



“Japan’s Strategy for Sustainable Food Systems (Strategy MIDORI), and Climate-Smart Agriculture

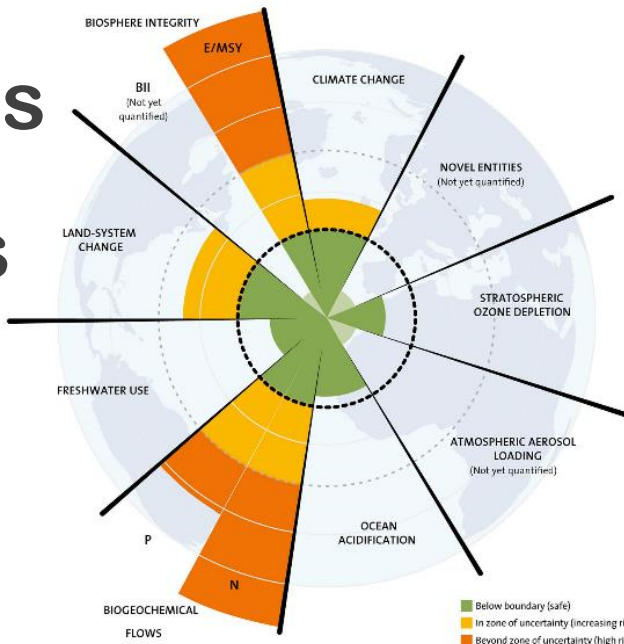
April 2023

Ministry of Agriculture, Forestry and Fisheries of JAPAN



Facing many Challenges

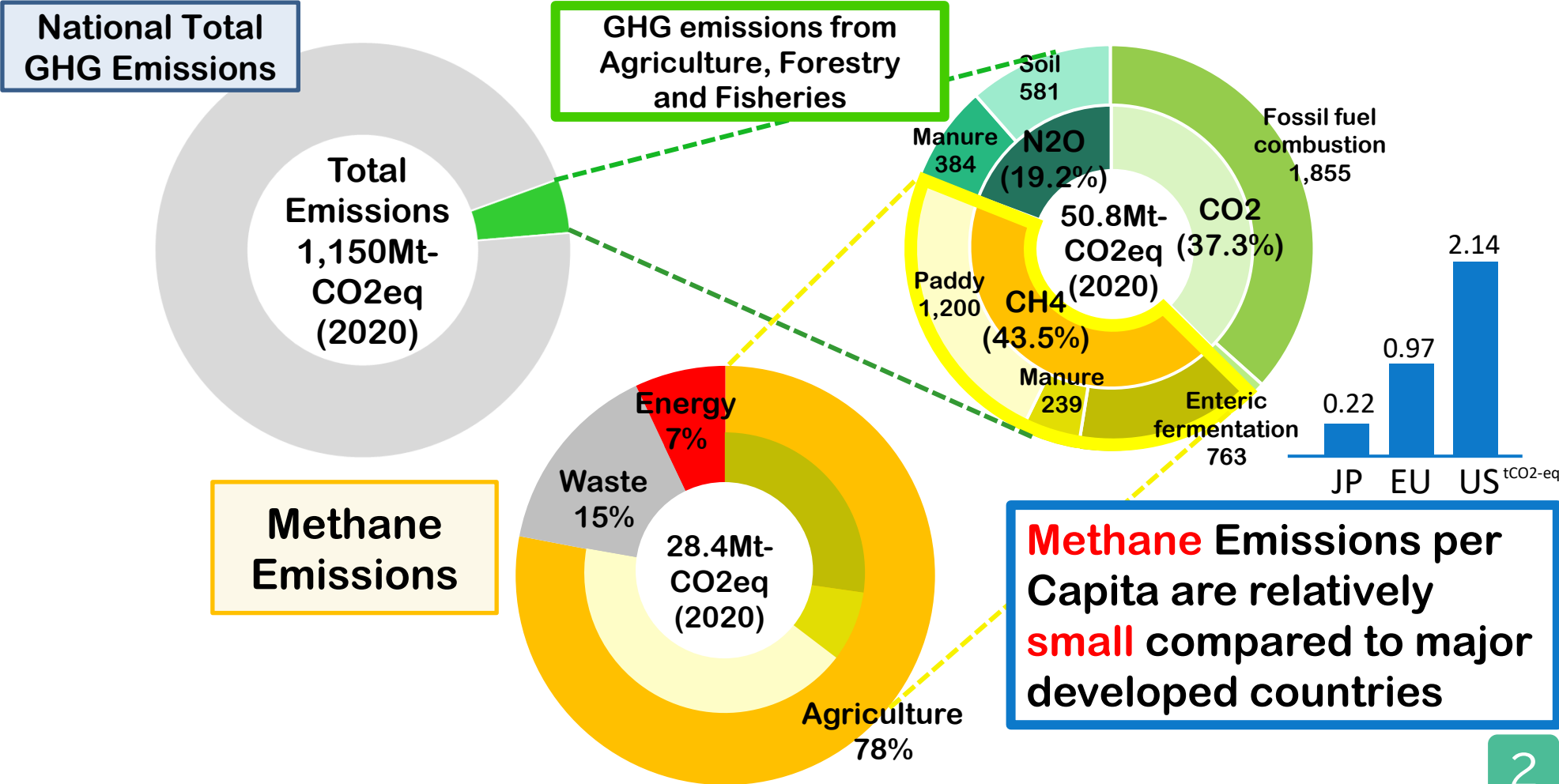
- Depopulation and aging of producers
- Stagnant rural communities
- Climate change and increasing natural disasters
- Disrupted supply chains due to the COVID-19
- Other challenges to achieve SDGs



(source: Stockholm resilience centre HP, credit :J. Lokrantz/Azote based on Steffen et al. 2015)

GHG Emissions from Agriculture, Forestry and Fisheries in Japan (FY2020)

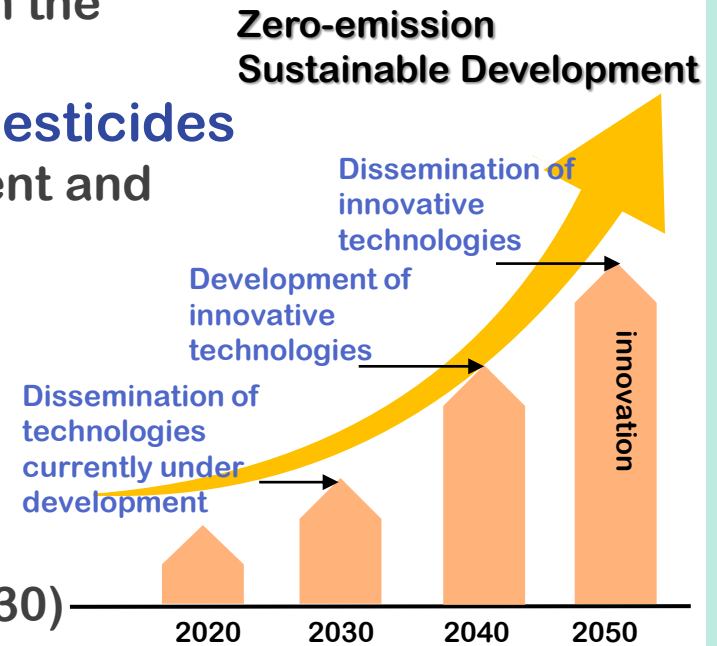
Agriculture, Forestry and Fisheries (AFF) accounts for **about only 4%** of the national total GHG emissions. 80 % of the national methane emissions is from the AFF sector. Total methane emissions (2020) have been **reduced by about 36%** from the 1990 level. Per capita emissions are relatively small.



Strategy MIDORI (Japan's Strategy for Sustainable Food Systems)

Key performance indicators by 2050

- **Zero CO2 emission from fossil fuels** combustion in the agriculture, forestry and fisheries sectors
- **50% reduction** in risk-weighted use of **chemical pesticides** by dissemination of the Integrated Pest Management and newly-developed alternatives
- **30% reduction** in **chemical fertilizer** use
- **Increase in organic farming** to 1Mha (equivalent to 25% of farmland)
- **At least 30% enhancement in productivity of food manufacturers** (by 2030)
- **Sustainable sourcing** for import materials (by 2030)
- **90% and more superior varieties and F1 plus trees in forestry seedling**
- **100% of artificial seedling rates in aquaculture** of Japanese eel, Pacific bluefin tuna, etc.

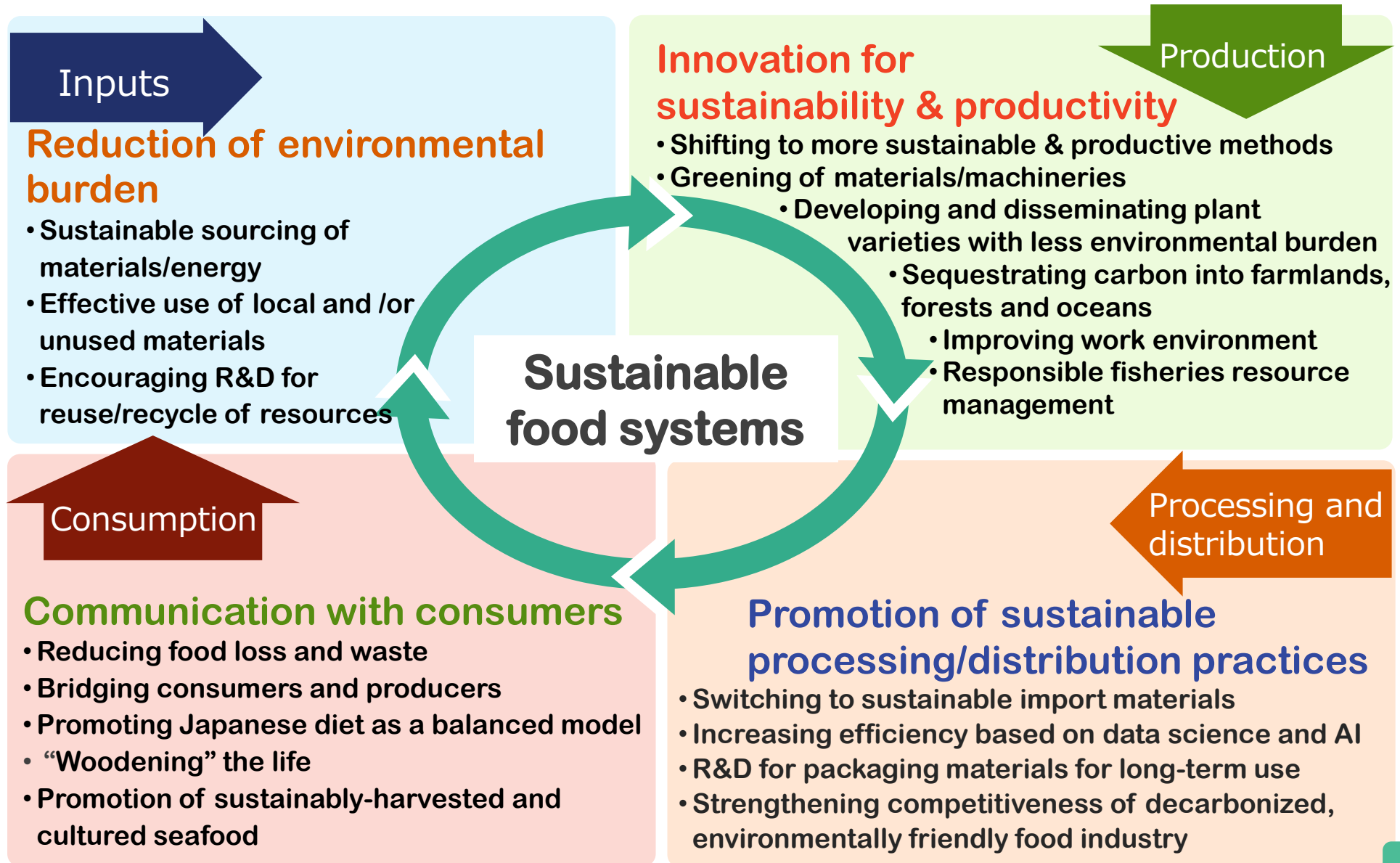


which will be enabled through:

- **development and dissemination of innovative technologies**
- **greening of MAFF's policy tools**

As interim goals, the 2030 targets have also been determined.

MIDORI's Approach

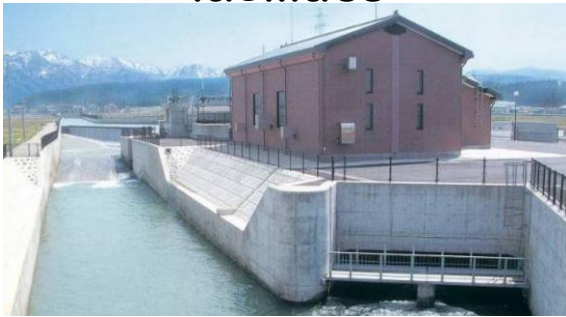


Inputs

Reducing environmental burden

Sustainable sourcing of materials/energy

Hydropower generation using agricultural water facilities



Bioenergy power generation



Effective use of local and/or unused materials

Organic fertilizer pellets and feed



MUSCA Inc.

Fish-meal free aquaculture



R&D for Biological resources

Glicol Lignin made from Japanese cedar



Source : FFPRI

Bioplastics with high-strength



Automotive door parts

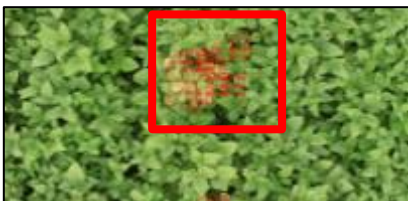
Miyagi Kasei Co., Ltd

Pinpoint Pesticide Application using drone

1. Capture entire fields by drone automatically



2. Identify pest locations precisely by AI image analysis



3. Minimize pesticide application



OPTiM Corp

Electrification of machinery



Sasaki Cooperation.

Machinery for small area



Electromotive tractor

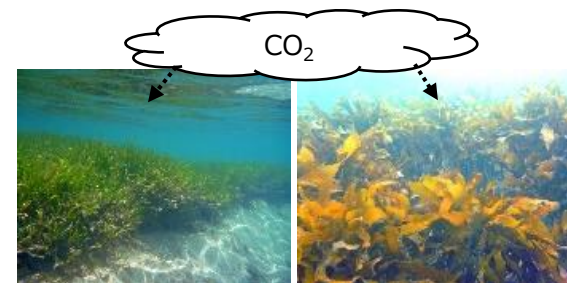
Biochar, Blue Carbon

Carbon Sequestration using biochar



Development of biochar products

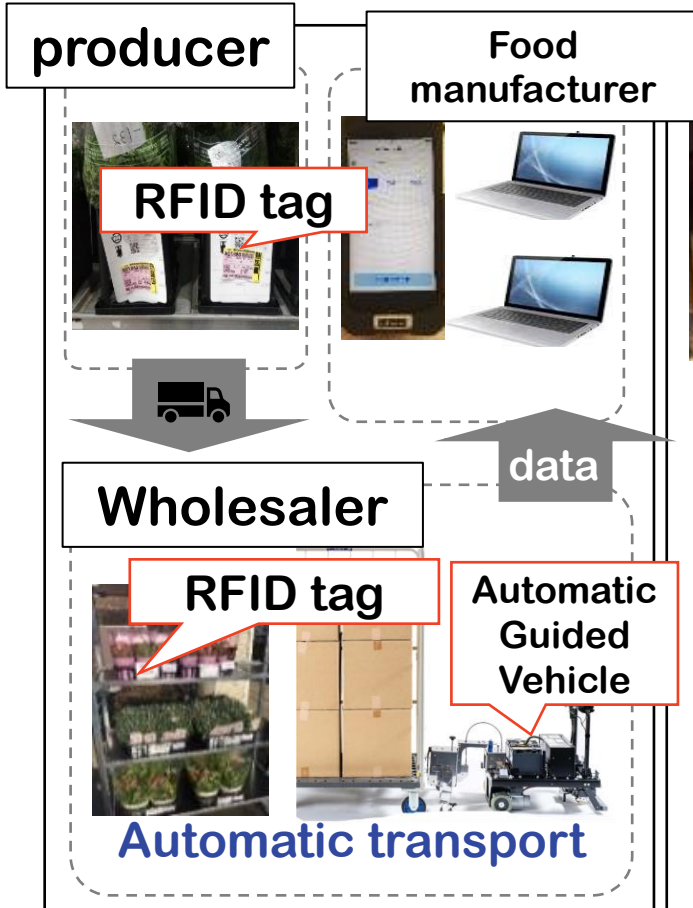
Blue Carbon CO2 fixation by seaweed



Processing and distribution

Promotion of sustainable processing/distribution practices

Efficient logistics through digitalization



Contactless and automated processing



Takoyaki Robot



Dishwashing Robot

Supply and demand forecasting with AI



Supply Forecasting × Demand Forecasting



matching

Consortium for sustainability

promoting sustainability action with various stakeholder



Events such as to promote the purchase of sustainable products and video awards to showcase activities for sustainability



Organic foods

Organic Supporters



Promoting organics in collaboration with restaurants and retailers

Consumption of local products



Direct sales of local products



School lunches made from local agricultural products

MIDORI Act

- ✓ The “**MIDORI Act**” was entered into force in 2022 to facilitate the implementation of the strategy MIDORI
- ✓ It gives incentives for producers to introduce environmentally-friendly technology, such as ag-machinery and facilities

AI

automatic irrigation and fertilization system to **reduce the use of chemical fertilizers**



Paddy field weeder for **organic farming**

Electric remote-controlled mower for **efficient weeding**



Sprayer which requires less volume of **pesticide**

Accelerate the Innovation for Sustainability

- ✓ Technologies are to realize the strategy MIDORI and to achieve “Climate-Smart” and “environmentally-friendly” agriculture

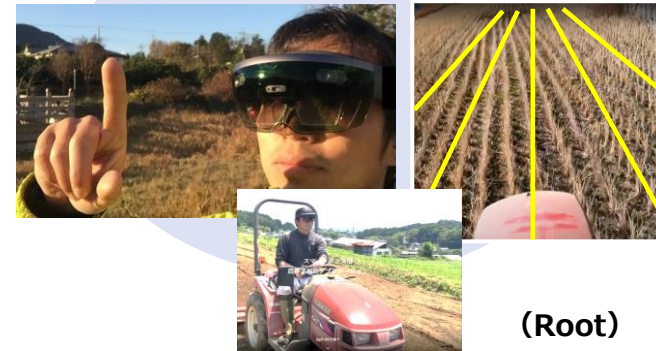
Pinpoint pesticide and fertilizer application using drone



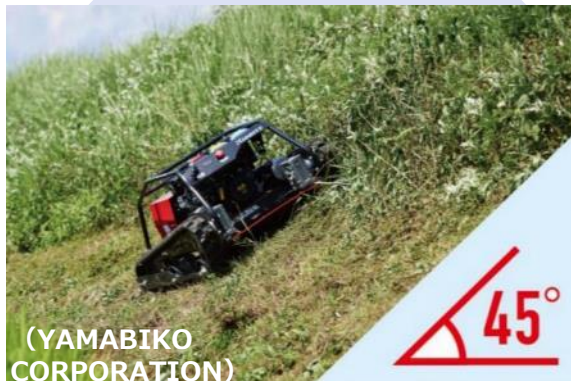
Weed control robot in a paddy field –AIGAMO–



AR/MR app for Smart Glasses to support farmers



Radio-controlled mowers which can be used on steep slopes



Remote-controlled water management of paddy



Bolt-on Automatic steering system



Visualization of the reduction of environmental burden



- Farmers' actions to reduce GHG are **quantitatively evaluated** and rated with stars on the **labels** of the products
- Labels help consumers to **choose environmentally friendly products.**

Mid-season drainage of paddy field

Reduced Chemicals

Biomass use as an alternative to fossil fuels

Biochar Application

Carbon Credit scheme

- ✓ Japanese credit scheme(J-credit) provides incentives for farming methods which reduce/remove GHG emissions

Carbon sequestration

e.g. Japan CoolVege Associations' program
Credits for **the amount of biochar applied on the farm**. Farmers can easily obtain credits by registering the amount of applied biochar.

Government (J-credit certifying body)

Applications ↔ Credits

Japan CoolVege Associations

Reports ↔ Benefit



Photo: CoolVege Association, Inc.

Amino acid balanced feed

e.g. Feed value chain with credit
Credits for **the amount of N₂O reduced by using this feed**. They are an incentive to promote a multi-stakeholder circular economy.

Government (J-credit certifying body)

Applications ↔ Credits

Ajinomoto Corporation



Sales of Amino acid

Reports ↔ Benefit

MEIJI Group

MEIJI HD. Co., LTD.
MEIJI CO.,LTD.
MEIJI FEED CO., LTD.

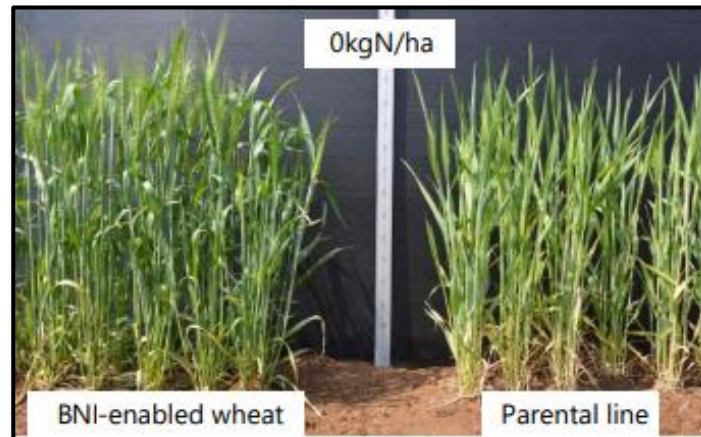
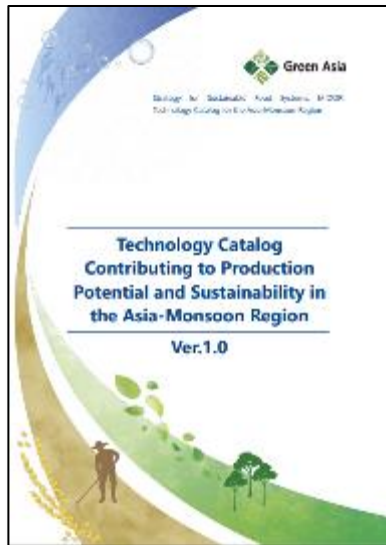
Ranchers Sales of feed



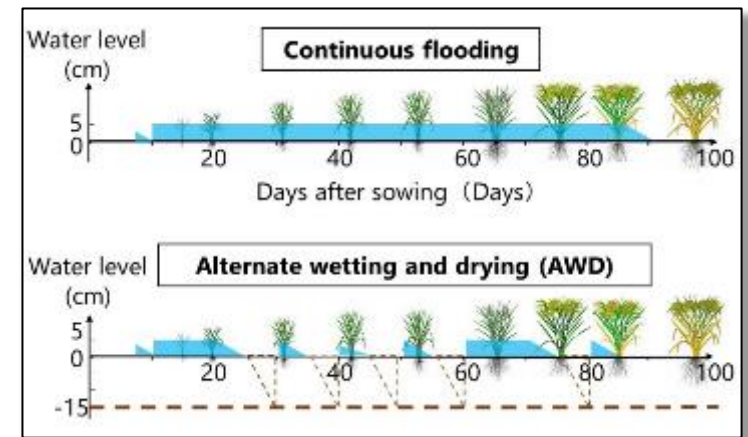
GHG Reduction by using Amino acid balanced feed

Enhancing global sustainability in the **MIDORI** way

- ASEAN and Japan MIDORI initiative
- Working also with other countries to improve their sustainability through dissemination of innovative technologies



BNI enables a 60% reduction in fertilizer use



water management of paddy field for reducing GHG emission