ASEAN-Japan MIDORI Cooperation Plan
Progress report

6th August 2024

Ministry of Agriculture, Forestry and Fisheries of JAPAN

1. ASEAN-Japan MIDORI Cooperation Plan

Characteristics of Asia-Monsoon region's agriculture

- hot and humid
- paddy field farming
- high proportion of small and medium farmers

Asian countries' own best-fit method for mitigation

No "One size fits all" Solution

ASEAN-Japan MIDORI Cooperation Plan

- **Japan's experiences: INNOVATION through R&D, human resources development and other policy measures**

→Based on Japan's experiences, each country selects the most appropriate technical cooperation

→building resilient and sustainable agriculture and food systems

- **contribute to food security and sustainability in the ASEAN region**
- **disseminate to the world as an initiative of the Asia-Monsoon region**

2. ASEAN-Japan MIDORI Cooperation Plan Progress Sheet (as of 7 Aug. 2024)

	(ANNEX 2)	Brunei	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Viet Nam	All/ several AMS
	ⅰ) Development, demonstration and dissemination of technologies for building resilient and sustainable agriculture and food systems through innovation, such as technologies enhancing smart/digital agriculture, circular economy, biomass energy ,reducing Green House Gas (GHG) emission and Integrated Pest Management (IPM)											
1	Contributing to the reduction of fertilizers through automatic plotting technology and soil diagnosis of farmland using satellite data.			◇				○		☆		
2	Contributing to increase of productivity and reduction of labor hours through automatic steering technology									○		
3	Launch of a Project on Joint Crediting Mechanism (JCM) to promote climate change mitigation in agriculture (JAPAN-MAFF funded ADB project)							○			○	
4	Promotion on climate change adaptation and mitigation measures through agricultural and rural development in the Asian Monsoon region		○		○						○	
5	Promotion on smart irrigation system technology for fruit trees									○		
6	ASEAN-JICA capacity building project on IUU fishing countermeasures in Southeast Asia											◇
7	Establishing the basic MRV environment to scale up GHG reduction, as well as stakeholder coordination to scale up actions on the ground											◇
8	Reducing GHG originating from livestock sector through optimized feeding by introducing livestock information management system										○	
9	Providing crop and other information using satellite data and agricultural machine that contribute to establishing effective MRV systems		○									
10	Introducing agroforestry practices in coffee production that contribute to increasing profitability of local farmers while preventing deforestation				○							
11	Projects on GHG emission reduction											◇

◇: preparation/ implementation of seminars, etc.
○: preparation/ implementation of local demonstrations, etc.
☆: preparation/ implementation of dissemination to other AMS
◎: completion of the Project
: given priority by AMS

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	(ANNEX 2)	Brunei	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Viet Nam	All/ several AMS
12	Projects on GHG emission reduction and biomass utilization											◇
13	Projects on GHG emission reduction and fertilizer reduction											◇
14	Projects on climate disaster mitigation											◇
15	Projects on chemical pesticide reduction											◇
16	Projects on labor productivity enhancement											◇
17	Projects on resource management/labor and productivity											◇
18	Projects on food loss reduction											◇
	ii) Human resource development for building resilient and sustainable agriculture , forestry and food systems											
19	Japan-MAFF (Forestry Agency) funded ITTO project on sustainable wood use promotion in timber producing countries					◇						
20	Activities to establish circular agriculture through public-private partnerships to train trainers to teach cultivation techniques and to utilize food residues as fertilizer.									○		
21	Capacity building activities of durian farmers in collaboration with local cooperatives					○						
	iii) Other supports for the implementation of the ASEAN Regional Guidelines for Resilient and Sustainable Agriculture and in ASEAN											
22	ASEAN-JICA food value chain development project											◇

◇: preparation/ implementation of seminars, etc.
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3-1. Cooperation Project (#1)

● **Contributing to the reduction of fertilizers through automatic plotting technology and soil diagnosis of farmland using satellite data**

(1) Overview of technology

- Automatically plotting farmland borders by AI using satellite images.
- Based on the plotting results, diagnosing soil conditions and evaluating crop growth of each farmland compartment.

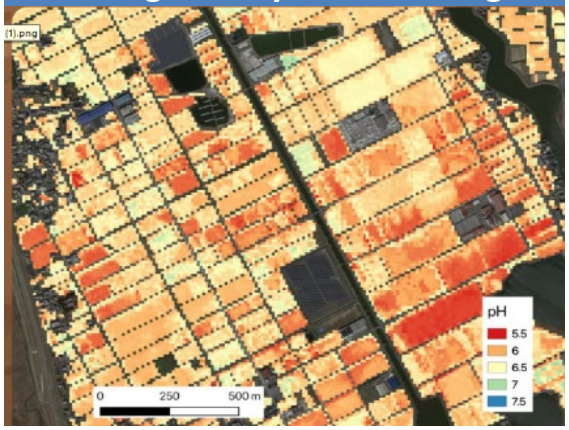
(2) Expected effect

- Able to implement soil diagnosis etc. easily and accurately.
- Contributing to both sustainable production and higher farm income through reducing application of fertilizers.

(3) Progress

- Thailand: In cooperation with Kasetsart University, the volume of estimated GHG reductions through optimization of fertilizer application were calculated, and demonstration results were released and disseminated in February.
- Philippines: Based on the demonstration results in Thailand, the demonstration project is scheduled to be started in this JFY.
- Indonesia: the site is being identified for future demonstration.

Soil diagnosis by satellite images



Identify farmland plots from satellite images and measure the area

3-2. Cooperation Project (#2)

- **Contributing to increase of productivity and reduction of labor hours through automatic steering technology**

(1) Overview of technology

・Operating tractors automatically and accurately (error range : 2 to 3 cm) by the cutting-edge steering system (consisting of a motor steering wheel, GPS, etc.).

・Able to attach the steering system to all kinds of tractors including existing tractors.

(2) Expected effect

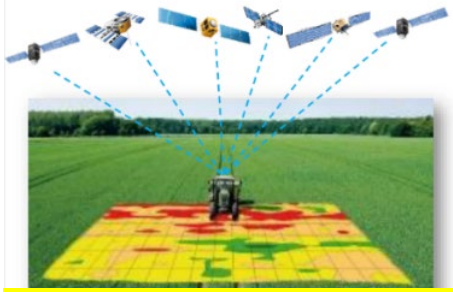
・Increasing yields and reducing labor hours, seedlings and other costs through enhanced efficiency of farmwork in small plots

・Low-cost automatic steering tractors for everyone

(3) Progress

・Thailand: Following the demonstration in rice paddies in Suphanburi Province, the demonstration in sugar cane fields started in the same province in April.

Innovation in farm works



Improvement of labor productivity and quality

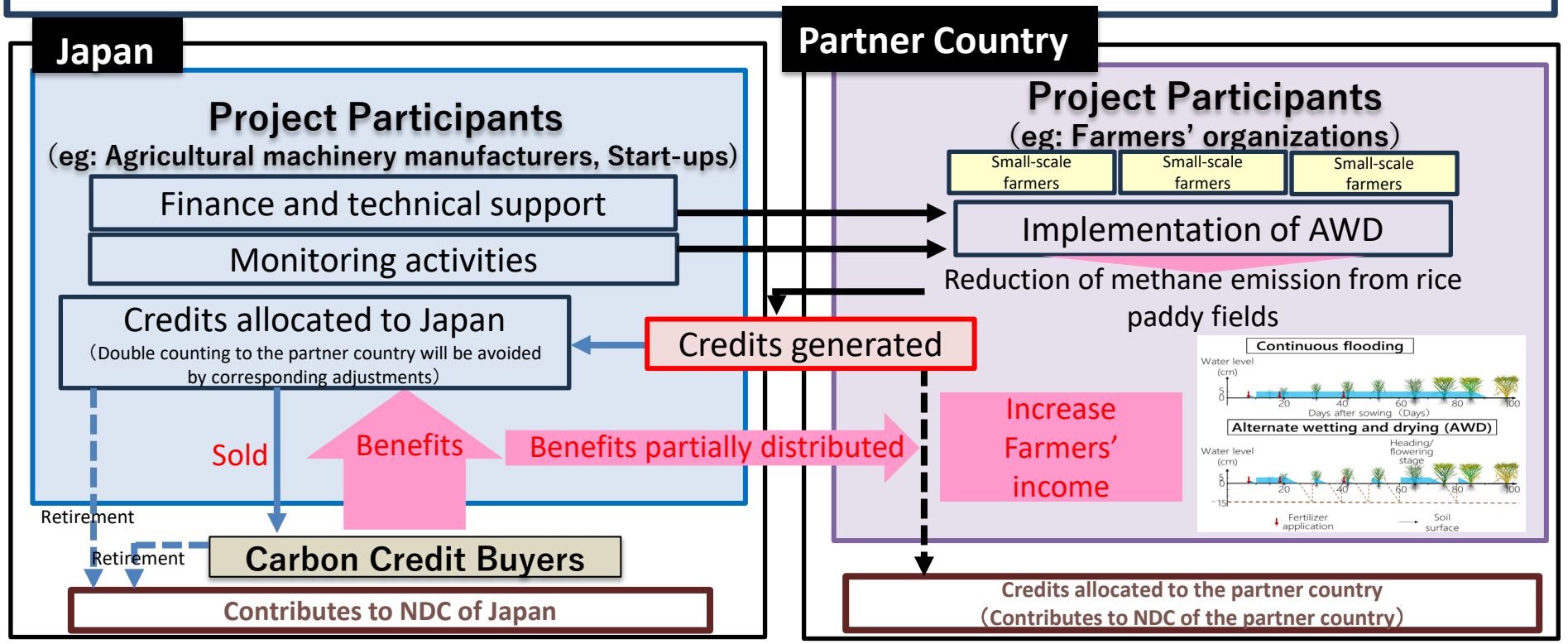
Retrofittable to any tractor series

3-3. Cooperation Project (#3)

- **Launch of a project on Joint Crediting Mechanism (JCM) to promote climate change mitigation in agriculture**

Joint Crediting Mechanism (JCM) in the Agricultural Sector

- Japanese private companies support the implementation of Alternate Wetting and Drying (AWD) in partner countries in accordance with their registered projects.
- This results in both the reduction of greenhouse gas (GHG) emissions and the increase in farmers' incomes in the partner countries. This contributes to the achievement of reduction targets (NDCs) under the Paris Agreement in both countries.



Credit retirement: The process of permanently removing a carbon credit from circulation after it has been used to offset/neutralize emissions. This action finalizes the offsetting process, ensuring that the credit cannot be reused or claimed by another entity.

3-3. Cooperation Project (#3)

I. Objective

- Introducing a JCM in accordance with the Article 6.2 of the Paris agreement, this project, in collaboration with the Asian Development Bank (ADB), aims to develop a methodology to formulate and implement a concrete JCM project with reliable and transparent carbon credits and contributes to reducing GHG emissions and increasing farmers' incomes.

II. Activities

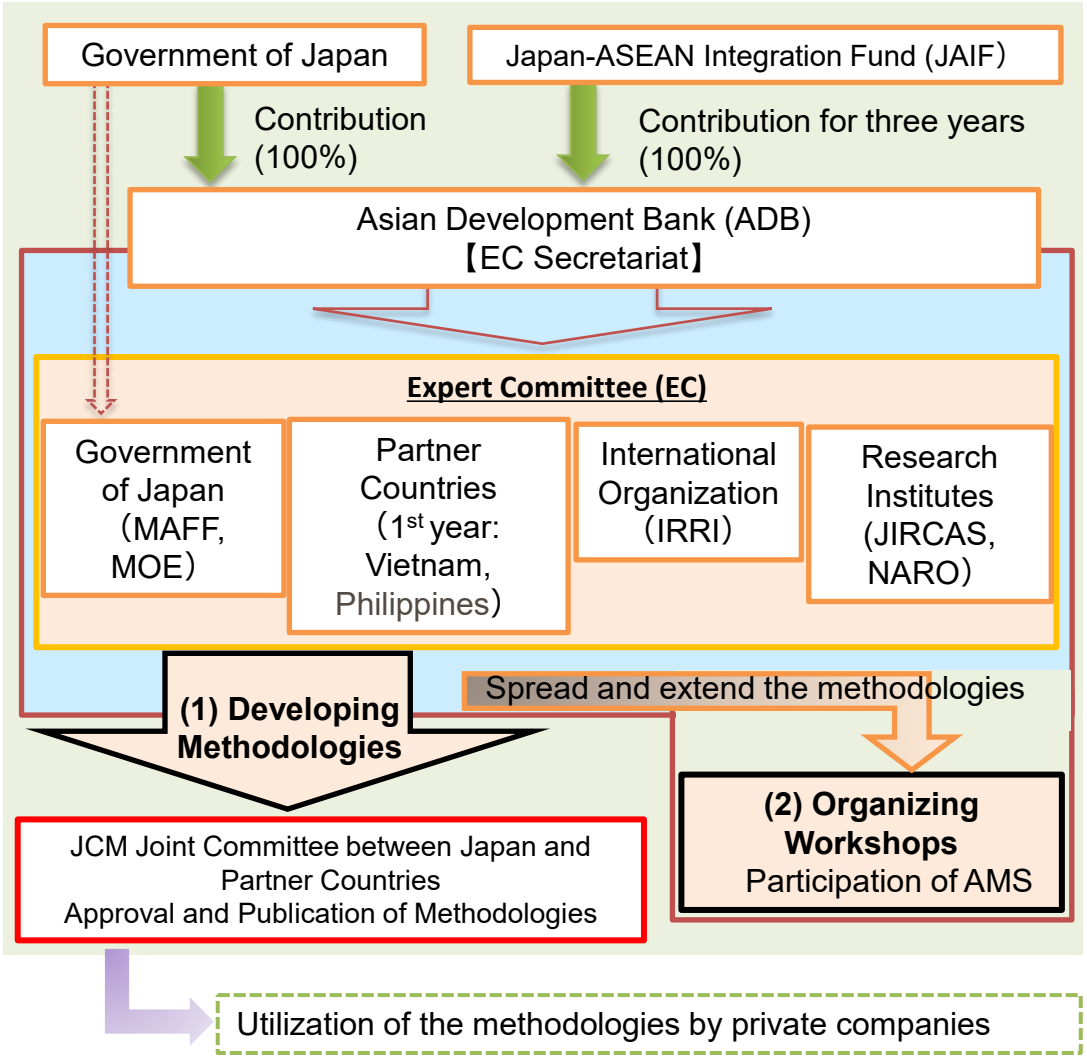
- In 2024, ADB serving as a secretariat with MAFF Japan, established an Expert Committee consisting of experts from partner countries, the Government of Japan, international organizations and research institutes.
- A draft JCM methodology for Alternate Wetting and Drying (AWD) in the Philippines was completed in June 2024. Subsequently, the methodology in Vietnam is currently under review.
- In the 2nd year in 2025 the EC will work with the other different partner countries (to be determined).

III. Period

- 2023 – 2026

IV. Participating countries

- ASEAN member states etc. (AMS)



3-4. Cooperation Project (#4)

● Promotion on climate change adaption and mitigation measures through agricultural and rural development in the Asian Monsoon region

(1) Overview of technology

- Introducing advanced agricultural water management such as AWD using ICT-based water management.
- Improving rainwater storage in paddy fields by installing runoff adjustment outlets as "Paddy Field Dam".

(2) Expected effect

- AWD reduces GHG emissions from paddy fields.
- ICT-based water management reduces agricultural labor and water usage.
- “Paddy Field Dam” reduces flood damage in downstream areas.

(3) Progress

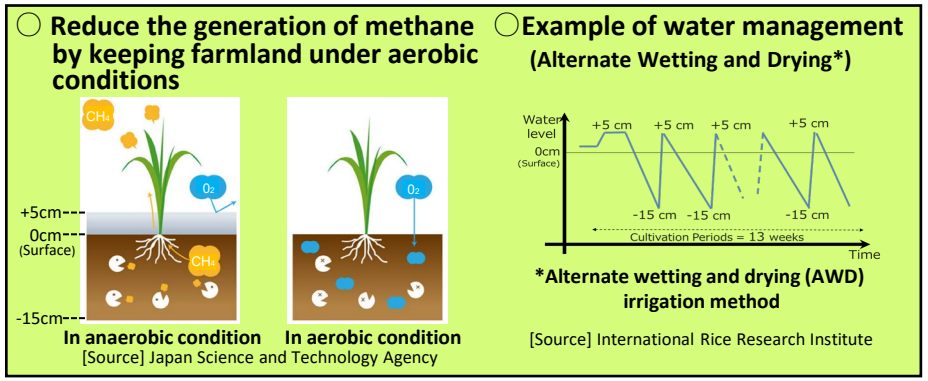
- The following demonstrations are scheduled to start later this year:

- Cambodia (Kampong Chhnang Province)
(i) AWD using ICT-based water management (ii) “Paddy Field Dam” by installing runoff adjustment outlets

- Lao PDR (Vientiane City)
(i) AWD using irrigation faucet with a float valve (ii) “Paddy Field Dam” by installing runoff adjustment outlets

- Viet Nam (Hai Phong City)
(i) AWD using ICT-based water management (ii) Underground drainage improvement using “Cut Drain”

ICT-based Water Management system



3-5. Cooperation Project (#5)

● Promotion on smart irrigation system technology for fruits

- The Department of Agricultural Extension (DOAE) is considering a site for a pilot project to promote smart irrigation system technology for fruits in Thailand

Progress:

- Training of Thai government officials in Japan is scheduled to start in October.

The pilot project on smart irrigation system technology for fruits in Thailand

- Intended location : Rayong Province
- Size: 0.4-0.7 hectares
- Demonstration Technology: Precise Irrigation Sensors and Controllers

3-6. Cooperation Project (#19)

- **Japan-MAFF (Forestry Agency) funded ITTO Project on Sustainable Wood Use Promotion in Timber producing countries**

(1) Overview of project

- Malaysia's wood industry is heavily export-oriented and its local wood supply chains are not well-organized. On the other hand, international trade policies and regulations pressing the industry to comply have been increasing in recent years.
- The project includes various activities ; improvement of the policy framework to drive domestic wood consumption, development of wood products to meet consumers' needs, research on demands and supply in the market, and feasibility analysis of mandatory timber certificate.

(2) Expected effect

- Improvement of capacity to produce high value-added wood products.
- Making the wood industry more resilient by breaking away from dependence on exports through development of the domestic markets.

(3) Progress

- Malaysia: The project was started in July 2024 and the completion is scheduled in December 2025.

Development of modern designed wood furniture

Support for small wood processing companies

These photos are on the similar project in Viet Nam.

3-7. Cooperation Project (#20)

- **Activities to establish circular agriculture through public–private partnerships to train trainers to teach cultivation techniques and to utilize food residues as fertilizer**

(1) Overview of the project

- Conducting demonstrations of cassava cultivation technology developed by private company.
- Based on the results of the demonstrations, compiling cultivation techniques and creating a manual for farming extension service.
- Conducting training of trainers to provide guidance to farmers in Thailand and disseminating the experiences throughout ASEAN.

(2) Expected effect

- Improvement of productivity and farmer's income
- Establishment of sustainable agriculture based on correct cultivation knowledge

(3) Progress

- Thailand: The preparation of manuals and training of trainers are scheduled to start in Kamphaeng Phet Province in JFY2024.

Demonstration of cultivation

Extension service for farmers

Cooperation project (#21)

● Capacity building activities of durian farmers

(1) Overview of project

- A Japanese start-up is participating in a large-scale production of durian in Pahang, Malaysia through technical assistance for the introduction of smart-agricultural practices.

(2) Expected effect

- Paving the way for establishing knowledge base and overall capacity with respect to smart durian production with the aim of contributing to farm income and sustainability.

(3) Progress

- Malaysia: Demonstration activities are underway on different practices, including those involving the use of drones, climate/soil data, tree identification with QR codes. Exploring collaboration with local research institutions to facilitate demonstration activities. Online meetings took place involving Malaysian government agencies and the start-up company concerned.

3-9. Cooperation Project (#22)

- **Food value chain development project (Promotion and marketing of ASEAN/national GAP and GAqP in the region, capacity building for pesticide residue analysis, etc.)**

(1) Overview of the project

- Overall Objective: Recommendations and guidelines on ASEAN-GAP, SPS, GAqP and PPP for promotion of FVC in ASEAN are utilized by stakeholders in ASEAN and AMS.
- Project Objective: The enabling environment for promotion of FVC in ASEAN is enhanced.

(2) Expected effect

- Output 1: Measures are developed for the marketing and promotion of national and ASEAN GAPs.
- Output 2: Capacities of pesticide residue analysis necessary to strengthen SPS measures in AMSs are improved.
- Output 3: Food safety on fishery sector is improved by promotion of GAqP and development of ASEAN guidelines and relevant principles on fisheries inspection mechanism.
- Output 4: Strategies for promoting PPP based FVC are developed.

(3) Progress

- After the “Planning Phase” for the first 6 months, formulation of the project plan for the entire cooperation period was discussed in the 1st Joint Coordinating Committee Meeting held on 9 July 2024.

Field Study on QGAP in Thailand

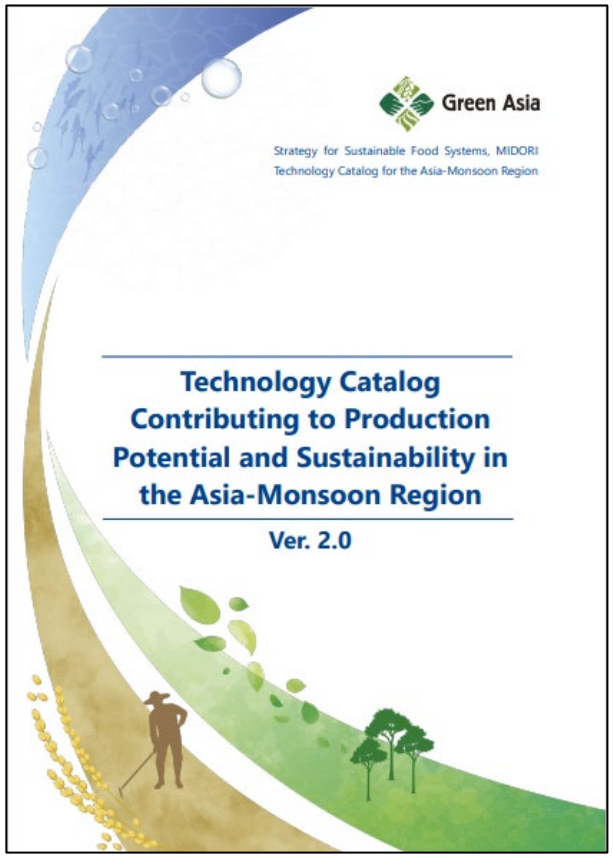
Field Study on SPS Measures in Singapore

Seminar on ASEAN GAP

1st JCC Meeting

Technology Catalog Contributing to Production Potential and Sustainability in the Asia-Monsoon Region Ver.2.0

Green Asia



A compilation of 31 applicable technologies in the Asia-Monsoon Region (Scalable technologies)

Agriculture: 23

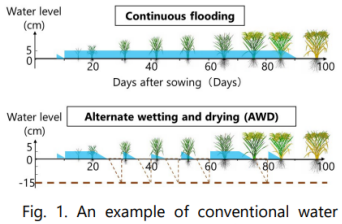


Fig. 1. An example of conventional water management (continuous flooding) and alternate wetting and drying (AWD) during a cropping season

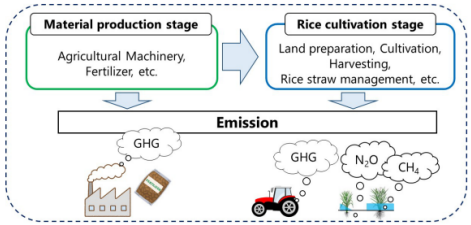
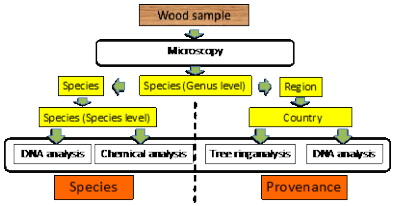


Fig. 2. Life cycle greenhouse gas (LC-GHG) emissions from rice cultivation

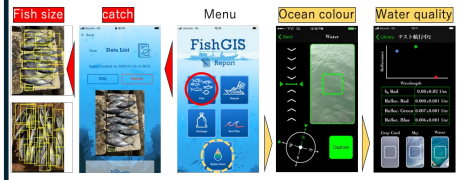
Forestry: 3

Identification of wood species and provenance of timber to promote trade of legal timber



Fisheries: 5

Smartphone application to collect coastal fisheries and environmental information for adaptation to changes in the marine environment (FishGIS)



Stages of Food System	Ver.2
Procurement	○(5)
Production	◎(27)
Processing and distribution	○(1)
Consumption	–

Areas of Contribution

- Greenhouse gas emission reduction
- Chemical pesticide reduction
- Climate disaster mitigation
- Food loss and waste reduction
- Chemical fertilizer reduction
- Biomass utilization
- Labor productivity enhancement
- Resource management
- Forest conservation

- **Featured on the ASEAN Secretariat's website**
- **Adopted in the ASEAN-Japan MIDORI Cooperation Plan**

3-9. Other projects in ANNEX2

[Cambodia]
・Provision of information using satellite data and agricultural machine to establish an effective MRV system (#9)
=> A demonstration project implemented (currently on hold).

[Lao PDR]
・Introducing agroforestry practices in coffee production (#10)
=> This project is currently implemented in Luang Prabang Province.

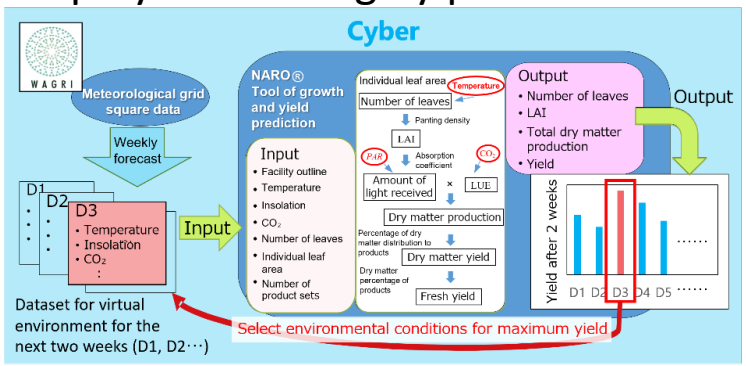
[Viet Nam]
・GHG reduction from livestock sector through optimized feeding (#8)
=> Implementation in cooperation with trading companies and venture companies is ongoing.

[All ASEAN Member States]
・Capacity building project on IUU fishing countermeasures (#6)
=> First training will start in Thailand in October 2024.

・Dissemination of initiatives that balance productivity improvement with climate change mitigation, and improvement of the environment for greenhouse gas measurement, reporting and verification (MRV) (#7)
=> This project held workshops and other programs since 2023.

4. Other Projects started after the MIDORI Cooperation Plan

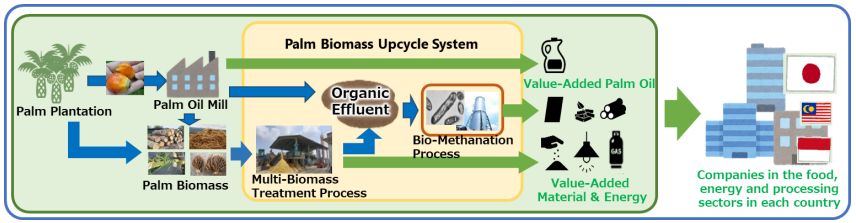
Development of smart greenhouse horticulture technology that enables the deployment of highly productive environmental control technology



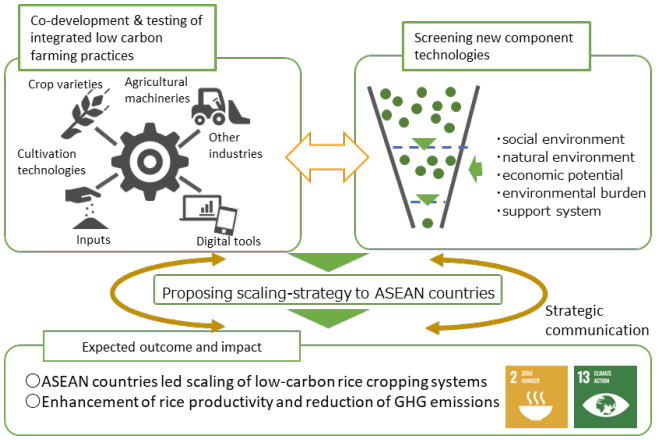
Transformation, Control

Research project on low-cost agricultural production systems utilising environmental control systems such as plant factories in ASEAN countries

Feasibility Study for worldwide expansion of the Next-Generation Biomass Upcycling Technology



Development of rice cropping systems toward carbon neutrality and food security in ASEAN countries



Cooperative projects under the MIDORI Feasibility Study Project

- To advance the objectives of the ASEAN-Japan MIDORI Cooperation Plan, the project has started this year with the aim of contributing to resilient and sustainable agriculture in the ASEAN region through mobilization of private technologies/finance.
- In collaboration with start-up companies, feasibility studies will be undertaken with respect to the introduction in the ASEAN member states of the following technologies.

Satellite + AI for MRV of AWD

- Improvement and verification of the "water detection model" that can monitor water-level of rice paddies with satellite data and AI analysis.
- AI determines the presence of water in rice paddies as well as water-level from satellite images.
- Potential application to measurement, reporting and verification (MRV) of Alternate Wetting and Drying (AWD) practices.

Cashew Nuts Shell Liquid (CNSL)

- Verification of the effect of Cashew Nuts Shell Liquid (CNSL) feed in terms of methane emission reductions from enteric fermentation.
- A joint research project in Viet Nam has demonstrated a 20% reduction in methane emissions.
- Examination of the applicability of the technology for potential deployment in the ASEAN region.

High-performance biochar

- Verification of effect of high-performance biochar utilizing local microorganisms and raw material.
- Contributing to the transition to a circular economy through the active utilization of organic fertilizers and biochar made from unutilized resources.
- Contributing to the promotion of organic fertilizers and increased soil carbon sequestration.

Agroforestry

- Agroforestry and biochar application in coffee production.
- Contributing to increasing agricultural production while preventing deforestation.
- Increased soil carbon sequestration through the application of biochar made from residues from coffee production.

Appendix

Background

Challenges on Global Agriculture and Food System

✓Climate change : low quality due to high temperature, frequent and severe natural disasters
→ GHG emission reduction from agricultural activities

✓COVID-19 pandemic and conflict in Ukraine
→ shortage and soaring price of food supply and inputs

⇨ Concern of food security and sustainability

UN's Food Systems Summit and its Pre-Summit(2021)

✓Food Systems Summit: The concept of enhancing resilient and sustainable agriculture and food systems while reducing greenhouse gas (GHG) emissions has been positioned as a core concept in agricultural policy and government initiatives

✓Pre-Summit : The Joint Statement on Sustainable Agriculture Production and Food Systems was agreed and announced by Ministers in charge of agriculture from several ASEAN Member States(AMS) and Japan

Farm to Fork Strategy(2020)

✓ The Farm to Fork Strategy aims to accelerate EU's transition to a sustainable food system

✓ The strategy sets concrete targets to transform the EUs food system, including
- a reduction by 50% of the use and risk of pesticides by2030,
- a reduction by at least 20% of the use of fertilizers by2030,
- a reduction by 50% in sales of antimicrobials used for farmed animals and aquaculture by2030,
- and reaching 25% of agricultural land under organic farming by 2030

⇨ Does this strategy fit the Asia-Monsoon region's agriculture?

ASEAN's Strategy

ASEAN Regional Guidelines for Sustainable Agriculture in ASEAN

✓Guide AMS on the transition of their agriculture to highly productive, economically viable, and environmentally sound one

-Provide policymakers with a general outline of the importance and relevance of new sustainable and circular agriculture policies

-Provide a transition mechanism where policies can be translated into strategies

-Serve to guide and promote the increasing strategies in sustainable circular agriculture

ASEAN leaders' Declaration on Strengthening Food Security and Nutrition in Response to Crises

✓Highlight ASEAN leader's commitment to ensure rapid action on food security and nutrition in response to crises as well as strengthen preparedness for long-term resilience and sustainability of agri-food system

✓For Rapid Actions to Food Security and Nutrition in Response to Crises

-STRENGTHEN the overall productivity of agri-food systems

-STRENGTHEN existing ASEAN Plus Three Emergency Rice Reserves

✓Strengthen Preparedness for Long-Term Resilience and Sustainability of Agri-Food Systems

-STRENGTHEN national policy frameworks

-PROMOTE investment in agricultural research and development (R&D) and agricultural infrastructure

Japan's Strategy

"MIDORI," the medium-long term strategy will pave the way for the future.

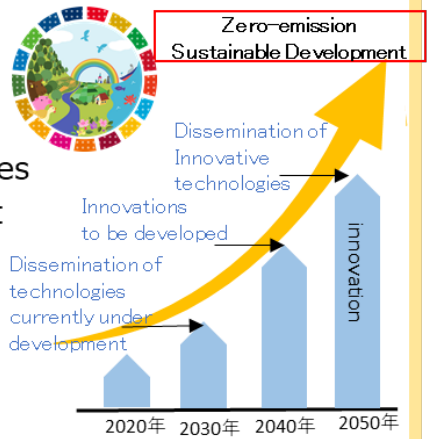
- **Enhancing engagement of stakeholders at each stage of food supply chains**
- **Promoting innovation to reduce environmental load**

Challenges

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

By 2050, MAFF aims to achieve;

- Zero-emission from the agriculture, forestry and fisheries sectors
- Reduction in overall use and risk of chemical pesticides by dissemination of the Integrated Pest Management and newly-developed alternatives
- Reduction in chemical fertilizer use
- Increase in organic farming
- Enhancing productivity of food manufacturers
- Sustainable sourcing for import materials



which will be enabled through:

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

MAFF endeavors to accomplish the triple wins of;

Economic sustainability

Ensure robust and resilient food industry

Social sustainability

Improve livelihood, promote balanced diet

Environmental sustainability

Save global environment for the future generation

ASEAN's Strategy and Japan's Strategy in Summary

ASEAN's Strategy

✓ASEAN Regional Guidelines for Sustainable Agriculture in ASEAN(2022)

- Guide AMS on the transition of their agriculture to highly productive, economically viable, and environmentally sound one

✓ASEAN Leaders' Declaration on Strengthening Food Security and Nutrition in Response to Crises(2023)

Japan's Strategy

✓Strategy for Sustainable Food Systems, MIDORI (2021)

- Realize increases in both productivity and sustainability in the food, agriculture, forestry and fisheries industries through innovation

Common approach of ASEAN and Japan＝
While increasing productivity,
increase the sustainability of agriculture and food systems