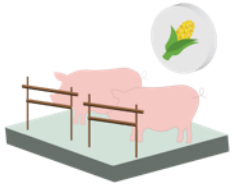
1

# Quantitative Impact on Improving Productivity of Pig Farmers

We quantitatively estimated the impact of the introduction of Porker on increased sales for pig farmers.

Based on our market share as of October 2024, we calculated that the sales increase in the first year of Porker's introduction was approximately 7.08 billion yen.

Furthermore, we have confirmed that the effect of Porker has continued after the first year of introduction, and we expect that the effect will be even greater as more pig farmers introduce and continuously use Porker in the future.

| Impact | Outcome | Output | Activity |
|---|---|---|---|
| **Increased sales for farmers and the livestock industry** | **Increased pork shipments** | **Improved breeding performance** | **Introduction of Porker** |
|  |  |  |  |
| **Increased sales for farmers**<br>**7.08 billion yen**<br>**Meat production volume increase**<br>**12,000t/year** | **Shipment volume increase**<br>**164,876 heads** | **Total piglets increase**<br>**216,943 heads** | **Number of sows**<br>**110,923 heads** |
| • The estimated carcass weight per pig is 74.7 kg.<br>• **A total of 12,000 tons of carcass meat, equivalent to 8,000 tons of trimmed meat, reached more consumers.**<br>• This calculation is based on the shipment weight, carcass yield, and transaction price per carcass. The price per kilogram of carcass meat is approximately 575 yen (MAFF, 2023).<br>• **Farmers' sales increased by 7.08 billion yen.** | • **76% of the total number of piglets produced have been shipped.**<br>• Based on an average litter size of 12.7 and 10.4 weaned piglets, with a 7.1% post-weaning mortality rate, the shipment number is 9.66 pigs per litter, or 76% of births (Japan Pig Farmers Association, 2023). | • For farms that have introduced Porker, the total number of piglets produced **improved by approximately 7% in the first year.**<br>• On average, the number of piglets produced has continued to improve by around 2% annually in subsequent years.<br>• The average sow turnover rate is 2.2, and the average number of piglets per litter is 12.7 (JPPA, 2023).<br>• An improvement of 0.889 piglets, representing 7% of 12.7 piglets, was calculated as the first-year effect of introducing Porker. | • As of October 2024, **the number of sows on farms that have adopted Porker is 110,923**.<br>• The total number of sows in the country is 758,300 (MAFF, 2024), representing **approximately 14.6% of the domestic share.** |

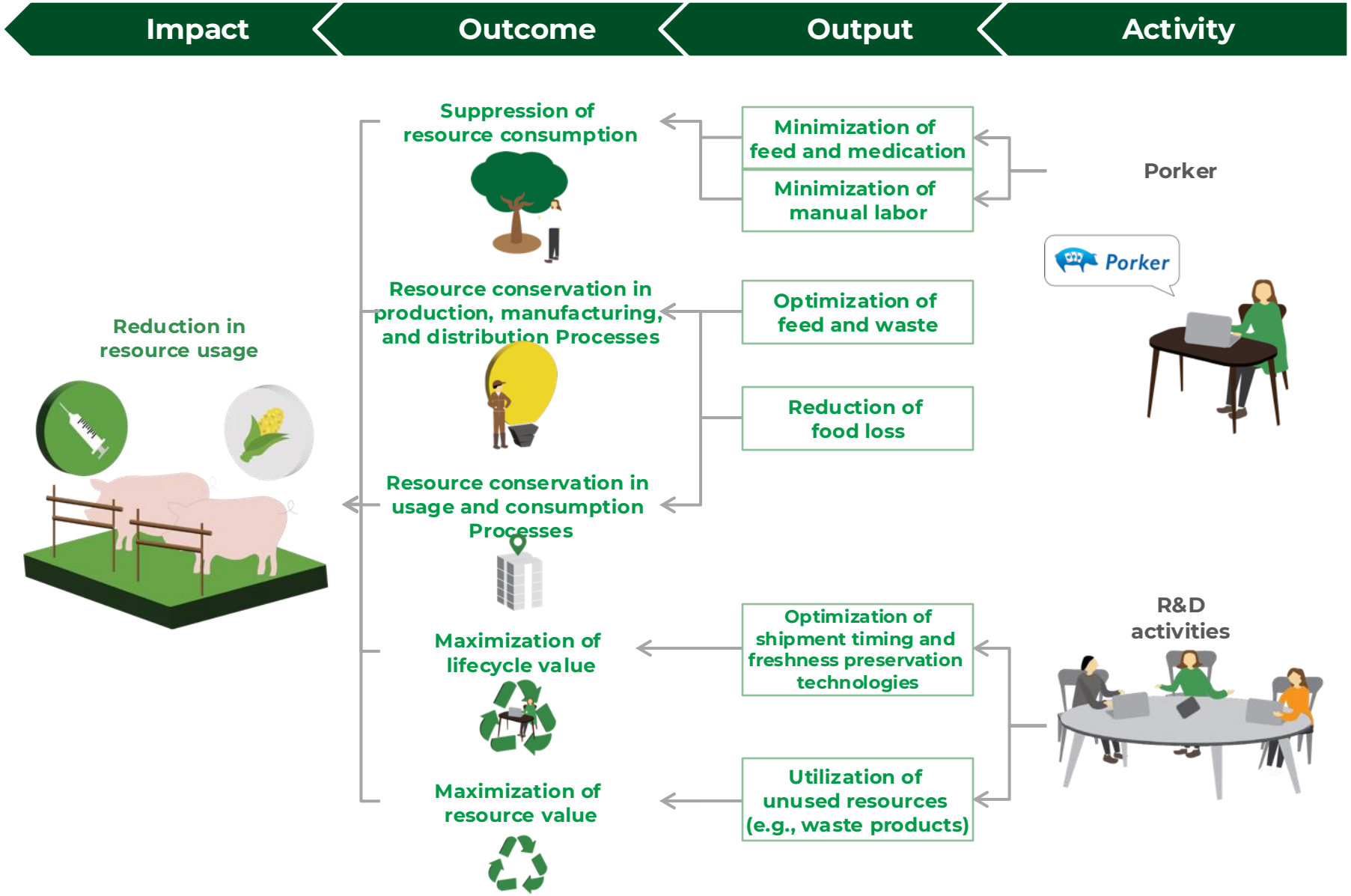
Source: Ministry of Agriculture, Forestry and Fisheries, Japan Pork Producers Association, Our Porker data

2 3

# Logic Model for Reducing Resource Usage (Feed and Antimicrobial Use)

To reduce resource usage, a comprehensive approach is necessary, including not using resources in the first place, minimizing usage in each process (resource conservation), and maximizing resource value throughout the entire lifecycle, including reuse and recycling.

As mentioned earlier, reducing feed usage and the use of antimicrobials in pig farming are important social issues. We aim to reduce feed usage by 30% and antimicrobial use by 80% by 2027, and we are advancing various initiatives to achieve these targets.



Eco-Pork

2

# Improving Feed Efficiency

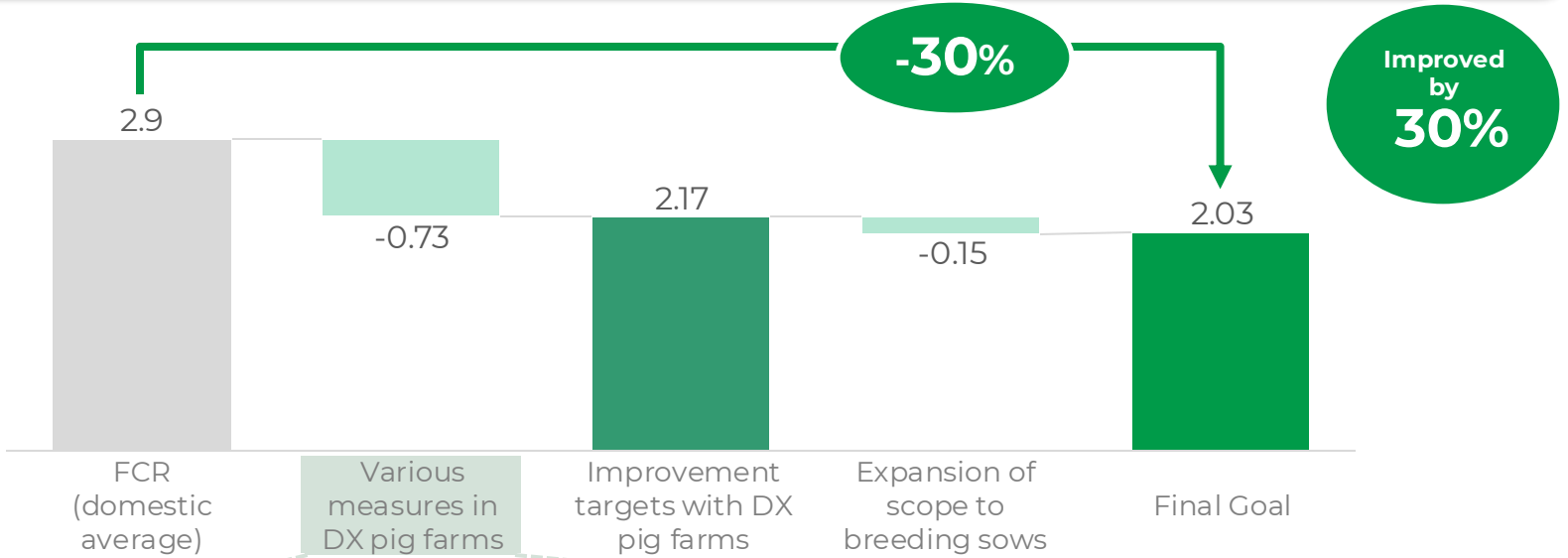
Global pig grain consumption reaches 600 million tons annually, 1.3 times the world's rice production. Improving feed efficiency is crucial for sustainable livestock farming.

In Japan, feed costs account for 60% of pig farming expenses, making efficiency improvements a key cost-saving factor.

By implementing DX pig farms, we aim to enhance management systems and improve feed efficiency by 25% for fattening pigs. Expanding this to breeding sows could add another 5% improvement, ultimately targeting a 30% reduction in feed use.

**Initiatives:**
**Sophisticated and automated management system with DX piggery including AI Buta(pig) Camera/Porker**

Porker




**Optimizing nutrient excess and deficiencies under traditional feeding improves FCR by 0.3.**

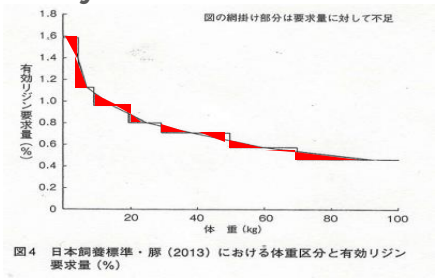



図4 日本飼養標準・豚（2013）における体重区分と有効リジン要求量（%）

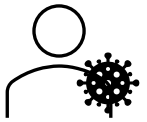
**Achieving a similar management system to top farms improves FCR by 0.33.**

The average farm period is shortened by 21.4 days, from 187.0 days to 165.6 days, by implementing detailed management akin to top farms.

Average farm 187.0 days → Top farm 165.6 days

**Shortened by 21.4 days**

**Reducing accidents through the minimization of human intervention in daily management improves FCR by 0.1.**



Preventing disease entry by reducing human contact lowers accident rates from 6.46% to 3.02%.

*FCR (Feed Conversion Ratio): The amount of feed required to gain 1 kg of body weight. The domestic average is 2.9 kg.

Eco-Pork

3

# Reducing Antimicrobial Use

The use of antimicrobials in livestock farming in Japan is 1.8 times that of human pharmaceuticals, amounting to 1,021 tons per year. In pig farming, reducing disease prevalence and antimicrobial use not only improves resource efficiency but also leads to cost and labor reductions.

Digitizing pig barns enables the automation of barn operations and the reduction of human involvement in daily management, which decreases the rate of accidents. Consequently, this contributes to a reduction in antimicrobial use.

**Initiatives:**
**Automation of barn operations with DX pig barns**
**Unmanned daily management**

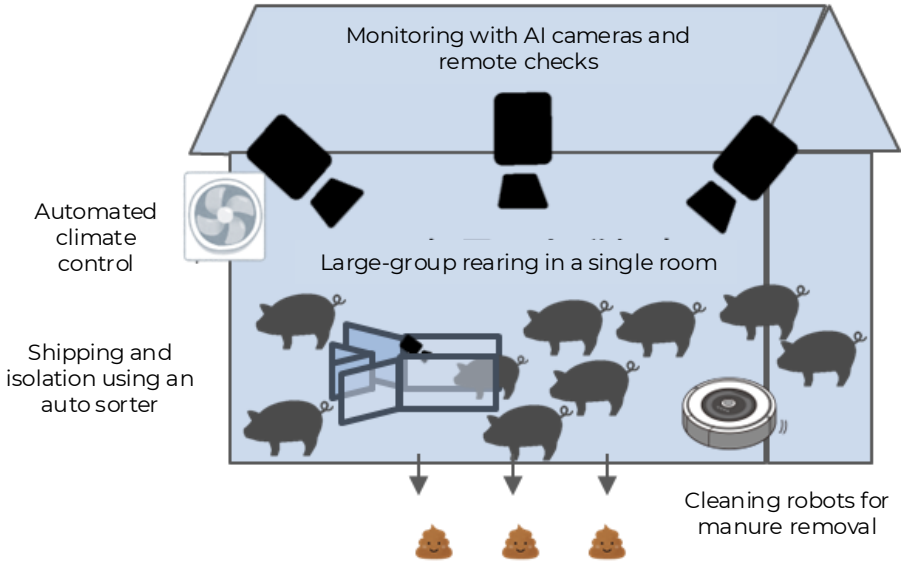
Porker

## 80% reduction in antimicrobial use

Reduced by 80%

**With our DX pig barns, barn operations can be automated. By eliminating human involvement in daily management, we prevent the introduction of pathogens by people and reduce the post-weaning accident rate (accident rate from 6.46% to 3.02%).**
**→ This leads to a reduction in the use of antimicrobials.**

### Management Image of DX Pig Barns



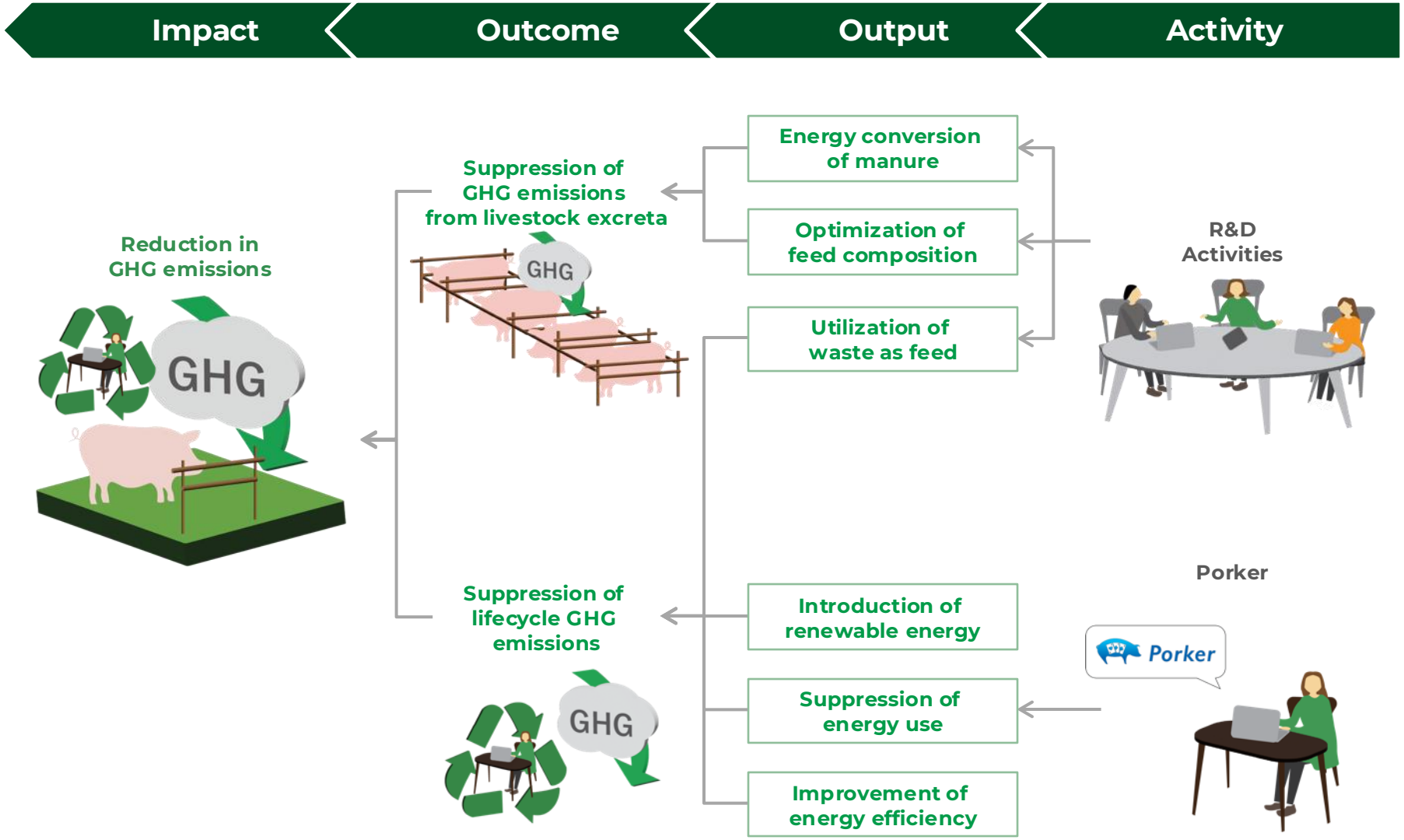
Eco-Pork

4

# Logic Model for Reducing GHG Emissions

Regarding GHG emissions, we believe that it is necessary to reduce not only the GHG emitted from livestock but also the GHG emissions across the entire lifecycle of pig farming.

We are aiming to reduce GHG emissions by 25% by 2027 and are advancing various initiatives to achieve this goal.



Eco-Pork

4

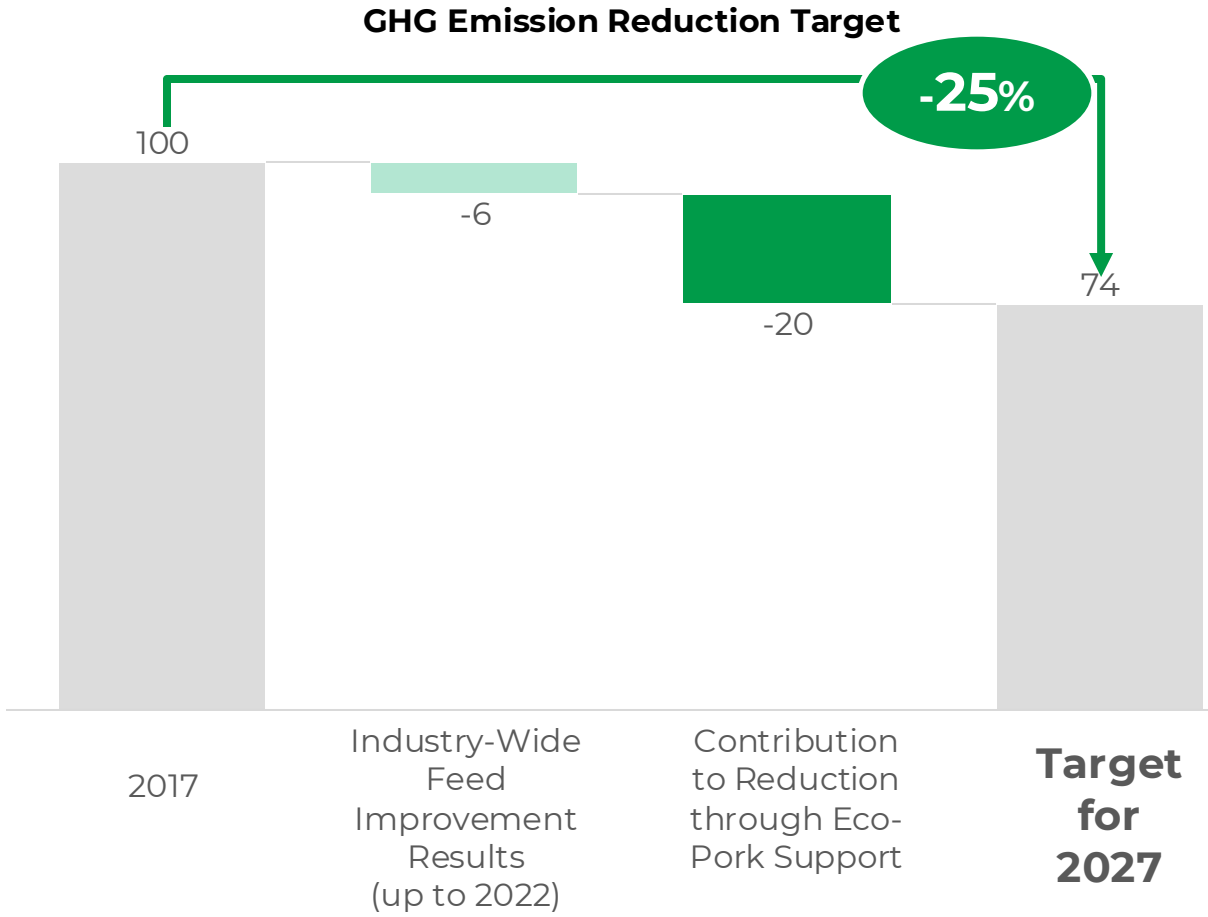
# Reducing GHG Emissions

As mentioned in Chapter 2, GHG emissions from pig manure management are significant. However, it has been demonstrated that using low crude protein (CP) feed can reduce GHG emissions from manure. This methodology is registered as "AG-001" under the J-Credit scheme.

We aim to contribute to a 25% reduction in GHG emissions by 2027, compared to 2017 levels. While the entire industry is gradually reducing the CP rate of conventional feed, Eco-Pork is further committed to supporting farmers in promoting the use of J-Credits and the introduction of low CP feed to achieve additional reductions.

## Contributing to a 25% Reduction in GHG Emissions

Reduced by 25%




J-クレジット
当該事業は、J－クレジット制度に登録されたプロジェクトとして、地球温暖化対策に貢献しています。

### Eco-Pork Supports

- Promoting the introduction of low crude protein (CP) feed to pig farmers
- Various support for registering as J-Credit
  - ✓ Collecting evidence using Porker
  - ✓ Application agency services
  - ✓ Sale of credits

Source: Company analysis and estimates based on Eco-Pork customer case studies.

Eco-Pork

# 6 Future Outlook

# Expansion of Solutions Overseas

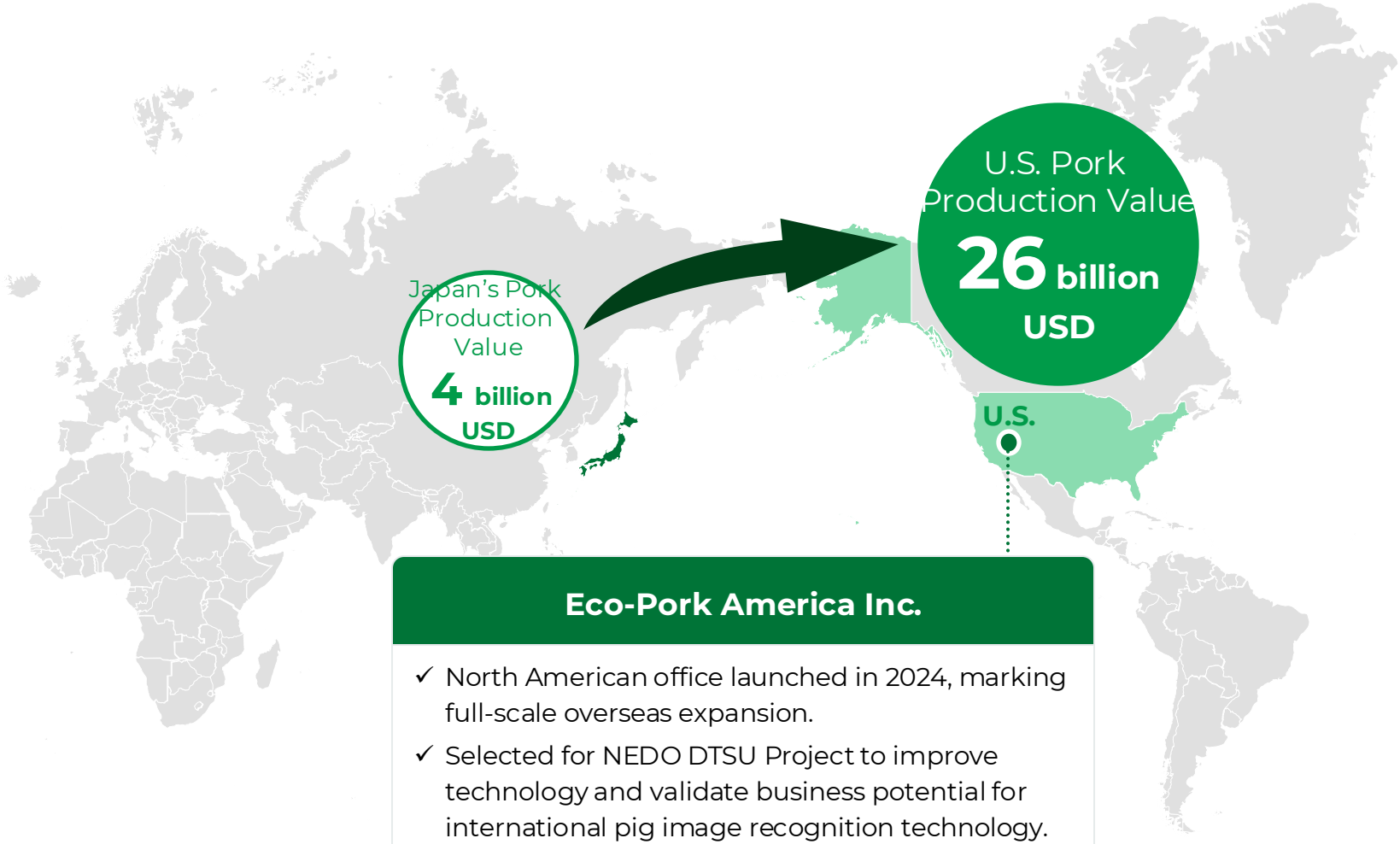
To accelerate global expansion, Eco-Pork established a North American office in November 2024.

Additionally, our project on international development of pig image recognition technology was selected for the 2024 NEDO Deep-Tech Startups Support Program (DTSU Project).

With increasing awareness of livestock environmental impact, our solutions aim to enhance productivity and sustainability, contributing to stable global meat supply.

Global Pork Production Value

**260 billion USD**




## Eco-Pork America Inc.

- ✓ North American office launched in 2024, marking full-scale overseas expansion.
- ✓ Selected for NEDO DTSU Project to improve technology and validate business potential for international pig image recognition technology.
- ✓ Conducting pilot tests for ABC's global expansion.

# Expansion of Solutions Overseas

The U.S., as one of the world's largest pork markets, presents significant potential for DX adoption. Based on our success in Japan, we are collaborating with local U.S. pork producers to refine our DX solutions.

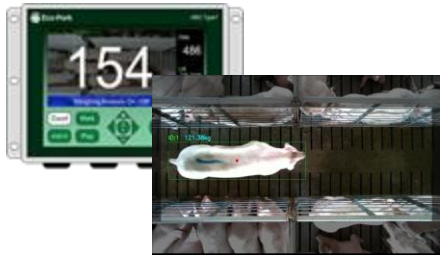
Our AI Bio-sensing Camera, optimized for U.S. standards, enables weight measurement and shipment optimization, contributing to productivity improvements, labor savings, and environmental impact reduction.

Through the DTSU project, we will actively incorporate feedback from local producers to enhance our solutions. By accumulating expertise in the U.S. and expanding globally, we aim to improve overall industry productivity and stabilize high-quality protein supply.

## 2021～
## AI Buta(pig) Camera Development in Japan

Verified improvements in shipment rate through the **MAFF's Smart Agriculture Demonstration Project**.

| Grading Rate (National Average) | Expected Improvement with ABC |
|---|---|
| High: 51.5% | High: **65.8%** |
| Medium: 37.3% | Medium: 23.5% |
| Standard: 11.0% | Standard: 10.5% |




## 2024～
## AI Bio-sensing Camera Deployment in the U.S.

Launched field trials in the U.S. for the international expansion of pig image recognition technology under the **NEDO DTSU Project.**

**Leveraging technology developed in Japan to address challenges in the U.S..**

## 2025 onward
## Global Expansion of ABC

Leveraging our brand built through **public and industry collaborations in Japan and the U.S., along with expertise and technical knowledge gained through our projects**, we are expanding ABC globally.

Our goal is to enhance **industry-wide productivity and stabilize protein supply.**

# Disclosure of the IMM Process

To realize our vision of a data-driven circular pork economy and pass down meat culture to the next generation, we prioritize incorporating impact into business and management decisions.

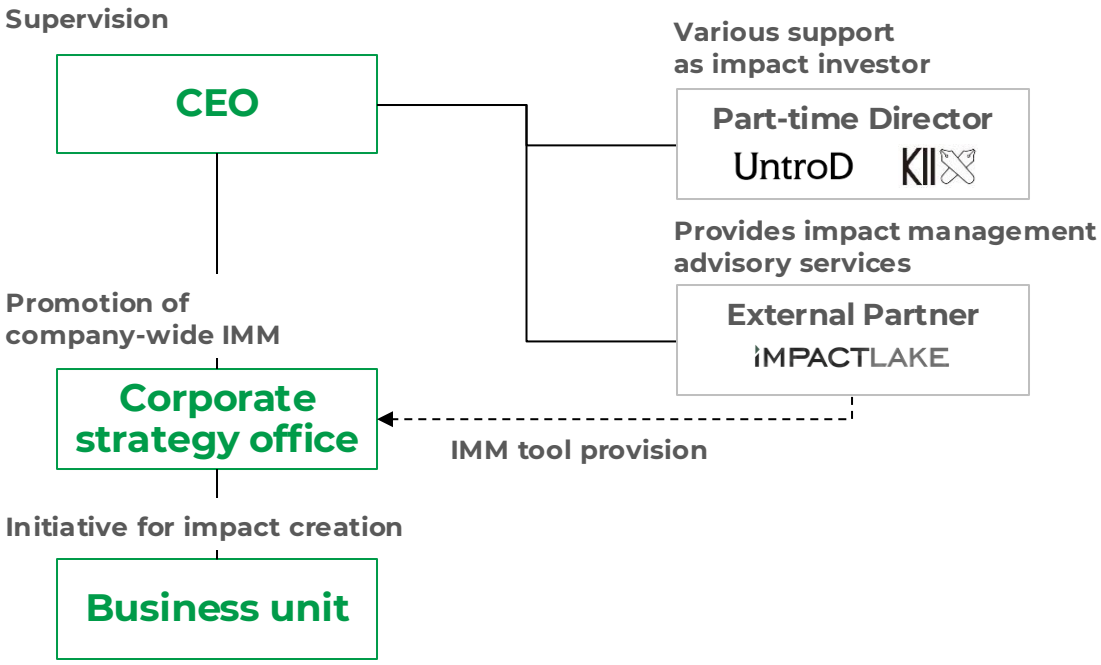
As part of this effort, we defined the objectives and processes of Social Impact Measurement & Management (IMM) and published an Impact Report in February 2024, followed by a GHG data update in September.

This time, we updated information on Porker's market expansion and our U.S. office launch. We will continue sharing key updates to drive our impact goals forward.

## Purpose of Eco-Pork's IMM

**Define key impact indicators based on the concept of "passing down meat culture to the next generation."**
**Evaluate the status of business promotion from both financial and impact perspectives and utilize this information for management decisions.**

## IMM Implementation Structure



Data company for sustainable
Pork Ecosystem

# Eco-Pork