

DEVELOPMENT OF VALVES FOR AUTOMATIC PADDY FIELD WATER SUPPLY AND DRAINAGE USING ICT

- Developed a paddy field water management system to control water supply and drainage by automatic or remote control by smartphones or PCs.
- Sophisticated water management can be achieved with less manpower.

BACKGROUND AND SPECIFICS OF THE EFFORT

- In order to reduce the burden on farmers of daily water management, which accounts for approximately 30% of the working time in rice cultivation, a system has been developed, which allows the farmers to see the condition of the paddy field from anywhere, and to manage water depending on the condition by remote control freely at any time.

OUTCOME

- The system was commercialized by a private company in 2018.

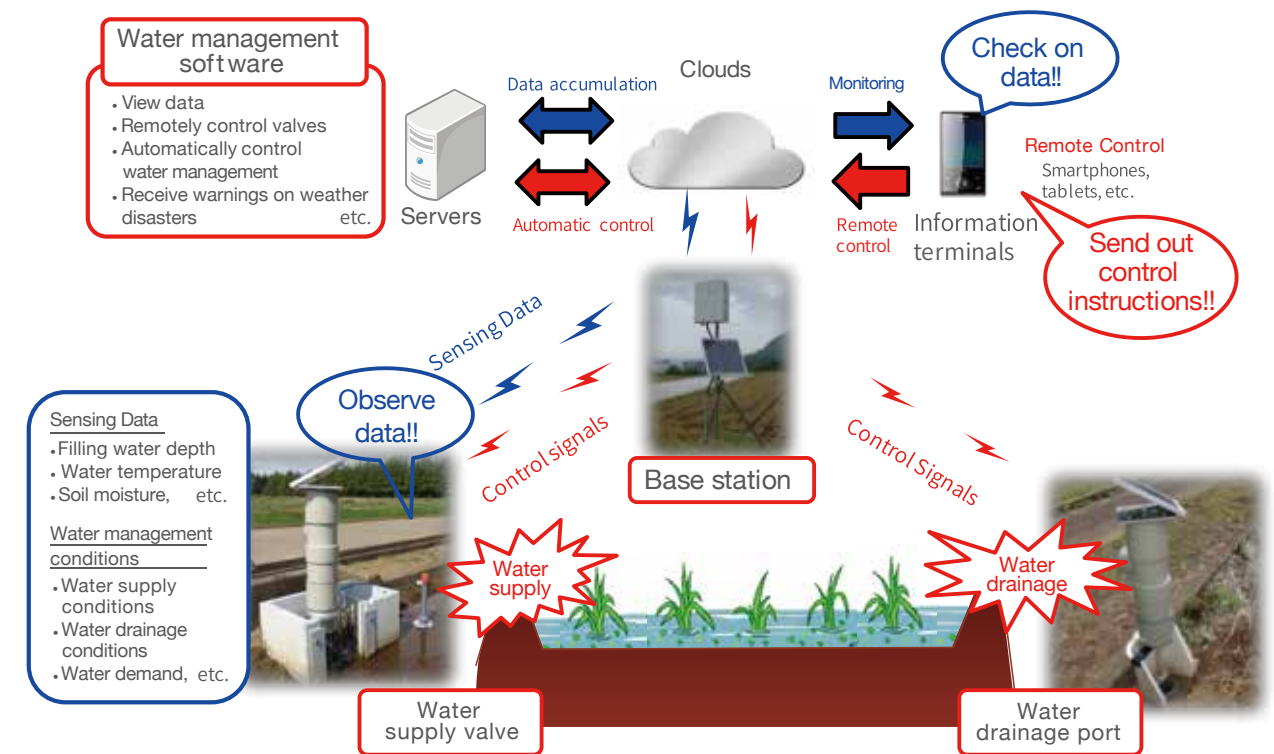
CHARACTERISTICS

- Water management software allows you to manage both water supply and drainage by automatic or remote control while monitoring sensing data.
- You can also optimize the water management schedule depending on crop growth conditions and weather conditions.
- Power supply is not required as the controlling device operates only with solar power generation and built-in battery.
- Large-scale installation work is not required either as it can be installed on currently existing water supply valves and drainage ports.

BENEFITS

- Significant reduction in labor required for water management leads to additional scale expansion of large scale farmers.
- Realization of appropriate water management contributes to avoiding yield decrease and reducing water consumption.

OVERVIEW OF WATER SUPPLY AND DRAINAGE VALVES CONTROLLED REMOTELY OR AUTOMATICALLY USING ICT



Operation screen

DEVELOPMENT OF SELF-DRIVING RICE TRANSPLANTERS

- Seedlings can be supplied into the machine and then transplanted in the field by one person.
- A newly-developed steering system has significantly increased the speed of the transplanter.
- With unmanned operation, you can transplant seedlings with speed and accuracy higher than those of highly experienced farmers.

■ BACKGROUND AND SPECIFICS OF THE EFFORTS

- A self-driving rice transplanter which enables unmanned operation has been developed in order to save labor required in rice transplanting and solve labor shortage. A steering system has also been developed, and it takes about eight seconds only for the transplanter to make a turn. When it travels straight, it does with standard deviation of less than two centimeters; accuracy as high as that of highly experienced farmers has been realized.

■ CHARACTERISTICS

- A riding rice transplanter, which is commercially available, is equipped with an antenna and a receiver for satellite positioning information. It recognizes its position with accuracy of several centimeters. It measures tilts with a sensor in three-dimensional directions, and corrects positioning information highly accurately.
- An electronic control unit controls a steering motor which has been incorporated into the steering wheel and steering mechanism, and steers the transplanter automatically along a route which has been set in advance.
- With a portable pendant-shaped remote controller with built-in safety functions, you can remotely control the transplanter to make an emergency stop and pull over to the bank; a safe unmanned operation has been realized.

■ OUTCOME

- Early commercialization in or after 2020 is expected.

■ BENEFITS

- It helps to save labor during heavy farming seasons, and enables new farmers to perform farm work as skillfully as highly experienced farmers, contributing to expansion of farming scale. It is also expected to be used as an automatic-driving technology for self-driving vehicles in general.



Self-driving rice transplanter traveling without a driver



It can transplant seedlings in a trapezoid-shaped rice-field.



Fast turn without going back and forth

COMMERCIALIZATION OF ROBOT TRACTORS

- Robot tractors have been commercialized in Japan that can drive autonomously on farm fields without driver on board.
- Collaborative work, which enables a person to operate two tractors, significantly improves efficiency in farm work, and makes it possible to work on more land in a limited period of time.

■ BACKGROUND AND SPECIFICS OF THE EFFORT

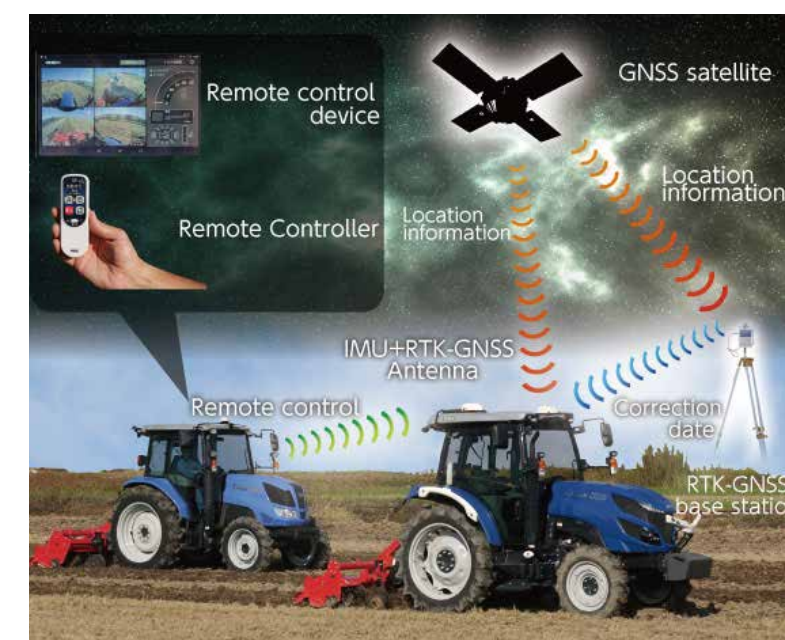
- Research on and development of self-driving tractors (robot tractors), which make farm work require little/no labor, have been promoted as a national project, in order to realize ultra-labor-saving and large-scale production.

■ OUTCOME

- One company in 2017 and two companies in 2018 started commercialization of robot tractors.

■ CHARACTERISTICS

- A robot tractor automatically creates a work route in the farm field by setting the shape and location of the field manually. Along the work route, the robot tractor can work autonomously with high-precision based on the geolocation data sent from GNSS satellites. A robot tractor is also equipped with various safety functions including sensors to detect people and other obstacles.
- A user sends signals to start and stop the work performed by a robot tractor with a remote controller. He/she monitors the robot tractor from farm field surroundings, or rides a tractor and follows the robot tractor: "collaborative work method".
- In the collaborative work method, one person can operate two tractors, which makes it possible to improve the work efficiency and save labor.



Mechanism of autonomous driving
Iseki & Co., Ltd.(Trial sale started in Dec. 2018)



Monitoring from farm field surroundings
Kubota Corporation
(Trial sale started in Jun. 2017)



Collaborative work method
Yanmar Agri Corporation (Sale started in Oct. 2018)

PROMOTION OF FOOD VALUE CHAIN DEVELOPMENT IN DEVELOPING AND EMERGING COUNTRIES THROUGH PUBLIC-PRIVATE PARTNERSHIP

Based on the Global Food Value Chain Strategy developed in June 2014, the Ministry of Agriculture, Forestry and Fisheries has been promoting food value chain (FVC) development on a global scale, applying the technologies and know-how of Japanese companies through bilateral policy dialogues with developing and emerging countries. The effort contributes to the increase of farmers' income, development of food companies, and eventually, global food security.

■ BACKGROUND

In developing and emerging countries, stable and sustainable FVC remains underdeveloped. Poor storage facilities and transportation systems, along with a lack of knowledge and skills among farmers, often cause food loss and make it difficult to provide safe and secure food that satisfies consumers' demands.

Therefore, it is important to develop supply systems to provide safe and secure food for consumers in urban areas, as well as to increase farmers' income and create jobs in rural areas. The promotion of local FVC development via the introduction of Japanese technologies and know-how, such as cold chains, can help make progress toward these goals.

■ RESPONSIBLE ORGANIZATIONS

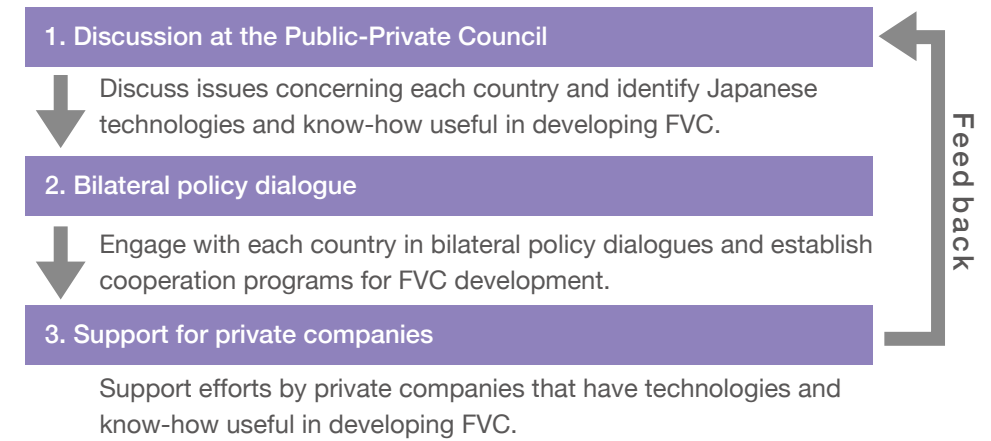
The Ministry of Agriculture, Forestry and Fisheries (MAFF) and other governmental organizations, in cooperation with private companies and organizations

■ TARGETS

Every FVC stakeholder, including producers, manufacturers, processors, distributors, retailers, and consumers

■ DETAILS

MAFF developed the Global Food Value Chain Strategy in June 2014. Details of the strategy are as follows:



■ OUTCOME

Bilateral policy dialogues for FVC development with 13 countries (*) have been held. Cooperation programs for FVC development such as the Medium- to Long-Term Vision for Japan-Vietnam Agricultural Cooperation and the Food Value Chain Roadmap in Myanmar have been established and implemented. (*) Vietnam, Myanmar, Indonesia, Thailand, Cambodia, the Philippines, India, Brazil, Argentina, South Africa, Kenya, Russia, and Uzbekistan

■ FUTURE PLAN

MAFF will continue to promote FVC development in developing and emerging countries through public-private partnership.



Public-Private Council



Bilateral Policy Dialogue

THE MEDIUM-TO LONG-TERM VISION FOR JAPAN-VIETNAM AGRICULTURAL COOPERATION

(ESTABLISHED IN AUGUST 2015, REVISED IN APRIL 2018)

SIGNIFICANCE OF THE VISION

- Development of Vietnamese agriculture, which accounts for approximately 50% of the population and 20% of the GDP, is essential to the improvement of the standard of living in Vietnamese rural areas and balanced nationwide development. It is important to develop FVC covering production, processing, distribution, and consumption in the future.
- The Medium-to Long-Term Vision for Japan-Vietnam Agricultural Cooperation has been established as five-year action plans (2015-2019) aimed at solving issues in Vietnamese agriculture over the medium to long term. Steady implementation of the plans by both Japan and Vietnam has significantly contributed to the comprehensive development of Vietnamese agriculture.

MAJOR ACTION PLANS (2015-2019) [REVISED IN APRIL 2018] AND THEIR PROGRESS THROUGH DECEMBER 2018

Food processing and product development

- **Model region (Lam Dong Province)**
- Producing high value-added agricultural products that meet domestic and international demand
- Assisting with activities associated with the branding of major products and promotion of agritourism



Key visual for a branding strategy

Progress

- Assisting in establishing branding strategies and developing agritourism in an effort to realize major strategies associated with agricultural development in Lam Dong Province



Improvement of distribution and cold chains

- **Model region (suburbs of large cities such as Hanoi and Ho Chi Minh)**
- Promoting private investment in the construction of refrigerated warehouses and establishment of cold chains
- Conducting a Japan-Vietnam cooperative survey on standards and certifications of agricultural products and foods

Progress

- Providing high-quality and mass-logistics services since July 2016 in Binh Duong Province, a suburb of Ho Chi Minh, with their temperature zones at frozen, chilled, and room temperatures



Refrigerated warehouse

- Signing a memorandum in April 2018 to promote the establishment of standards and certifications of agricultural products and foods and organizing a working group

Cross-sectional initiative

■ Consideration of climate change

- Developing infrastructures to prevent intrusion of sea water
- Planting to protect drainage basins and enhance the forest-management ability of the people in the regions

■ Developing highly-skilled manpower (Can Tho University and others)

- Establishing endowed courses and sending staff from Japanese food companies as lecturers

Progress

- Signing the Exchange of Note in June 2017 on the implementation of the Ben Tre Water Management Project, which is an effort to prevent the intrusion of sea water in the Mekong Delta region (facilities to be completed in 2022)
- Improving forestry-management systems and contributing to environmental conservation and poverty reduction through planting and building forestry infrastructures under Protection Forests Restoration & Sustainable Management Project
- Implementing endowed courses sponsored by Japanese companies at Vietnam National University of Agriculture, covering various areas of FVC



Facilities to prevent salt water intrusion (Image for illustrative purpose only)



Endowed course

Enhancement of productivity and value added

■ Model region (Nghe An Province)

- Enhancing agricultural productivity and value added through reform of decrepit irrigation facilities, establishment of production systems for safe vegetables

Progress

- Improving agricultural productivity through the introduction of varieties that are fast growing, high-yielding, resistant to diseases and pests, and suitable for local weather. After experimental cultivation, the cultivated area is to be expanded. (from approximately 400 ha in 2016 to 1,000 ha in 2018 (forecast))
- Reforming decrepit irrigation facilities under North Nghe An Irrigation System Upgrading Project, to be completed in 2020



Introduction of new varieties



Reformed water channel



Improvement in post-harvest processing

■ Nationwide Initiative

- Establishing plant variety protection systems based on the 1991 Act of the UPOV Convention

Progress

- Extending cultivation methods under the Project for Improvement of Reliability of Safe Crop Production in the Northern Region and contributing to improvements in the safety and reliability of agricultural products

Setting up a consultation desk for new agricultural businesses (Agribusiness Japan Desk) to assist Japanese companies entering Vietnamese markets under collaboration with the Ministry of Agriculture and Rural Development of Vietnam



Consultation desk set up in the Ministry of Agriculture and Rural Development

FOOD VALUE CHAIN ROADMAP IN MYANMAR

SIGNIFICANCE OF THE ROADMAP

- The Roadmap aims to effectively link efforts made by the public and private sectors of Japan and Myanmar and develop and enhance FVC in Myanmar. It lists measures to be taken in the next five years in the following two categories:
 - Product-specific measures (rice and pulses, oil and industrial crops, horticultural crops, etc.)
 - Cross-product measures (agricultural finances, agricultural machineries, food industry, etc.)
- Planned implementation of the Roadmap by both Japan and Myanmar has greatly contributed to the comprehensive development of Myanmar's agriculture.

MAJOR ACTION PLANS IN THE ROADMAP (2016-2020) AND THEIR PROGRESS THROUGH 2018

[Product-specific measures]

Rice and pulses

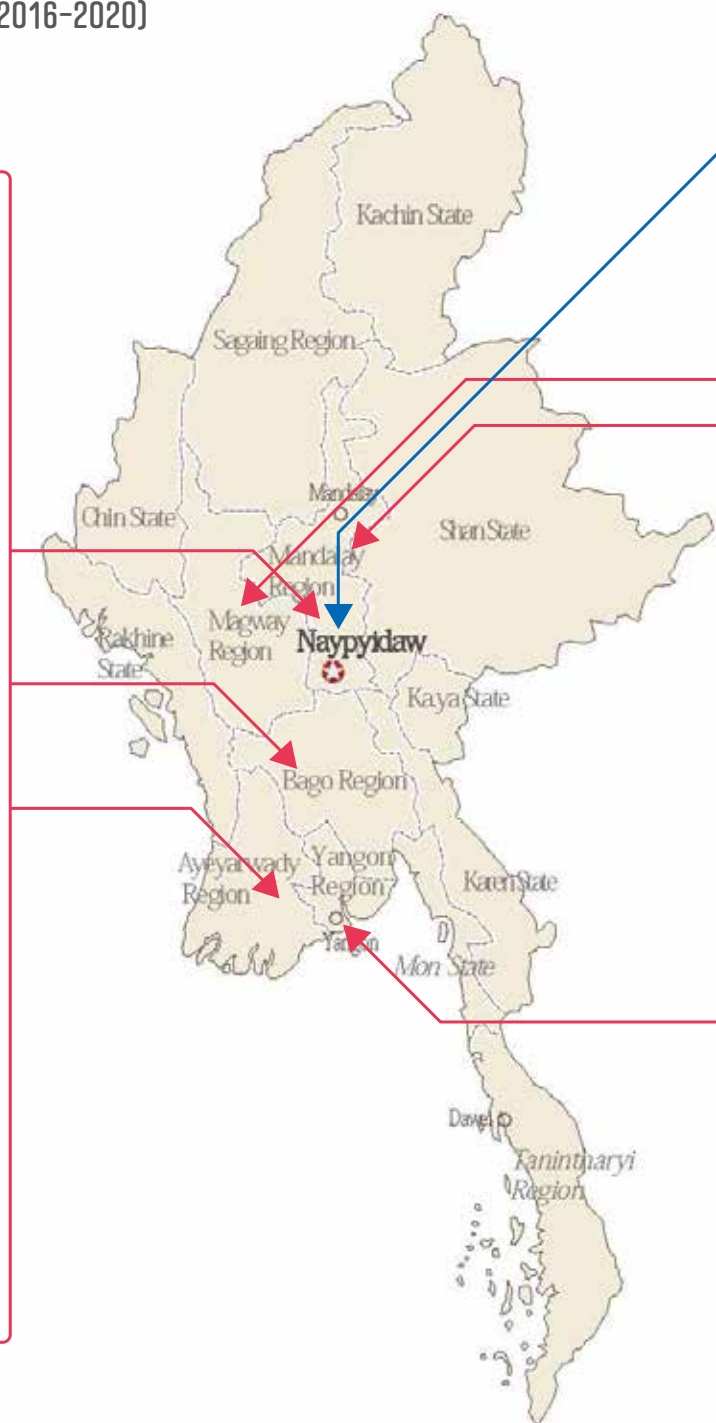
- Purifying varieties, removing red rice, reducing broken rice ratio, and promoting mechanization
- Improving irrigation and drainage facilities, farm roads, etc. along with improving farm fields

Progress

- Improving production and distribution systems of quality-guaranteed seeds under Development of Participatory Multiplication and Distribution System for Quality Rice Seeds. (Mandalay and Ayeyarwady Regions)



- Forming more than 100 farmer groups to allocate irrigation water to farm land and maintain and repair irrigation facilities under Project for Profitable Irrigated Agriculture in Western Bago Region.



[Cross-product measures]

Food industry

- Assisting SMEs (Small and Medium Enterprises) through measures such as SME finance and tax exemption
- Establishing quality standards for processed food

Progress

Establishing a frozen food processing plant by a Japanese joint venture and beginning exports of frozen vegetables to Japan (Naypyidaw; since 2016)



Agricultural finances

- Increasing funds for machinery and equipment through investments by the Myanmar Agricultural Development Bank (MADB)
- Enhancing the screening abilities of MADB

Progress

Financing for the purchase of 1,043 pieces of machinery such as tractors, combine harvesters, and cultivators in twelve regions/states under the Agriculture and Rural Development Two Step Loan Project (nationwide; funding complete)



Oil crops and industrial crops

- Improving oil crop seeds and extending cultivation technologies
- Establishing extensive supply networks

Progress

Specifying varieties of and cultivation methods for peanuts, sesame, pigeon peas, and mung beans, which are suitable for the weather and soil in the Central Dry Zone, and transferring seed production technologies under the Project for Development of Water Saving Agriculture Technology in Central Dry Zone (Mandalay and Magway Regions)

Horticultural crops

- Supplying seedlings of high-quality varieties and introducing appropriate pesticides and fertilizers
- Improving quality control including development of cold chains by private investment

Progress

- Understanding the current FVC situations, identifying the issues to develop FVC, and assisting policy making by dispatching agricultural policy advisors
- Developing cold distribution warehouse projects by Japanese companies (Thilawa SEZ, etc.)



Agricultural machineries

- Providing financial assistance from various sources
- Establishing examination systems for agricultural machinery to guarantee safe operation
- Providing after-sale services

Progress

Launching business by Japanese companies in Thilawa SEZ (Special Economic Zone) and expanding sales networks in collaboration with dealers in Myanmar (nationwide)



FOSTERING AND STRENGTHENING FARMERS' ORGANIZATIONS IN DEVELOPING COUNTRIES THROUGH FUNDING TO THE ICA

In cooperation with the International Co-operative Alliance (ICA), the JA Group (agricultural co-operatives and federations in Japan), and the Institute for the Development of Agricultural Cooperation in Asia (IDACA), the Ministry of Agriculture, Forestry and Fisheries (MAFF) of Japan assists ICA's capacity-building efforts to foster leaders in management and strengthen business activities of agricultural cooperatives and others by conducting training at IDACA and JAs in Tokyo and surrounding areas. These initiatives contribute to increases in agricultural products, increases in farmers' income, and eventually food security worldwide.

■ BACKGROUND

As mutually aided organizations, Japan's agricultural cooperatives provide various services such as vital farm guidance and have also been the basis for development of agriculture, rural areas, and farmers in Japan.

In developing countries, where the majority of the farmers work in small-scale operations, agricultural cooperatives play an important role in enhancing the marketing of farm products, supplies of production input, and credit. Hence, it is important for Japan to assist in fostering and strengthening farmers' organizations in developing countries.

■ RESPONSIBLE ORGANIZATIONS

The Ministry of Agriculture, Forestry and Fisheries (MAFF), the International Co-operative Alliance (ICA), JA Group (agricultural co-operatives and federations in Japan), and the Institute for the Development of Agricultural Cooperation in Asia (IDACA)

■ TARGETS

Members of farmers' organizations, including agricultural cooperatives in the Asian and African regions

■ DETAILS

Upon receiving funding from Japan, the International Co-operative Alliance Asia and Pacific (ICA-AP) implements the capacity-building project. The Institute for the Development of Agricultural Cooperation in Asia (IDACA) is responsible for project training in Japan.*

The main training courses in Japan are as shown below.

(Note)*: Training may be conducted in one of the Asian countries in addition to Japan. By undergoing training in one of the Asian countries, such as Thailand, which is relatively developed, and in Japan, which is more advanced, trainees will be able to gauge the differences in cooperative management more clearly.

- Training Course on "Fostering Leaders in the Management and Development of Agricultural Cooperatives"

Assist in the fostering of farmers' organizations, including agricultural cooperatives, to boost agricultural production and increase farmers' income through the development of agriculture as a main industry in the Asian region



- Training Course on "Empowering Women in Business and the Management of Agricultural Cooperatives"

Assist in the capacity building of leaders of rural women to promote participation in organizational management and organized business activities



- Training Course on "Fostering Agricultural Cooperatives for the Food Value Chain"

Contribute to the development of agricultural cooperatives and improvements in members' living standards, focusing on strengthening the food value chain by employing marketing business approaches that are more profitable



(GOOD PRACTICE 1 : PHILIPPINES) PROMOTING WHITE ONION PRODUCTION FOR MORE SUSTAINABLE MARKETING IN SAN JOSE AND MAGSAYSAY

OVERVIEW

- Ms. Nerissa D. Lucena, General Manager, Lourdes Multi-Purpose Cooperative (Lourdes MPC) attended a training course in FY2017.
- She disseminated information obtained during the training course to her superior officers and cooperative members and gained approval for the implementation of the Action Plan (Title "Promotion of White Onion Production for More Sustainable Marketing in San Jose and Magsaysay").
- In these areas, palay (=rice) and red onions are major crops. 27 farmer members were newly organized as a group to start production of white onions (which can be sold at higher prices because of their tender texture and less pungent taste in comparison with red onions).
- After explaining the quality and supply system of their white onions to a fast food chain (Jollibee Foods Corporation) and gaining its understanding, the cooperative has started shipping the farm produce to the chain's primary processing plant (shipping 68 tons annually). This has increased the net income of the cooperative significantly.

PHOTOS RELATED TO THE ACTIVITIES



Briefing for farmer members



Production guidance in the field



White onion



Jollibee's collection & shipment facility for white onions



Jollibee's farm produce distribution center



Ms. Nerissa (third from the left) attends a seminar by the Jollibee Group

(GOOD PRACTICE 2 : LAO PDR) ORGANIZING 14 FARM HOUSEHOLDS IN NONGYATEUNG VILLAGE INTO A GROUP AND EXPORTING COFFEE BEANS TO SWITZERLAND

OVERVIEW

- Mr. Bounheuang Vongmanykhoun, Administrative & Financial Manager of the Bolaven Plateau Coffee Producers Cooperative (CPC), attended a training course in FY 2015 (1,093 member households; average land holding: 3 ha).
- He developed an Action Plan titled "Expanding membership of CPC to the coffee farmers of coffee producers in Nongyateung" based on knowledge and ideas he obtained during training course at IDACA, aiming to expand membership in the targeted organization in order to revitalize the cooperative's production and marketing.
- As for the activities of Action Plan, he conducted training programs designed to improve the capacity of the member farmers in processing (= cleaning process*), started production of high-quality commodities, and conducted training on traceability and quality control.
- After the cooperative organized, production increased by 46%, and processing in Crop Year 2017-2018 reached 8,300 tons. The cooperative's marketing channels were developed, including exports, as two containers (equivalent to about 38 tons) were shipped to Switzerland.

(Note)*: By cleaning off mucilage from the surface, clean coffee beans of uniform quality can be produced. This process is generally equivalent to primary processing.

PHOTOS RELATED TO THE ACTIVITIES



Mr. Bounheuang Vongmanykhoun, Manager



Coop members in front of a processing facility



Primary processing (cleaning process)



Drying and selection of beans after cleaning

(GOOD PRACTICE 3 : THAILAND) MARKETING OF A HEALTH DRINK PRODUCED BY A WOMEN'S GROUP IN TOMBON, KASET PATTANA

OVERVIEW

- Ms. Prasertsri Mangkornsaksit, Manager of Banphaeo Agricultural Co-operatives Ltd., attended the "Training Course on Fostering Core Leaders of Agricultural Cooperatives" (the former name of the current course "Fostering Leaders in the Management and Development of Agricultural Cooperatives") in FY 2016. During this training course, she picked up many hints for improving her cooperative's business on relationships between JA and its members for JA's agro-processing business, direct sales shops, and the activities of JA Women's Associations.
- There was a factory that procured medicinal plants from local farmers for processing in the past. However, after the factory closed, the farmers lost interest in production of medicinal plants. Thus, Banphaeo Agricultural Co-operatives Ltd. and CPD (Cooperative Promotion Department, Ministry of Agriculture and Cooperatives) provided guidance on organizing a women's group for product development, distribution, and marketing so as to enable farmers to start a processing business for medicinal plants by themselves.
- Since the area was also famous for aloe vera production, the women's group decided to engage in production and marketing of aloe vera juice. In addition, they obtained halal certification, issued by the Thai government, aiming to export the juice to countries overseas.
- Currently, they are exporting this aloe vera juice to several ASEAN Member States, namely Cambodia, Lao PDR, Vietnam, and Malaysia, resulting in steady income growth among women's group members.

PHOTOS RELATED TO THE ACTIVITIES



Ms. Prasertsri Mangkornsaksit, Manager



Women's group



Processing of aloe vera

HIGHLY-FUNCTIONAL CONTAINERS AND PACKAGES TO HELP REDUCE FOOD LOSS

- 6.46 million tons of food is estimated to have been wasted in Japan in FY2015. This means that about twice as much food as the food aid provided globally by United Nations' World Food Programme, which amounted to 3.2 million tons approximately, was wasted.
- Food containers and packages have a role of delivering food to consumers while preserving the safety and quality of the food. They contribute to reducing food loss by extending the shelf life of the food.
- As there are various approaches to improving containers and packages to reduce food loss, the Ministry of Agriculture, Forestry and Fisheries published examples of highly-functional containers and packages on the website.



High Function	Example of Approaches
Preservation of freshness	Preserving freshness of food and other contents by using multiple packaging materials with different functions when manufacturing the containers and packages.
Extension of food life	Since food deterioration is prompted by oxidation, among other factors, we try to extend food life by using packaging materials with high barrier properties.
Separateness of contents	By using packaging materials that have been specially processed so that the food does not stick to them, we increase the separateness of food and its containers and packages.
Small individual packaging	By dividing food into small individual packages, we make it possible to consume as much food as necessary and whenever necessary to eliminate waste.
Reduction of damage during transportation	By wrapping fragile contents such as fruits and vegetables with soft packaging materials, we reduce damage and loss ratios during transportation.
Others	By changing the food packaging from bags to containers, we eliminated the waste that used to be generated when using bag packaging. We also devised better shapes of the containers.

THE APPROACH OF FARMING-PHOTOVOLTAICS (FPV) THAT CONTRIBUTES TO ACHIEVE THE SDGs

- FPV is an approach that is expected to further improve farm management through continuous income stream from the sale of electricity and captive-consumption of generated electricity, in addition to the income from the sale of crops.
- This approach is in line with the SDGs to protect global environment while pursuing income growth, and efforts involving local communities have been spreading in recent years.

* Farming photovoltaics(FPV) : FPV is an approach to install PV equipment above farmland, while properly continuing farming.

Example 1

RESTORATION OF THE DESOLATE FARMLAND AND CONTINUATION OF AGRICULTURE IN THE COMMUNITY

[Effort led by] Three little birds LLC (TLB), People's energy Chiba LLC (PEC), Chiba Ecological Energy Inc. (CEE), (Chiba prefecture)

- Due to aging of local farmers, abandoned agricultural land has increased.
- PEC, the community-based power generating company, invited new farmers, and established TLB. TLB carries out FPV on abandoned agricultural land with support by CEE.
- Under the solar panels, TLB organically cultivated "native soybeans" they increased the added value. They achieved a yield equivalent to the regional average yield per unit of land. Moreover, cooperating with some business operators, they created high added value by producing alternative coffee and confectionery, that were made from the soybeans they grew.
- TLB has achieved stabilization of management by earning from electricity sales and it increased the continuity of agriculture in the community. They led to expand arable land and resolved the abandoned agricultural land issue which had been a concern in the community among citizens. These efforts spread together with the PEC and other companies, attempting to promote regional development.



Participating farmers



Exterior of the power generator



Cultivation work by a tractor under the PV

Example 2

PROMOTION OF FARMLAND USE THROUGH COLLABORATION BY UTILIZING INCOME FROM ELECTRICITY SALE FROM FPV

[Effort led by] Yoshitaka Koie, Takarazuka Sumire Electric Power Co., Ltd.(Sumire) (Hyogo Prefecture)

- While facing a challenge of the lack of local farmers' successors, Mr. Koie managed a citizen farm and making efforts to promote understanding agriculture among local people and to revitalize the community.
- Sumire has made efforts to install renewable energy facilities in the city. Sumire considered a citizen farm, which many people has joined, as an approach that can revitalize both agriculture and the community itself, and invited Mr.Koie to join FPV.
- Under the solar panel, Mr. Koie managed a citizen farm, and citizens paid fees for their allotted farmlands and harvested sweet potatoes. Local students developed jam made from the sweet potatoes and sell it.
- When installing the equipment, Sumire utilized a no-interest loan provided by the prefecture as well as got funding from citizens, and placed it as an emergency power system in case of disaster. A part of the income from electricity sale is returned to the citizens as a discount for farm usage fees so as to avoid vacancy in sections in the citizen farm. Other efforts of local participation has also been expanding: i.e., a newly established regional Power Producer and Supplier has decided to purchase the electricity Sumire generated.



the citizen farm



Exterior of the power generator



Jam developed by local students

EFFORTS TOWARDS A “SHIFT TO THE SIXTH INDUSTRY” TO INCREASE FARMERS’ INCOME

- The Ministry of Agriculture, Forestry and Fisheries has promoted efforts towards a “shift to the sixth industry,” which means that farmers, foresters, and fishermen become engaged not only in production (the primary industry), but also in processing (the secondary industry) and distribution (the tertiary industry) altogether.
(Primary industry x Secondary industry x Tertiary industry = Shift to Sixth industry)
- They hope to increase added value of products of agriculture, forestry and fisheries, increase income of farmers, foresters, and fishermen, and stabilize their management, through efforts towards a shift to the sixth industry.
- Various efforts have been made throughout the country. Presented below is an example of efforts towards a shift to sixth industry of a cherry producer in Yamagata Prefecture.

EFFORT BY YAMAGATA SAKURANBO FARM CO., LTD.

SPECIFICS OF THE EFFORT AND ITS BACKGROUND

- They are a producer who runs orchards of cherries and other fruits in Tendo city, Yamagata Prefecture.
- In addition to production, they also process fruit juice, liquor, etc., run a tourist orchard where tourists can experience harvesting fruits and a café that offers home-made parfait and other food, and sell products at a direct-sale shop and on the internet.
- In the aftermath of the Great East Japan Earthquake, which occurred in 2011, the number of orchard visitors decreased drastically, and a large amount of products had to be discarded. They are diversifying their business for a stable management that is resistant to such disasters.



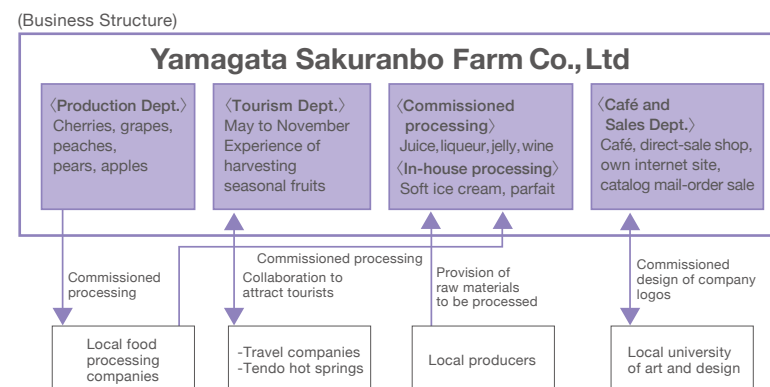
The series of harmonized design achieved the Bland Design Award of Yamagata Excellent Design 2015.

OUTCOME OF THE EFFORT

- Total sales from the tourist orchard: JPY180.20 million (2013) to JPY274.87 million (2017)
- Sales from the café: JPY1.51million (2013) to JPY14.81million (2018)
- Number of visitors to the tourist orchard: 23,000 (2013) to 60,000 (2018)

FUTURE PROSPECT

- They plan to increase awareness of the orchard and increase customers through accepting sightseeing tours in collaboration with local Tendo hot springs and developing new products. They particularly plan to proactively attract foreign visitors to Japan.



SOCIAL WELFARE ORGANIZATION “COCORON”

- In order to promote social participation and employment of people with disabilities, a social welfare organization grows agricultural products without using pesticides and chemical fertilizers, and runs a network of direct-sale stores that sell agricultural products and processed goods.
- They have contributed to economic independence of people with disabilities through sales increase. They have also assisted people with disabilities to be integrated into the community through increased understanding of them.

BACKGROUND

It used to be an NPO supporting people with disabilities. They opened a direct-sale store in 2006 that sold local agricultural products, and made effort towards greater assistance for social participation and employment of people with disabilities.



Direct-sale store “Cocoroya”

EFFORT LED BY

Social Welfare Organization “Cocoron”

SPECIFICS OF THE EFFORT

- They reused farmland that had no longer been cultivated and grew agricultural products without using pesticides and chemical fertilizers (2 ha for vegetables and 1.5 ha for paddy rice). They also took over management of a chicken ranch that had gone out of business and started Cage-free egg poultry (approximately 1,000 hens).
- They produced and sold sweets made from agricultural products grown by themselves or by local farmers, and offered mobile catering at apartment houses whose residents were ageing and temporary houses for refugees of the Great East Japan Earthquake.



Product examples



Mobile catering at temporary houses

OUTCOME

- Sales at direct-sale stores increased from approximately JPY20 million in 2012 to approximately JPY68 million in 2017.
- Increase in sales led to increase in wages and contributed to economic independence of people with disabilities. Understanding of people with disabilities was promoted and integration of participants into the community was made possible.

FUTURE PROSPECT

- They plan to involve the community in their business development to sustain their efforts associated with agriculture, food education and welfare of the people.

YOUNG FARMERS PRODUCING AND BRANDING QUALITY EUROPEAN VEGETABLES TO SUPPLY TO RESTAURANTS

- Farmers, restaurants, distributors and the local governments cooperatively formed a study group to grow European vegetables locally to meet the demands of local restaurants.
- Several young farmers have been producing various European vegetables to meet the needs of local restaurants throughout the year, and have come to supply their products to more than 1200 restaurants.
- They have introduced production support and sales management systems in cooperation with Shibaura Institute of Technology, and the collaborative effort has developed into an industry-government-academia collaboration system.

■ BACKGROUND

- In Saitama City, there are a lot of Italian and French restaurants, and they are in need of relatively inexpensive and fresh European vegetables.

■ SPECIFICS OF THE EFFORT

- Producers, restaurants, distributors, seed and seedling companies, and administrative agencies gathered and formed “Saitama European Vegetable Society” in April 2013 to grow European vegetables locally.
- Approximately ten young farms (family owned) started growing European vegetables.
- They introduced IT systems for production support and sales management in 2015 in cooperation with Shibaura Institute of Technology, and their effort developed into an industry-government-academia collaboration system.
- In 2016, 11 producers established an agricultural producers' co-operative corporation "FENNEL," and started business development to stabilize management, improve work efficiency, and diversify their business.
- Currently they produce approximately 70 European vegetables including Italian eggplants and beets throughout the year and supply them to over 1,200 restaurants primarily in Saitama Prefecture.
- The prices are determined by the producers themselves, referring to the prices of imported products.

■ OUTCOME

- Producers have stabilized their income and restaurants are able to use fresh and locally grown vegetables.

■ FUTURE OUTLOOK

- In order to position European vegetables as new local brand products, they are working on increasing business partners, holding events in collaboration with restaurants, and other collaborators.



PRODUCTION AND EXPORT OF EDAMAME (GREEN SOYBEANS) WITH INTERNATIONAL TECHNOLOGIES BROUGHT TOGETHER



- In Nakasatsunai Village, Hokkaido, they produce frozen Edamame (green soybeans) and string beans that keep freshness as just harvested.
- Together with JA, they have streamlined and systematized harvest work using large machines, improved processing facilities, increased storage facilities, etc. They have now become able to process products, freezing quickly by using -196°C liquid nitrogen, within three hours after harvest at any time.
- When procuring seeds and harvesting machinery, they imported and used high-quality and high-performance products from overseas.
- They have expanded their sales channels for their products to overseas countries.

■ BACKGROUND

- They needed to introduce new highly-profitable crops which can be combined with field crop rotation crops (sugar beets, potatoes, wheat, and beans).

■ SPECIFICS OF THE EFFORT

- They started the production 27 years ago, and are now growing 650 ha of Edamame and 200 ha of string beans. In order to establish an optimal production system, they have procured machinery and seeds globally.
- They have imported high-quality Italian string bean seeds and grown them.
- They have imported and introduced 6 French-made harvesters made for harvesting green peas. They have established an efficient production system to harvest for 24 hours a day on a three-shift basis.
- Harvested Edamame and string beans are frozen quickly by using -196°C liquid nitrogen to keep them fresh and processed and sold mainly as frozen products.
- In order to minimize the time required for harvest and transport, they have developed a field where large machines can easily operate. They have become able to harvest, process and quick-freeze the products in three hours at any time.



■ OUTCOME

- With sales exceeding 2.7 billion yen, the frozen Edamame and string beans have grown into specialty products representing the region.
- They are supplied to schools in 36 prefectures in Japan for school meals, and their sales channels have been expanded overseas such as Canada, Australia, Hong Kong, Hawaii, Singapore and Dubai.