

Summary of the Terminal Evaluation

I . Outline of the Project		
Country: Republic of the Philippines		Project: Improvement of Packaging Technology for Philippine Food Products in the Region
Sector: Livelihood improvement (empowerment of the poor) / support of small and medium enterprises		Cooperation scheme: Technical cooperation
Division in charge: Philippine Office		Cooperation amount: 396.50 million yen
Period of cooperation	Jun. 2005 to Jun. 2009 (4 years)	Partner country's implementing organizations: Department of Science and Technology Packaging R&D Center
		Supporting organizations in Japan: none in particular Related cooperation:
<p>1-1 Background to and outline of the cooperation</p> <p>In the Philippines, small and medium enterprises (SMEs) in the food industry constitute one of the sectors that contribute the most to the national economy. Around 2000, when a project was requested, the SMEs in the food industry accounted for more than 40% of gross regional domestic product (GRDP) in the Philippines and offered jobs especially in rural areas. However, the growth and development of food SMEs have been hampered by poor packaging and a short storage period. Although large food processing companies in urban areas, such as Metro Manila, can introduce state-of-the-art packaging technology, many food companies in rural areas have difficulties in acquiring packaging information, technology, and materials and cannot fully meet demands from domestic supermarkets and standards in importing countries.</p> <p>To meet rural food companies' need for packaging technology, the Department of Science and Technology (DOST) established the Packaging R&D Center in 1999. Although PRDC's technical support service has reached a certain level, there is immediate necessity to strengthen PRDC's human capacity and facilities to meet rural SMEs' further needs related to packaging.</p> <p>In this situation, the Philippine Government requested the Japanese Government to give technical cooperation in improving PRCD's human capacity for the improvement of rural food SMEs' packaging technology. Responding to this request, JICA dispatched a survey mission, consulted with the Philippine persons concerned, and decided to carry out a JICA technical cooperation project that was to be implemented with initiative of PRDC, entitled "Improvement of Packaging Technology for Philippine Food Products in the Region" (hereinafter referred to as this "Project") .</p>		
<p>1-2 Contents of the cooperation</p> <p>To improve the packaging technology of rural food SMEs in the Philippines in particular, JICA gave technical cooperation to improve PRDC's skill in improving packaging technology and to improve its ability to hold consultations with clients who visit PRDC to seek consultation about packaging technology support.</p>		

(1) Overall goal

The rural food SMEs that are PRDC's clients will improve the marketability of their products in the domestic and export markets.

(2) Project goal

PRDC will enhance its capability to improve its packaging technology services for rural food SMEs.

(3) Outputs

1. Improvement of PRDC's capability to formulate an activity plan, monitor the activities, and control information for the management of this Project
2. Strengthening of PRDC's skills and knowledge about appropriate packaging technologies
3. Improvement of PRDC's skills and knowledge about appropriate package and label designs
4. Improvement of PRDC's capacity to hold seminars for dissemination and motivation, workshops, and corporate consultations for the support of rural food companies' introduction of appropriate packaging technologies

(4) Inputs (at the time of evaluation)

• Japanese side: total amount of inputs: 390 million yen

- 1) Short-term experts (14 persons) : team leader, package engineering, project management planning, business management, group coordinator, retort packaging (1) (2) , dried food packaging, CAP/ MAP (Controlled Atmosphere Packaging / Modified Atmosphere Packaging) , MAP packaging, structural packaging design, transport packaging, graphic design, mechanic technology, operational coordination (the total number of man-months is 51.90 MM.)
- 2) Provision of equipment: 130 million yen
- 3) Training of counterparts in Japan (11 persons in total) : consumer packaging, graphic design, project management, transport packaging, dried/semi-dried food packaging, MAP packaging
- 4) Payment of local cost: none

• Philippine side:

- 1) Placement of counterparts: 27 persons in total
- 2) Offices and facilities: offices and equipment for this Project (including the cost of maintaining facilities)

II. Outline of the evaluation team

Team members	Supervisor: Mr. Kenzo IWAGAMI, Deputy Resident Representative of JICA Philippine Office Cooperation Planning: Ms. Kumiko KASAI, Project Formulation Advisor of JICA Philippine Office Evaluation Analysis: Ms. Kazumi UENO, Consultant Manager of Overseas Merchandise Inspection Co., Ltd. Evaluation Analysis: Mr. Rey GERONA, Local Technical Coordinator of JICA Philippine Office Evaluation Assistant: Mr. Pablo LUCERO, Program Officer of JICA Philippine Office	
Period of the evaluation	May 20, 2009 to June 5, 2009	Type of evaluation: Terminal evaluation

III. Outline of the evaluation results

3-1 Confirmation of the achievements

(1) Degree of achievement of outputs

Output 1: Improvement of PRDC's capability to formulate an activity plan, monitor the activities, and control information for the management of this Project

Indicator 1: Regular monitoring of each packaging technology group's activities is to be introduced by the project team by February 2008.

PRDC's annual activity plan was formulated with Japanese experts' guidance and suggestions. The 2008 version contains the activity plan for the support of food SMEs, the goals to be achieved, monthly schedules of activities, and all the target foods. As shown in the status of achievement of Indicator 3, this Project has been carried out according to the annual activity plan through regular monitoring.

Indicator 2: The integrated database on services provided by PRDC is to be put into use as a management information system by December 2008.

Because, in addition to eight types of existing databases, a database for consulting service has been developed, nine types of integrated databases have been used as a part of the management information system.

Indicator 3: More than 80% of the planned activities are to be implemented by the end of this Project.

Although some activities are still not carried out, such as training in Japan concerning contaminants of packaging materials, all the other activities have been completed as planned.

Therefore, it can be said that Output 1 is likely to be achieved.

Output 2: Strengthening of PRDC's skills and knowledge about appropriate packaging technologies

Indicator 1: An implementation plan for technical transfer is to be formulated every year by the project team.

The formulation and implementation of the annual activity plan for each year were confirmed.

Indicator 2: Three staff members of PRDC are to become able to apply high-barrier packaging technology or dried/semi-dried food packaging technology to food in the Philippines by June 2009.

Three staff members of PRDC received training on high-barrier packaging and applied the technology to packaging technologies for cashew nuts, small dried sardines, brownies, bread, etc. It was confirmed during this evaluation that the food SMEs that received consultations were satisfied with the service.

Indicator 3: Three staff members of PRDC are to become able to apply MAP technology to fresh cut vegetables by June 2009.

Three staff members of PRDC received training on MAP technology and conducted a demonstration experiment using fresh cut lettuce and pineapple. It was planned that the technology is to be applied to mushrooms and pomelo (a type of citrus fruits) in the future.

Indicator 4: Three staff members of PRDC are to become able to apply retort technology to various types of food packaging by July 2008.

Three staff members of PRDC received training on retort packaging and developed a procedure for demonstration experiment to apply the technology to various kinds of food. The technology was applied to corn, cassava cake, chicken barbecue, rice cake, sausage, etc.

Indicator 5: Five staff members of PRDC are to become able to design corrugated cardboard boxes for transport packaging of fresh fruits by June 2009.

Five staff members of PRDC received training on transport packaging and improved their ability to develop the design of transport packaging. They applied guidance by the use of CAD software and a sample maker to develop a design of transport packaging for strawberries and have been carrying out a demonstration experiment at a market in Benguet. In addition, they also developed transport package designs for mango and banana.

The technology transferred through Japanese experts' training resulted in the strengthening of PRDC's technical capability. PRDC has independently applied the technology to local food packaging and utilized it for services to rural food SMEs. Therefore, it can be said that Output 2 has already been achieved.

Output 3: Improvement of PRDC's skills and knowledge related to appropriate package and label designs

Indicator 1: The implementation plan for technical transfer is to be formulated every year by the project team.

An annual plan has been formulated every year and activities have been carried out according to the plan.

Indicator 2: Four designers of PRDC are to develop two high-quality packaging designs by June 2009.

Many of the packaging designs developed by PRDC have already been commercialized (such as those for cashew nuts, coffee, and pancakes) .

Therefore, Output 3 has already been achieved.

Output 4: Improvement of PRDC's capacity to hold seminars for dissemination and motivation, workshops, and corporate consultations for the support of rural food companies' introduction of appropriate packaging technologies

Indicator 1: PRDC staff members are to become able to provide appropriate consultation on food packaging technologies at PRDC and locally by June 2009.

At PRDC and locally, the PRDC staff provided consultations on retort packaging, MAP packaging, high-barrier/active packaging, and other food packaging technologies, provided information on transport packaging and brand development, and carried out safety tests for packaged food.

Indicator 2: PRDC staff members are to become able to provide appropriate lectures on food packaging technologies at local seminars by June 2009.

Although PRDC staff members provided lectures only on the basics of packaging and compulsory labeling before the implementation of this Project, they became able to provide more comprehensive lectures at seminars, because brand development, graphic design, packaging technologies, and transport packaging were added to the lecture contents after the implementation of this Project.

Indicator 3: 80% of the participants in local seminars will evaluate improvements in lectures, workshops, and consultations compared with 2005, by June 2009.

As a result of the addition of MAP packaging, active packaging, transport packaging, contaminants of packaging materials, printing technology, brand development, etc. PRDC's local consultations and seminars became more substantial, resulting in an increase in the number of inquiries from rural SMEs. In addition, many seminar participants have continued to use PRDC's services and receive consulting from DOST's packaging coordinators, resulting in an increase in client satisfaction.

Therefore, it can be said that Output 4 is highly likely to be achieved by the end of this Project.

(2) Degree of achievement of the project goal

The implementation of this Project resulted in expansion of the range of PRDC's services, the provision of which then resulted in clients' increasing use of new packages. It also resulted in expansion of SMEs' channels for sales of goods and their markets, leading to an increase in sales and attaining of the high level of customer satisfaction. Therefore, as explained below, it can be said that the project goal has almost been achieved.

Indicator 1: The range of PRDC's technology services that meet rural food SMEs' needs is to expand by 25% by the end of this Project.

The range of PRDC's services at the time of the terminal evaluation has already doubled from the beginning of this Project (the number of clients also increased from 110 in 2005 to 258 in 2009) .

Comparison of the range of PRDC's services before and after this Project

Rural SMEs' problems	Services before this Project	Services added during this Project
Poor packaging and insufficient information	<ul style="list-style-type: none"> - Packaging technology development - Evaluation of nutrition - Technical support for retort packaging - Paid packaging service - Enlightening seminar on packaging and labels - Provision of non-brand packaging materials and containers 	<ul style="list-style-type: none"> - MAP packaging - Retort packaging service - High-barrier packaging - Transport packaging - Package contaminant test - Additional paid packaging service - Training and seminar on packaging technology
Short storage period	<ul style="list-style-type: none"> - Freshness date test - Drop test - Vibration test - Closeness test - Moisture permeation test - Friction test - Elution test - Package and label 	<ul style="list-style-type: none"> - Compression test - Oxygen permeation test - Moisture permeation test - Tension test - Film identification by DSC/FTIR

Unattractive appearance	- Label design - Evaluation of compulsory labeling	- Package design - Graphic design training - Philippine-style design development
Difficulty in procurement of packaging materials		- Short-time printing by digital printer

Indicator 2: Food SMEs that are PRDC's clients are to show client satisfaction of 80% or more concerning PRDC's packaging technology services by the end of this Project.

PRDC had already begun client satisfaction surveys before the beginning of this Project. In general, client satisfaction has remained high. According to the five-grade comprehensive evaluation by 22 companies between February and May 2009, 17 companies graded it at "5 (very excellent)" and 5 companies graded it at "4 (very satisfied)".

(3) Process of implementation

1) Philippine side's ownership

To manage this Project smoothly, the Philippine side provided necessary inputs, such as maintenance expenses, facilities, and counterparts.

DOST not only placed and budgeted counterparts but also repaired PRDC's main building, laboratories, a pilot plant for storage of supplied equipment and other buildings. In addition, DOST locally procured packaging materials essential for demonstration tests and the development of packaging technologies.

2) Relationship between Japanese experts and counterparts

Japanese experts and counterparts developed a good relationship by positively exchanging suggestions and opinions about the status of progress in this Project and the implementation in the future at quarterly meetings for reviews of activities and by contriving devices for communications and consensus formation through mutual understanding.

3-2 Summary of the evaluation results

(1) Relevance

The relevance of this Project is high.

1) Consistency with the Philippine Government's policy

In the Medium-Term Philippine Development Plan (2004 to 2010), SMEs are considered a driving force for national economic development, and their development is a priority policy issue. DOST provides technology services and financial assistance for the support of SMEs under the Small Enterprises Technology Upgrading Program (SET-UP). In addition, in the SME Development Plan (2004 to 2010), the Department of Trade and Industry (DTI) regards the improvement of packaging technologies to be an important factor for the development of SMEs. Therefore, the goal and contents of this Project are consistent with the policy.

2) Consistency with Japan's ODA policy

In the country assistance program for the Philippines (August 2000), "strengthening of industrial structure" is one of the priority issues concerning assistance to the Philippines. In addition, because the development of rural SMEs leads to the strengthening of the basis of industrial structure through expansion of product markets, stabilization of the local economy, and creation of employment, the

importance of these types of assistance has been pointed out. Because the purpose of this Project is to improve access to markets for SMEs, which account for most of the Philippine food industry, through the transfer of technology related to R&D of food packaging technology and the dissemination and motivation of packaging technology among rural SMEs, this Project is consistent with the priority assistance issues in the country assistance program.

3) Consistency concerning the target group

PRDC is a public agency that provides rural food SMEs with consultations, technical advice, and seminars on packaging technologies. Because PRDC's capacity building is essential for satisfying SMEs' needs related to packaging technologies, PRDC strengthened its technical capacity through this Project. As a result, PRDC has become able to provide technical advice and training that satisfy rural SMEs' needs.

It can be said that a total of 27 counterparts assigned to this Project had academic backgrounds and experience appropriate for the provision of packaging technology services. For example, staff members experienced in studying fine arts participated in the design development team; those experienced in studying food engineering and chemistry participated in the retort packaging team; and those experienced in studying mechanical engineering and chemical engineering participated in the transport packaging team. Their participation contributed to smooth technical transfer.

Therefore, this Project is consistent with the target group's needs.

(2) Effectiveness

Because all the outputs contribute to the achievement of the project goal, the effectiveness of this Project is high.

1) Probability of achievement of the project goal

As an indicator for the project goal, the range of PRDC's services has doubled compared with the state before the implementation of this Project (the indicator expanded by 25%). Client SMEs' degree of satisfaction with PRDC's services is "3 (satisfied)" to "5 (very excellent)" of the 5-grade evaluation. The companies which the mission visited seemed highly satisfied. Although some activities, such as training in Japan, had yet been carried out at the time of the evaluation, the goal is likely to be achieved at the end of this Project.

2) Each output's contribution to the achievement of the project goal

During the course of this Project, PRDC gained knowledge and experience necessary for the improvement of rural food SMEs' packaging technologies through the following activities:

- a) PRDC's ability to manage this Project was strengthened through Japanese experts' support for the formulation of plans and the creation of the business information system. (Output 1)
- b) PRDC acquired skill and knowledge on new packaging technologies through experts' guidance and the use of equipment. (Output 2)
- c) PRDC's skills and knowledge on package design were strengthened through Japanese experts' technical guidance and the introduction of equipment and were applied to practical product development. (Output 3)
- d) PRDC staff's consultation and on-site activities were strengthened through Japanese experts' advice and guidance. (Output 4)

e) The management ability strengthened by Output 1 and the technical abilities strengthened by Outputs 2 to 4 improved the counterparts' ability to satisfy rural SMEs' needs.

(3) Efficiency

The efficiency of this Project is somewhat high.

1) Timing of input of experts and equipment

At the very beginning of this Project, some errors in management and technology occurred due to a delay in the dispatch of Japanese experts and a language barrier. After that, however, those problems were solved through full mutual consultation.

Although the implementation of this Project was influenced by a delay in the procurement of some equipment, the delay was eliminated through the adjustment of the schedule by both the counterparts and the experts. The equipment supplied under this Project has been appropriately and efficiently used for PRDC's research and development and provision of services.

2) Training of counterparts

The training in Japan was very useful for PRDC's activities.

(4) Impact

This Project was recognized as having positive impact.

This Project has been contributing to the expansion of the markets for the products of the food SMEs that are clients of PRDC. Because the companies to which PRDC gave support have improved their packaging, domestic and overseas markets have already expanded.

1) Visibility of PRDC services

The visibility of PRDC's capabilities to research and develop packaging technologies and design packages has increased as a result of this Project. Because the level of PRDC's packaging technologies is high, the United States Food and Drug Administration (USFDA) and other food quality certification agencies have recognized its international competitiveness.

Pouch-packed sardines have already begun to be exported to Eastern Europe, North America, and the Near and Middle East. If the export is successful, it is expected to trigger the expansion of markets for other Philippine foods.

In addition, PRDC was commended for its retort packaging technology and package designs at exhibitions, which made it possible for PRDC to display its capabilities both at home and abroad.

2) Expansion of packaging technology services through improvement of laboratory facilities

The equipment supplied under this Project has increased PRDC's ability to provide the packaging technology services (such as lending of facilities to SMEs for trial product test and short-time printing of labels by digital printer) . Moreover, package design facilities were improved so that designers can process photographs and illustrations.

3) Cooperation with related agencies

Local DOST packaging coordinators who received training from PRDC are in charge of packaging and labeling, and many SMEs have understood the importance of packaging technology, contributing to the creation of internationally competitive products.

PRDC has been recognized as the only agency that provides package designs to the SMEs supported under the partnership program of the Philippine Department of Trade and Industry's Center for International Trade Expositions and Missions (DTI-CITEM) . PRDC also cooperates with the Department of Trade of Industry Bureau of Export Trade Promotion (DTI-BETP) and the local offices of DTI. Moreover, there are three paid packaging technology service centers, for which PRDC cooperates with local governments in the dispatch of staff members and the provision of technical guidance.

(5) Sustainability

The sustainability of this Project is somewhat high from the viewpoints of organization, finance, and technology.

1) Organization

Although PRDC is considered a temporary agency of DOST, there is a plan to make it an official department in the near future. In addition, if the staff assignment plan is approved, 11 contract employees among the counterparts will be promoted to regular employees, and the budget will be allocated as general expenditure instead of subsidies. Although two of PRDC's staff members who received training under this Project left their jobs, other staff members were recruited soon after. Therefore, it can be said that human resources have been secured stably.

The three local paid packaging technology service centers in the Philippines were established in 2004 for the purpose of accelerating the local development of packaging technology and teaching packaging technology to rural SMEs through the transfer of some of PRDC's services to DOST's local offices. They function as the hub between local governments and PRDC in each region and contribute to ensuring the sustainability of this Project.

2) Finance

PRDC's financial resources for research and development of packaging technologies have been secured by DOST. According to the results in the past six years, the budget has recently been on an upward trend. At the time of the terminal evaluation, service charges collected by PRDC accounted for 10% of PRDC's total budget. According to PRDC, the expansion of services is expected to increase the ratio to more than 10%. Also because the budget plan is estimated to be on an upward trend in next five years, the sustainability of this Project can be expected from the viewpoint of finance.

3) Technology

PRDC can continue to research and develop packaging technologies and inherit and expand knowledge and skills internally. In addition, PRDC strengthened its ability to use its technology for client service. Therefore, it can be said that the sustainability of this Project has been secured from the viewpoint of technology.

3-3 Factors for the emergence of the effects

(1) Factors related to the contents of the plan

None in particular

(2) Factors related to the process of implementation

1) Provision of equipment to PRDC: This is helpful for not only PRDC staff's capacity building but also actual services to SMEs.

- 2) Training in Japan and practical training by Japanese experts: Practical training by lecturers with rich practical experience was helpful for grasping SMEs' needs and providing technical advice and guidance. PRDC is trying to succeed and expand the knowledge and experience gained through the training in Japan within PRDC.
- 3) PRDC's ownership and coordinating capability: Because local procurement of packaging materials essential for demonstration tests and the development of packaging technologies were carried out based on the budget secured independently by PRDC and the cooperation with cooperative organizations, PRDC has been recognized as having high ownership and the coordinating ability to involve other stakeholders effectively.

3-4 Problems and related factors

(1) Problems related to the contents of the plan

Full understanding of PDM indicators and baselines: Project management meetings were held regularly between PRDC and the Japanese experts, and the activities and the progress were monitored according to the overall implementation plan based on PDM. However, because discussions on indicators and the baselines were insufficient, expressions and definitions became ambiguous and hard to measure. Because of this, the indicators for the overall goal have been changed in this evaluation study.

(2) Problems related to the implementation process

Period of absence of Japanese experts in the first year: Although the schedules for technical guidance and the procurement of equipment were delayed, the delay was eliminated through efforts by both PRDC and Japanese experts. Concretely, Japanese experts and counterparts held quarterly meetings to review the progress in this Project, to exchange suggestions and opinions about the implementation of this Project in the future, and to contrive devices for communication and consensus formation through mutual understanding. As a result, the two parties created a good mutual relationship, which led to smooth management of this Project.

3-5 Conclusion

Given the results of the project evaluation based on the five evaluation items, it is estimated that the project goal, including each of the outputs, will be achieved by the end of June 2009, when this Project ends. Although the training of the counterparts is scheduled for mid-June and some activities, such as support for SMEs' improvement of packaging technologies and the commercialization of products, have yet to be carried out, it is expected that all activities will be completed by the end of June 2009.

Although the Japanese experts with high expertise contributed to the success in this Project, the factor that contributed most to the successful management of this Project was the counterparts' active participation in this Project and strong ownership. Needless to say, for PRDC, which was established to provide global standard packaging technologies, this Project served as the pillar for the counterparts' motivation and activities. In the future, the related Philippine agencies are expected to make further efforts to maintain and develop the achievements gained through this Project and attain the overall goal.

3-6 Recommendations (specific measures, suggestions, and advice related to this Project)

To improve PRDC services further, the following recommendations are given to the related agencies in the Philippines:

PRDC

- PRDC should research new packaging technologies and maintain and improve the technical power through research and training in cooperation with related agencies and others.
- To secure the impact and sustainability of this Project, PRDC should strengthen the cooperation with each government office's regional offices, local governments, the paid packaging technology service centers, etc.
- PRDC should provide market-oriented and competitive services, such as high market growth, high-impact R&D, strengthening of the package design capability, and improvement of facilities at the paid packaging technology service centers and others.
- PRDC should continue to enhance the integrated database so that it can be used as a management information system.
- To increase the visibility of PRDC services and the degree of achievement of the overall goal (expansion of markets for products of food SMEs) , PRDC should enable laboratory facilities to gain a third party's international certification so that they can objectively prove international competitiveness (such as the International Association of Packaging Research Institutes (IAPRI) , the International Safe Transit Association (ISTA) and ISO17025) .

DOST

- DOST should take continuous budget measures to manage PRDC and maintain equipment.
- DOST should approve PRDC's shift from a temporary agency to an official department to secure the sustainability of its system and organization.

3-7 Lessons learned (matters that serve as reference materials for the discovery, creation, implementation, and management of similar projects derived from this Project)

(1) Utilization of PDM for project management

- Collection of baseline data

Although meetings on project management are held regularly between PRDC and the Japanese experts, and the activities and the progress were monitored according to the entire implementation plan based on PDM, because discussions about indicators and baselines were insufficient, expressions and definitions were ambiguous and hard to measure. Because of this, the indicators for the overall goal were changed for this evaluation study. If baseline data are not collected, it is necessary to include them in the project plan.

- Setting of clear and measurable indicators

Although PDM was used as a tool for smooth project management and was altered when needed, because discussions about indicators and baselines were insufficient as described above, expressions and definitions were ambiguous and hard to measure. It is extremely important to introduce at an early stage of the project a process of fully discussing and sharing clear and measurable indicators among the persons concerned in this Project.

(2) Selection of Philippine evaluation team members

Because two of the three members of the Philippine team for the terminal evaluation had participated in the Philippine team for the mid-term evaluation, concrete discussions could be held about the issues at the time of the mid-term evaluation, the changes in this Project from the time of the mid-term evaluation, etc.

Because as a part of DOST's everyday work, one of the members made a project evaluation within the department, comments could be gained from both institutional and financial viewpoints. Because the other member was a consultant who had experience in working in the packaging industry, discussions on SMEs' problems and the direction of the industry could be held from technical and practical viewpoints.

Because the evaluation team has to make a study in a short term, the selection of local evaluation team members who can give adequate advice and ideas from institutional, financial, and technical aspects seems to contribute to improvement in the efficiency of the study.

3-8 Follow-up

Although PRDC's capabilities for packaging technologies as a whole were strengthened through this Project, because it is necessary to contribute to the target sector through the cooperation specialized in packaging technology for transport of farm products, a request for the "Packaging Technology Improvement Project for Strengthening the Competitiveness of Farm Products" is now under consideration.