



NEDO's Challenges and Developments in Food Tech

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Agenda

- 1. Overview of NEDO**
- 2. Food Security**
- 3. Policies and Goals**
- 4. Case Studies**

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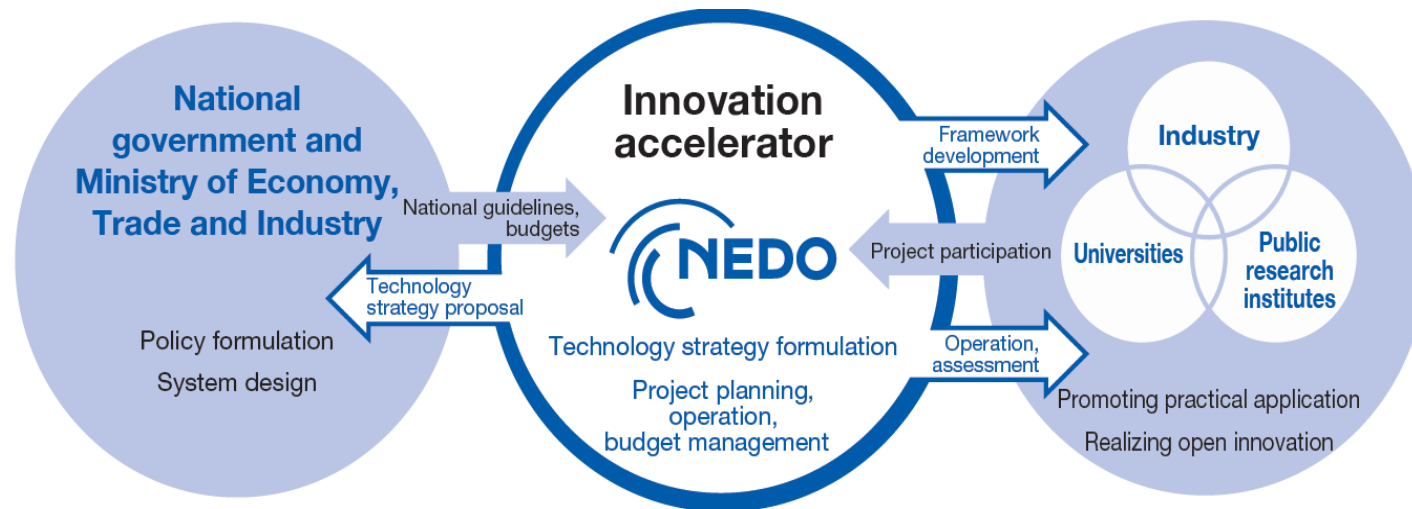
Overview of NEDO

Basic information



New Energy and Industrial Technology Development Organization (NEDO)

Designation	National Research and Development Agency
Mission	1. Addressing energy and global environmental problems 2. Enhancing industrial technology
Foundation	1980
Budget	0.91 billion EUR (FY2025) and additional funds
Employees	1,640 (as of April 1, 2026)



Overview of NEDO

Fields for NEDO Technology Development

- NEDO covers a wide range of technology fields needed for the future

Energy and Environmental Fields

New energy



Clean coal technologies



Energy conservation



Rechargeable batteries and energy systems



Global warming mitigation



Environment and resource conservation

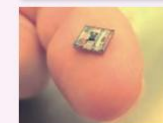
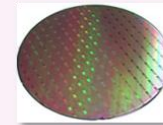


Support for International expansion



Industrial Field

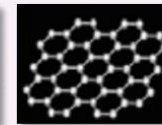
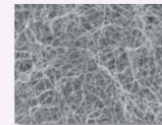
Electronics, information and telecommunication



New Manufacturing technology



Materials and nanotechnology



Crossover and peripheral fields



Robot technology



Overview of NEDO

NEDO Funds



- In addition to our annual budget, the Japanese government has established eight funds at NEDO (totaling approx. 47 billion EUR)



Moonshot Research and Development Program



Specified Semiconductor Funding Program



Post-5G Project

ポスト5G情報通信システム
基盤強化研究開発事業

R&D for Post-5G Information & Communication Systems

DTSU

Deep Tech Startup Support Program



Green Innovation Fund



Fund for Promoting Bio-Manufacturing Revolution



Program on Technologies for Economic Security

Supply Chain

Project for Supporting a Secure & Stable Supply

Agenda

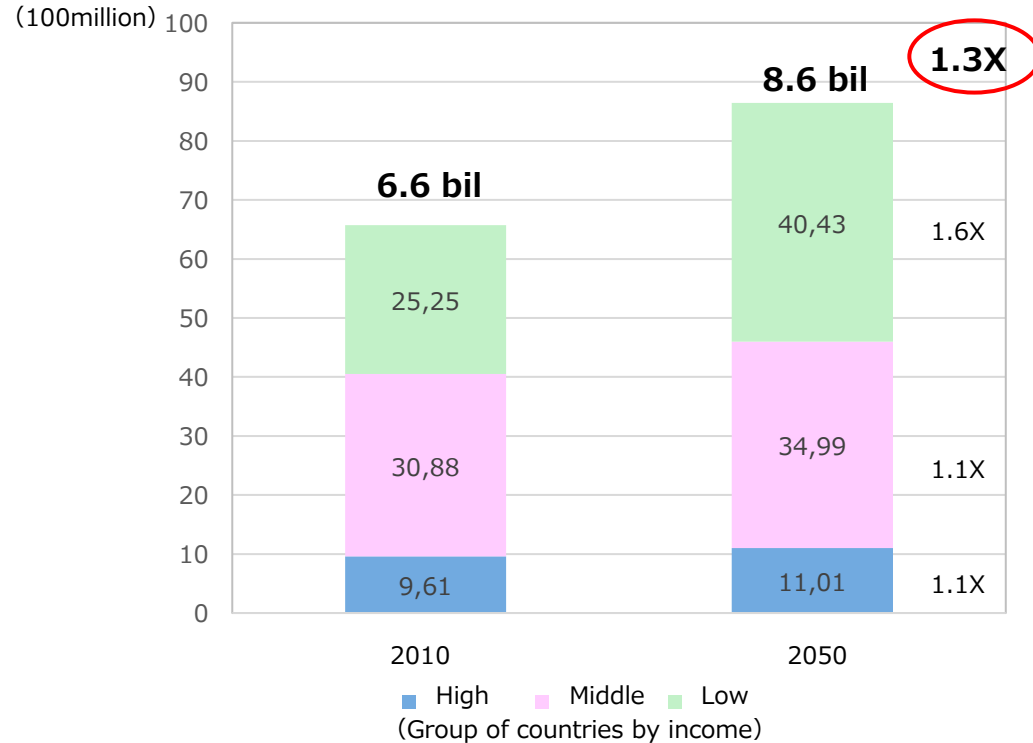
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Food Security

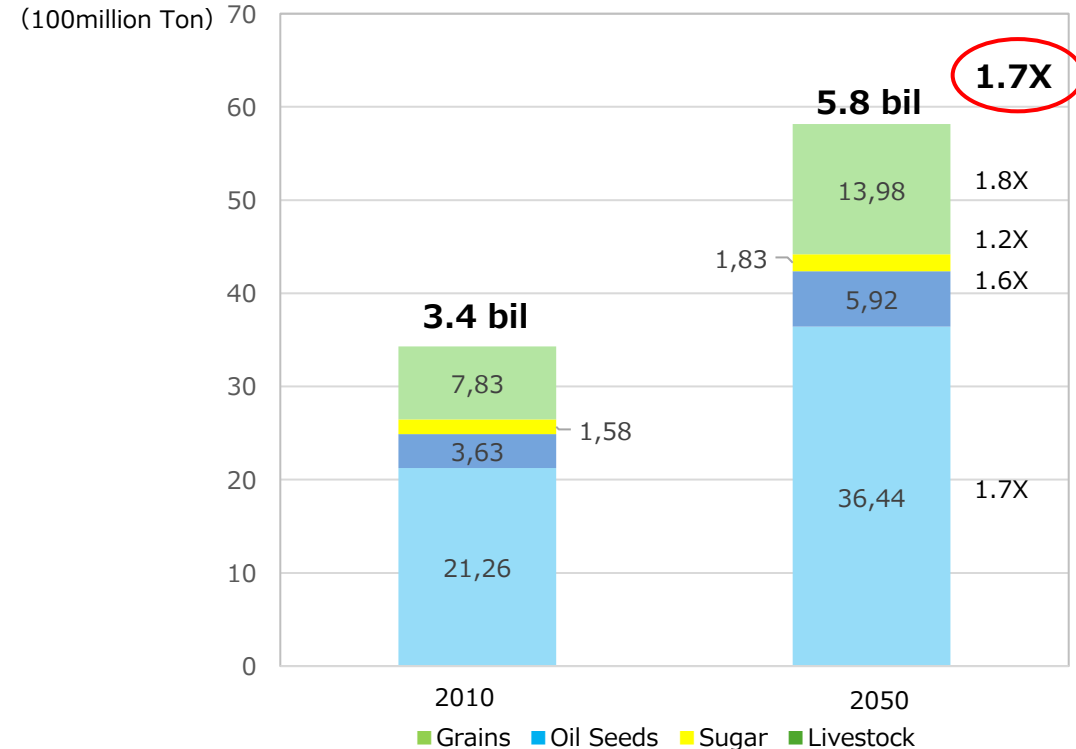
Population and Food Demand Forecasts

- By 2050, the world population will increase to nearly 9 billion, mainly in developing countries (1.3 times of 2010 level)
- Food demand will be 1.7 times of 2010 level (5.8 billion tons), exceeding the ratio of population growth

World Population Forecast



World Food Demand Forecast



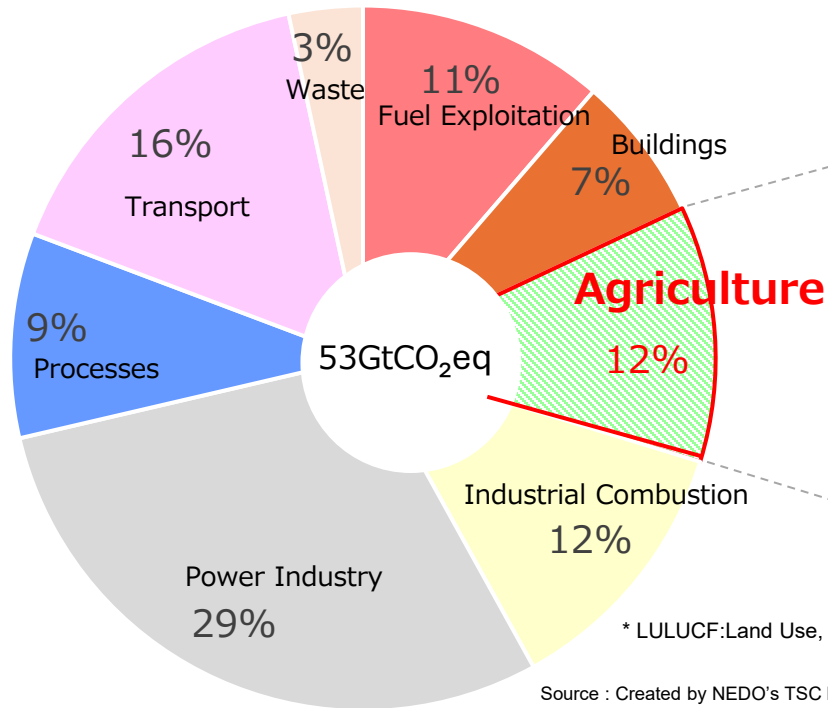
Source : Created by NEDO's TSC based on the report "Global food supply and demand outlook in 2050" by Ministry of Agriculture, Forestry and Fisheries

Food Security

Agricultural Greenhouse Gas Emissions

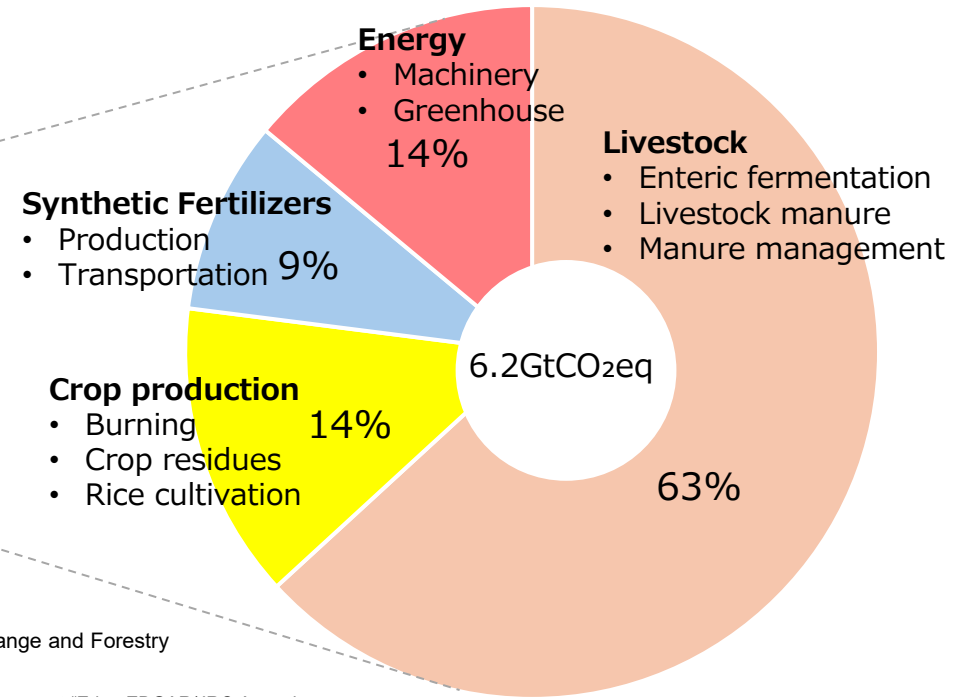
- Anthropogenic greenhouse gas emissions worldwide in 2024 reached 53Gt (CO₂ equivalent)
- The agriculture sector accounts for 6.2 Gt, 12% of the total emissions

Total Greenhouse Gas Emissions (Excluding LULUCF*)



Source : Created by NEDO's TSC based on Statista report "EdgarEDGAR/JRC Annual greenhouse gas (GHG) emissions worldwide from 1990 to 2024 by sector"

Agricultural Greenhouse Gas Emissions

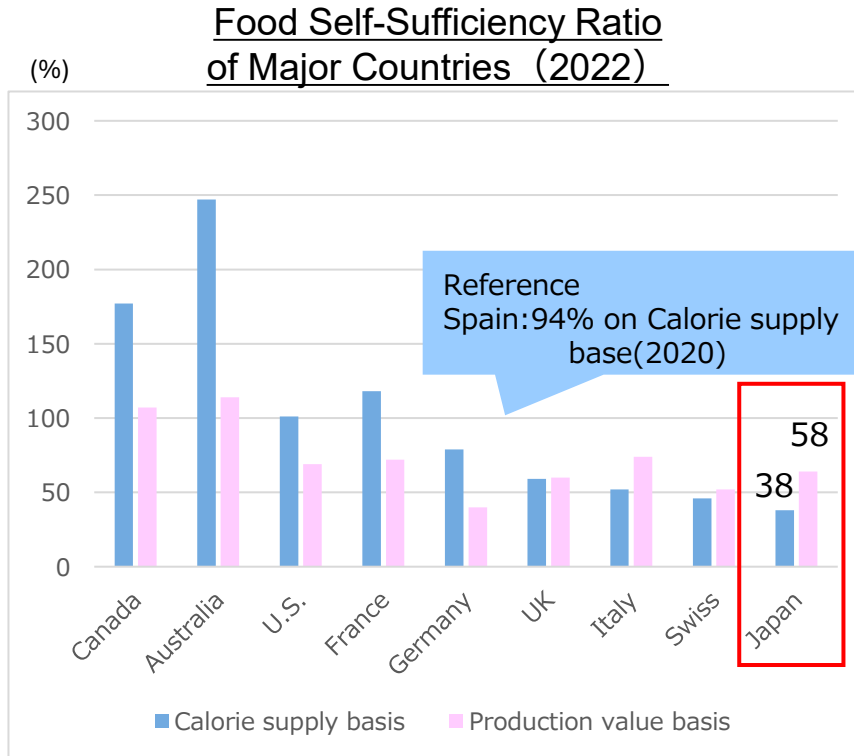


Source : Created by NEDO's TSC based on Statista report "FAO Emissions from agriculture and forest land worldwide in 2021 by component"

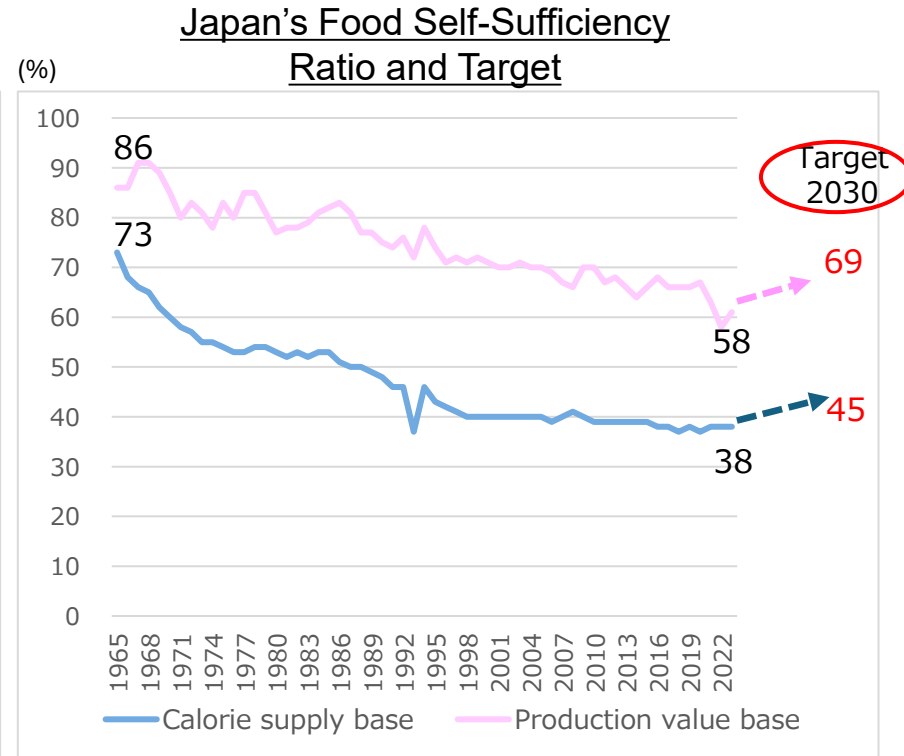
Food Security

Food Self-Sufficiency Ratio of Japan and Other Major Countries

- Japan's food self-sufficiency ratio is relatively low, both on a calorie supply basis and on a production value basis
- As Japan's food self-sufficiency ratio continues to decline, “The Basic Plans for Food, Agriculture, and Rural Areas” established in 2025 aims for 45% on a calorie basis and 69% on a production value basis till 2030



Source : Created by NEDO's TSC based on the report "Food self-sufficiency ratio of Japan and major countries" by Ministry of Agriculture, Forestry and Fisheries



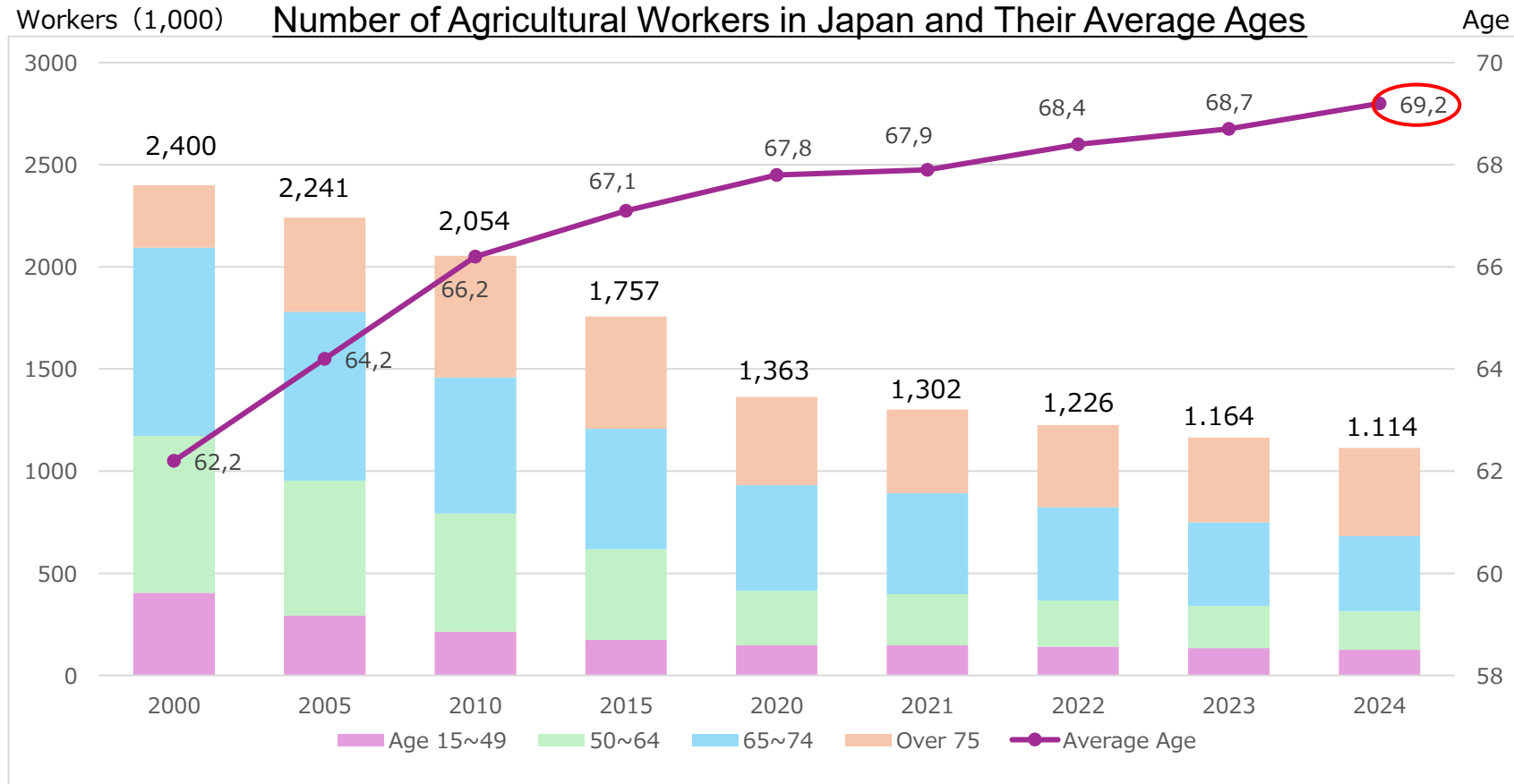
Source : Created by NEDO's TSC based on the report "Japan's food self-sufficiency ratio" by Ministry of Agriculture, Forestry and Fisheries

Food Security

Number of Agricultural Workers in Japan and Their Average Ages



- Since 2000, the number of agricultural workers has decreased by an average of 3% per year
- The average age of agricultural workers in 2024 was 69.2 years old, indicating an aging workforce



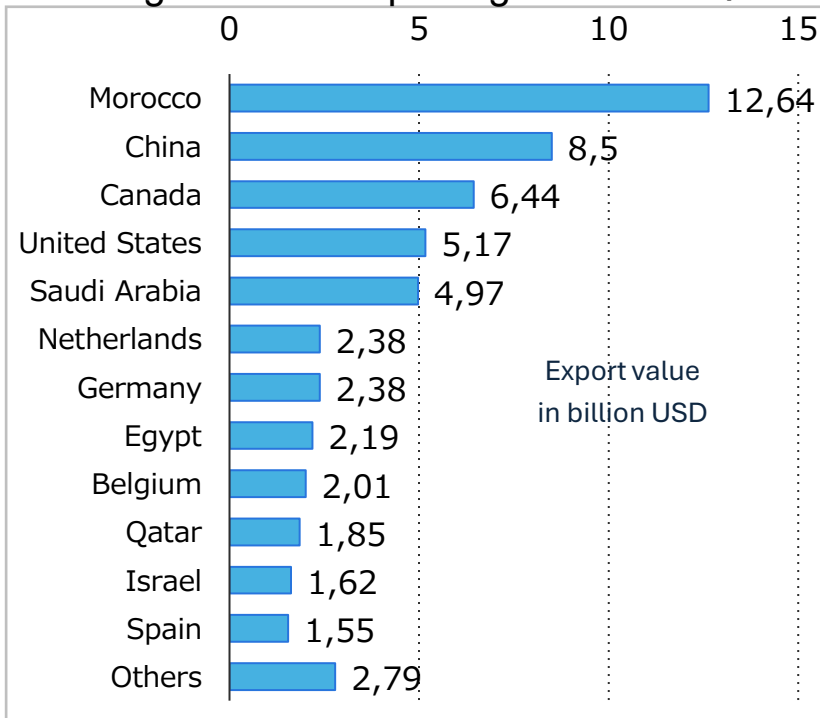
Source : Created by NEDO's TSC based on the report "Number of core agricultural workers and average age", Ministry of Agriculture, Forestry and Fisheries

Food Security

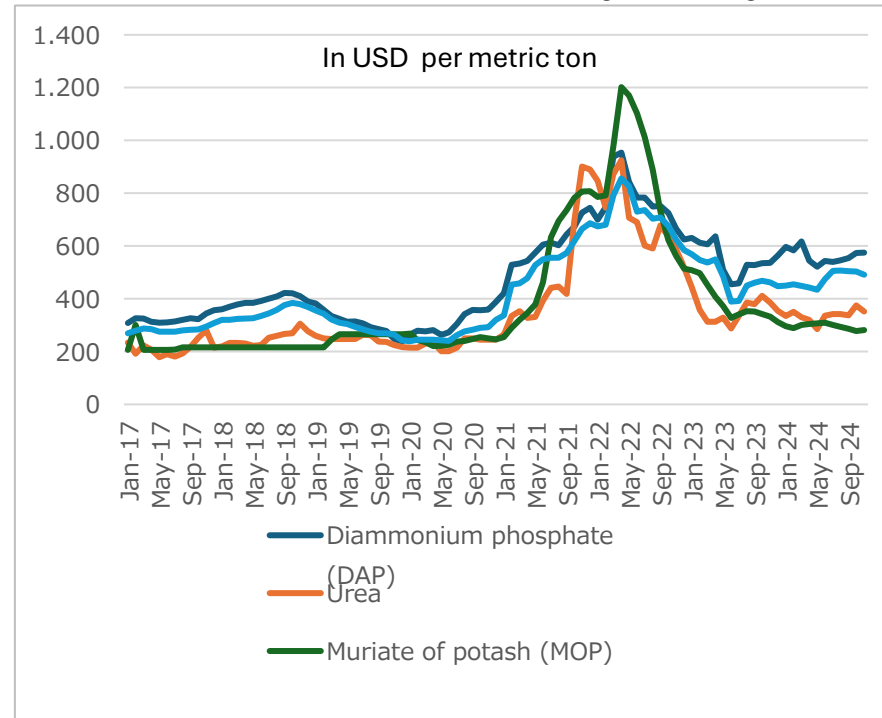
Fertilizer Risks in Japan

- Because fertilizer raw materials exist unevenly globally, Japan is almost entirely dependent on imports, presenting a serious risk
- Fertilizer prices are highly sensitive and fluctuate significantly due to factors such as strict export control by China and Russia's aggression against Ukraine

Leading Fertilizer Exporting Countries (2024)



World Fertilizer Price from 2017 to 2024



Source : Created by NEDO's TSC based on Statista report "Fertilizer industry worldwide"

Source : Created by NEDO's TSC based on Statista report "Monthly prices of fertilizer worldwide"

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Policies and Goals

Law Revisions in Japan

- In Japan, two important legal revisions were implemented in 2024 to strengthen food security:
 - Amendment of The Basic Law on Food, Agriculture and Rural Areas
 - Enforcement of the Act on the Promotion of Smart Agricultural Technology Utilization

The Basic Law on Food, Agriculture and Rural Areas

Reinforcement of food security and the transformation to environmentally friendly agriculture



Source : Ministry of Agriculture, Forestry and Fisheries

Act on the Promotion of Smart Agricultural Technology Utilization

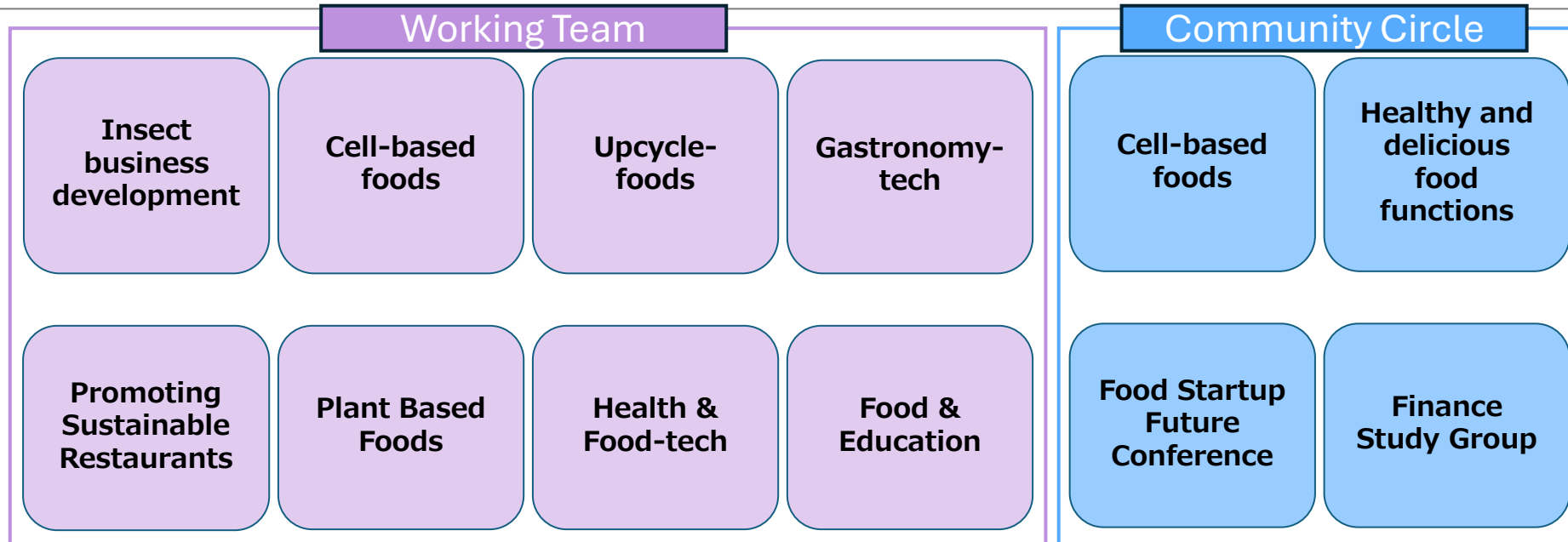
Financial support for Smart Farming



Source : Ministry of Agriculture, Forestry and Fisheries

The Food-Tech Public – Private Council (FTPPC)

- In Japan, **The Food-Tech Public-Private Council** was established in October 2020 and consists of food companies, startups, research organizations and governmental agencies. Currently around 1,800 members from approximately 1,000 companies/organizations participate in it. (as of April 2026)
- Working teams were established **to discuss specific issues in each field to create new market**
- Regular meetings are held three times per year



Source : Ministry of Agriculture, Forestry and Fisheries

Policies and Goals

NEDO's Focus Area for Food Tech



- Our goal is to build a robust food production system that is less susceptible to external factors while mitigating environmental impact
- Factors effective for food security and environmental impact are listed below

Food Security

Labor saving

Yield expansion

Synthetic fertilizers reduction

Responding to extreme climate

Nutritionally healthy

Sustainable food supply

Environmental Impact

Greenhouse gas reduction

Soil health

Water saving

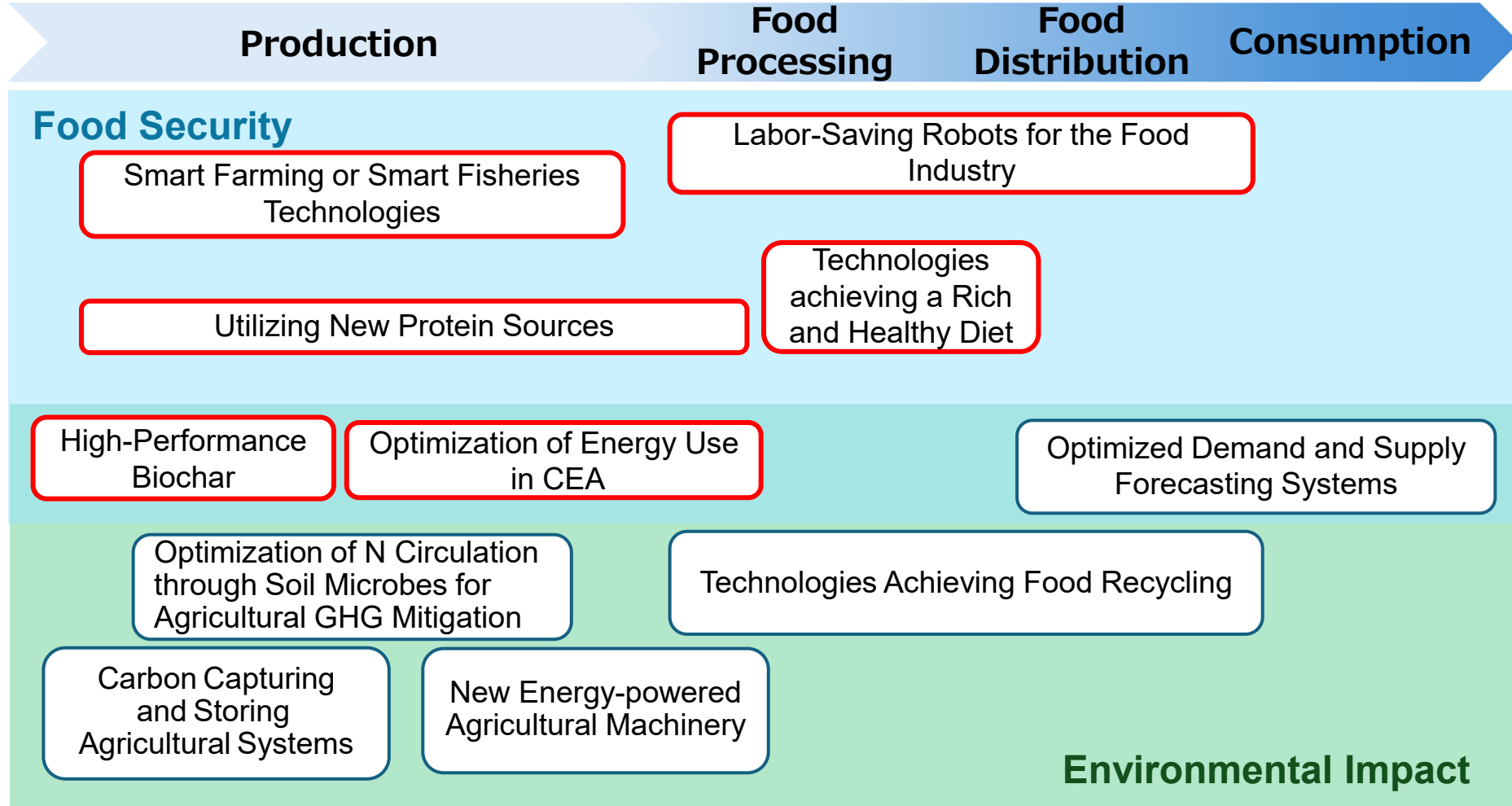
Pesticide reduction

Biodiversity

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Examples of Food-Tech R & D in Japan



Case Study AGRITECH

- Development of a production and economic cycle system for high-performance BIOCHAR derived from agricultural by-products

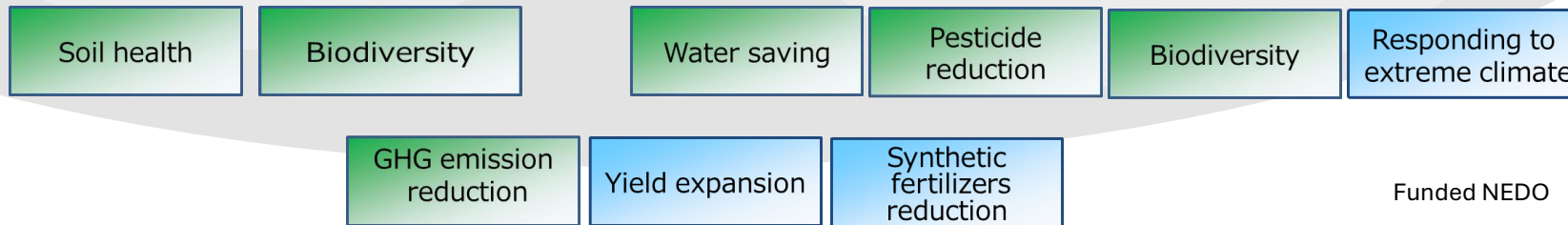
- Optimization of energy in CEA (controlled environment agriculture) by demand forecast through AI & IoT



Source: NEDO GI Fund website



Source : FARMSHIP



Case Study

AGRITECH

- Development autonomous tractors

- Development of fruit and vegetable crops harvesting robot



Source : Ministry of Agriculture, Forestry and Fisheries (Japan)



Source : YANMAR HOLDINGS CO., LTD. News release
Funded by NEDO

Labor saving

Case Study

FOODTECH

- Cell – based foods for increased protein demand *



Sustainable food supply

- AI cooking robot *



Labor saving

- Plant - based alternative protein supply



Nutritionally healthy

- Hypoallergenic eggs for people with egg allergies *



Source : Ministry of Agriculture,
Forestry and Fisheries
* Funded by the Ministry of
Agriculture, Forestry and Fisheries of Japan

Case Study

Startup Support - Immersion Program

- The program supports startups in their overseas expansion by providing lectures on fundamental knowledge of international expansion



Pitching event in Silicon valley



Pitching event in Silicon valley



Pitching event in Paris



Social media lecture in Paris

Japanese research institutions and companies exhibiting at F4F

Deats Food Planning Corporation



Vegan food made from okara & konjack

Source : Deats Food Planning Corporation Web site

Yamagata University



Creating the Future of Eating in the Space and on Earth

Source : Yamagata University

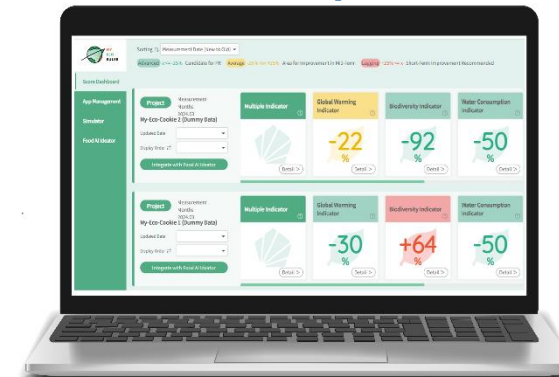
Dishwill.Co.,Ltd.



CASHEW FOIE : Plant-based Foie Gras:

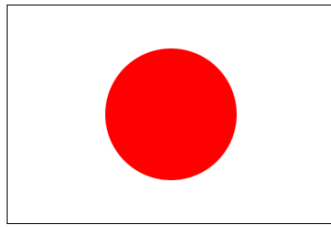
Source : dishwill.Co.,Ltd.

cuoncrop inc.



AI-Powered Intelligence Platform that Translates Agrifood Data into Value

Source : cuoncrop inc.



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