Ex-Post Project Evaluation 2012: Package I-2 (Thailand, Sri Lanka, the Philippines)

October 2013

JAPAN INTERNATIONAL COOPERATION AGENCY

IC NET LIMITED

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Preface

Ex-post evaluation of ODA projects has been in place since 1975 and since then the coverage of evaluation has expanded. Japan's ODA charter revised in 2003 shows Japan's commitment to ODA evaluation, clearly stating under the section "Enhancement of Evaluation" that in order to measure, analyze and objectively evaluate the outcome of ODA, third-party evaluations conducted by experts will be enhanced.

This volume shows the results of the ex-post evaluation of ODA Loan projects that were mainly completed in fiscal year 2010, and Technical Cooperation projects and Grant Aid projects, most of which project cost exceeds 1 billion JPY, that were mainly completed in fiscal year 2009. The ex-post evaluation was entrusted to external evaluators to ensure objective analysis of the projects' effects and to draw lessons and recommendations to be utilized in similar projects.

The lessons and recommendations drawn from these evaluations will be shared with JICA's stakeholders in order to improve the quality of ODA projects.

Lastly, deep appreciation is given to those who have cooperated and supported the creation of this volume of evaluations.

October 2013

Toshitsugu UESAWA
Vice President
Japan International Cooperation Agency (JICA)

Disclaimer

This volume of evaluations, the English translation of the original Japanese version, shows the result of objective ex-post evaluations made by external evaluators. The views and recommendations herein do not necessarily reflect the official views and opinions of JICA. JICA is not responsible for the accuracy of English translation, and the Japanese version shall prevail in the event of any inconsistency with the English version.

Minor amendments may be made when the contents of this volume is posted on JICA's website.

JICA's comments may be added at the end of each report when the views held by the operations departments do not match those of the external evaluator.

Kingdom of Thailand

Ex-Post Evaluation of Japanese ODA Loan Project
Integrated Agriculture Development in Land Reform Areas

External Evaluators: Yuko Kishino and Mikayo Yamazaki, IC Net Limited

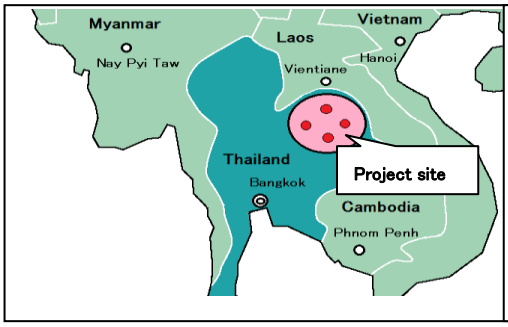
0. Summary

This Project was carried out by the Agricultural Land Reform Office (ALRO) with the objectives of enhancing agricultural productivity, raising incomes, and stabilizing livelihoods in Land Reform Areas of Northeast Thailand. The Project has helped develop farm ponds, farm roads and other basic agricultural infrastructure, and it has provided non-infrastructure assistance in the form of agricultural technical training and help with organization of farmers' groups and the sale and processing of agricultural products. Combined, such support has enabled farmers in the region to cultivate rice, vegetables and fruit and raise fish and livestock in the same area using water from the farm ponds. This method of mixed farming is called "integrated agriculture" in the Project. The agricultural development of Northeast Thailand, which has poor agricultural productivity and high rates of poverty, is consistent with Thailand's development policy and needs and is also in line with Japan's ODA policy. Therefore its relevance is high. Over 90% of beneficiaries adopted the integrated agriculture promoted by the Project, resulting in greater yields and profits and more stable livelihoods for farmers. Accordingly, the Project's effectiveness and impact is high. The Project fell considerably behind schedule because of construction delays and plan changes, but final expenses were around 70% of those initially planned; therefore efficiency of the Project is fair. The Project's development impact is attributable to its flexibility, with modifications made and activities added on over 12 years according to the needs of beneficiaries. There are no problems with maintenance of agricultural facilities such as farm ponds, which have been transferred to farmers. Some issues remain regarding maintenance of farm roads, which have been transferred to Tambon Administration Organizations (TAOs)[1], and irrigation facilities, which will be transferred in the future, but there are plans for continued aid from the Agricultural Land Reform Office, so the infrastructure should be managed sustainably. Therefore, sustainability of the Project effect is fair.

In light of the above, the Project is evaluated to be satisfactory.

[1] Local government in Thailand is divided into provinces, districts, sub-districts (Tambons), and villages. Tambons are administrated by Tambon Administrative Organizations (TAOs).

1. Project Description



Project Location

Fish cultivation in a farm pond.
Fruit trees and vegetables are grown
in the surrounding area.

1.1 Background

In the 1990s, Thailand's economic policies focused on development of the Bangkok metropolitan area, which experienced robust growth as a result. However, little improvement came to rural and agricultural areas, where incomes remained low compared with urban areas. To address the worsening economic disparity, the Thai government refocused development efforts toward agricultural regions, trying to reduce poverty, spread economic activity to rural areas, and better protect natural resources and the environment.

The Thai economy had been centered on agriculture, but industrialization in the 1980s and '90s led to a drop in the share of GDP and exports made up by the agricultural, forestry and fisheries industries. Even so, when the Project was inspected in 1997, those industries employed 57.4% of the Thai workforce, and agriculture was still a principal industry with an essential role in the country's economy.[2]

Northeast Thailand suffers from water shortages[3] and has low soil fertility.[4] Agriculture is made difficult by the inhospitable natural environment; farmers are faced with low yields and limited to growing rice during the rainy season and drought-tolerant crops such as cassava and sugarcane. As a result, the Northeast is poorer than other areas[5]—the average income of a farmer in the Northeast in 1994 was around 65% of the national average.[6] The Land Reform Areas[7] where the Project was carried out were especially impoverished and undeveloped at the time of the Project's appraisal, with widespread degradation of forestland and inhospitable natural conditions for agriculture. Developing the Land Reform Areas and alleviating poverty were considered pressing issues.

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[2] Thailand's principal crops are rice, cassava, sugarcane, and fruit (bananas, mangos, pineapples, etc.). The tropical monsoon climate makes year-round growing possible, and rice paddies can be planted two or three times a year where irrigation is available. Thailand's rainy season is from May to October, and the dry season is from November to April. The mean annual rainfall is 1,500–1,600 mm.

[3] Annual rainfall, at 1,200–1,400 mm, is not much lower than the national average, but the rainy season is interrupted by unpredictable dry spells, and irrigation is scarce; the entire region suffers from a water shortage.

[4] Soil is mostly sandy, making for poor fertility and low moisture retention. Furthermore, salt rising from rock formations and accumulating on the surface causes high soil salinity that inhibits crop production.

[5] The poverty rate (annual household income under 48,000 baht) in 1992 was 13% nationwide, 22% in the Northeast Region, and 46% in the Land Reform Areas (JICA appraisal documents).

[6] JICA appraisal documents

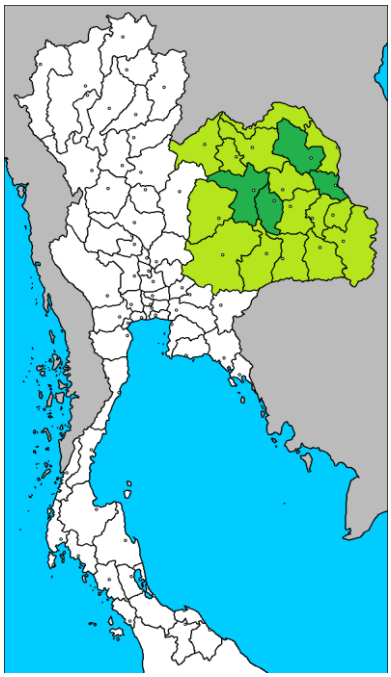
[7] Defined by the Agricultural Land Reform Act of 1975, 46% of these areas belongs to the Northeast Region.

Rural regions also became a focus of attention because of the Asian financial crisis; beginning in July 1997, the crisis resulted in a steep rise in urban unemployment, and people looked hopefully to the agricultural sector to absorb job losses. The Ministry of Agriculture and Cooperatives (MOAC) drafted a new set of economic policy measures to answer the need for agricultural and rural development, granting approval to 80 projects, including this one. The Cabinet approved the proposed measures in March 1998.

1.2 Project Outline

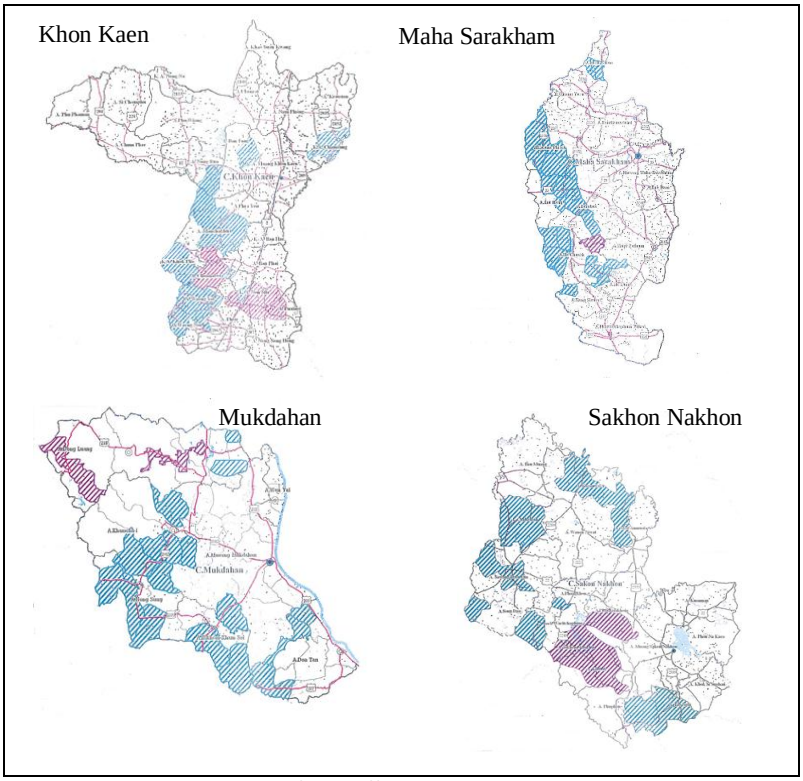
The objective of the Project was to improve agricultural productivity and yields and thereby raise incomes and help to stabilize the livelihoods of farmers in Land Reform Areas in four provinces of Thai's Northeast Region (Khon Kaen, Maha Sarakham, Mukdahan and Sakhon Nakhon), through infrastructure development and technical support for farmers who have received permission to cultivate farmland from the Agricultural Land Reform Office (ALRO).

Loan Approved Amount/ Disbursed Amount	3,617 million yen / 2,686 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	September 1998 / September 1998
Terms and Conditions	Civil works and procurement: Interest rate: 2.2%, Repayment period: 25 years (Grace period 7 years), General untied Consultant: Interest rate: 0.75%, Repayment period: 40 years (Grace period 10 years), General untied
Borrower / Executing Agency	Government of Thailand/ Agricultural Land Reform Office
Final Disbursement Date	November 2011
Main Contractors	None
Main Consultants	Sanyu Consultants Inc. (Japan), TEAM Consulting Engineering and Management Co., Ltd. (Thailand), A&R Consultants Co., Ltd. (Thailand), Sanyu Consultants (Thailand) Ltd. (Thailand) (Joint Venture)
Feasibility Studies, etc.	Feasibility Study on the Integrated Agricultural Development in the Agricultural Land Reform Areas in the Upper Northeastern Region (Sanyu Consultants Inc., 1998)
Related Projects (if any)	Dispatch of ALRO agricultural and civil engineering experts (before the start of the present project) Dispatch of ALRO experts (July 2011 – December 2012)



Source: Evaluators

Figure 1: Project Locations (the Northeast Region is in light green; in dark green, the four provinces where the Project was carried out)



Source: Agricultural Land Reform Office

Figure 2: Areas of Each of the Four Provinces Where the Project Was Carried Out (red denotes the Project sites, blue denotes planned sites for future projects as of the end of the Project)

2. Outline of the Evaluation Study

2.1 External Evaluators

Yuko Kishino and Mikayo Yamazaki, IC Net Limited

2.2 Duration of Evaluation Study

The External Evaluators performed an evaluation study as follows in the course of this ex-post evaluation:

Duration of the Study: August 2012 - July 2013

Duration of the Field Study: November 4–28, 2012 and February 6–9, 2013

2.3 Constraints during the Evaluation Study

The Project encompassed a wide range of activities, such as development of agricultural infrastructure, technical training, organization of farmers' groups, and the processing and sale of agricultural products. Furthermore, these activities were carried out in four different provinces with varying natural environments and socioeconomic conditions. The Project provided support to a large number of farmers, including development of basic agricultural infrastructure (farm ponds, farm roads, and irrigation, etc.) and assistance with technology, processing and sales. Because of the wide scope of the Project and large number of beneficiaries, field surveys performed for this evaluation focused on specific activities and areas.

To supplement field surveys and receive a variety of responses, a wide range of entities were interviewed, including the ALRO (the executing agency), the ALRO offices in each of the four provinces where the Project was carried out, beneficiaries, farmers' groups, Tambon Administration Organizations (TAOs), and other related organizations. The study attempted to understand and accurately evaluate the effect of Project activities from other angles as well; questionnaires were given to farmers who had received multiple types of support, such as agricultural water supply, technical training, and organizational help. The questionnaires included items regarding the state of agricultural production before and after the Project, and support received as part of and apart from the Project.

3. Results of the Evaluation (Overall Rating: B[8])

3.1 Relevance (Rating: ③[9])

3.1.1 Relevance with the Development Plan of Thailand

The Project was highly relevant to the development policy of Thailand at the time of the appraisal. The Project's plans for agricultural and rural development were based on the principle of the "Sufficiency Economy,"[10] which was advocated by the King of Thailand in 1974 and emphasized

[8] A: Highly satisfactory; B: Satisfactory; C: Partially satisfactory; D: Unsatisfactory

[9] ③: High; ②: Fair; ①: Low

[10] A philosophy based on "moderation," "reasonableness," and "self-immunity" for sufficient protection from impact arising from internal and external changes. (Tetsuro Oda, 2011, Rural Development Project Based on "Sufficiency Economy" Concept in Thailand, Journal of Rural Planning Association, Vol. 30, No. 1, 60–63.) Self-immunity means preparation for such impacts.

during the Asian financial crisis of 1997. By promoting development of integrated agriculture[11], the Project has aimed to increase farmers' food self-sufficiency, reduce expenditures on food and agricultural materials, and raise incomes from the sale of agricultural products. These goals are consistent with the philosophy of Sufficiency Economy.

The Project is also highly relevant to Thailand's development policy at the time of this ex-post evaluation. The Sufficiency Economy is the guiding principle of the Eleventh National Economic and Social Development Plan (2012–2016), and reinforcing the agricultural sector—with the goals of improving quality of life, raising incomes, and providing stable employment in rural areas—is part of the national strategy for growth.

By aiming to stabilize livelihoods and raise incomes of farmers in accordance with the principle of Sufficiency Economy, the Project has been relevant to Thailand's national development strategy from the time of appraisal to ex-post evaluation.

3.1.2 Relevance with the Development Needs of Thailand

The Project was highly relevant to development needs of Thailand at the time of the appraisal. In the areas of Northeast Thailand where the Project was to be carried out, harsh natural conditions, poor water resources, and low soil fertility made it difficult to significantly increase crop yields. Farmers were able to cultivate only a limited range of crops, such as rice, which is dependent on rainfall, and cassava; their living conditions suffered as a result. In order to improve their livelihoods, farmers needed to achieve food self-sufficiency and reduce expenses, which they could do if they were able to grow a greater variety of vegetables and fruits, as well as raise livestock and fish. They also needed to be able to increase yields beyond subsistence levels so they could sell the extra produce, make profits, and have stable incomes. The Thai government aimed to address these needs by developing integrated agriculture across the Northeast Region and drew up a scheme to implement it in certain districts, each with distinct natural environments and economic and cultural backdrops. The four sites selected for this project were indeed each distinct in several ways.[12]

The conditions on the ground have not affected relevance of the Project since its launch. As shown in Table 1, which ranks areas by average household income, the Northeast Region was still the poorest area of the country in 2010. Agriculture is the mainstay of the region's economy, and a strong need remains for assistance with water supply, agricultural technology, and organization of farmers' groups.

[11] A form of mixed farming in which farm ponds are dug and the water is used to grow vegetables and fruit in the surrounding area, raise animals such as chickens and pigs, and cultivate fish.

[12] Environment: Khon Kaen and Maha Sarakham are mainly flat, while Mukdahan and Sakhon Nakhon are mountainous. Economic and cultural backdrops: Khon Kaen is located close to urban areas and has a high level of agricultural development; Maha Sarakham does not have any farmers' groups; Mukdahan is home to some minority groups; Sakhon Nakon has an advanced network of farmers' groups.

Table 1: Average Household Income by Region (2010)

Unit: baht/year

Area	Income
Northeast	44,516
North	68,015
South	118,184
East	441,901
West	105,129
Central	218,088
Bangkok	412,887
National average	**160,556**

Source: Gross regional/provincial product 1995–2000,
Thai State Economic and Social Development Agency

3.1.3 Relevance of Objectives

The Project had the following three objectives at the time of the appraisal:

(1) Stabilize farmers' livelihoods in the Land Reform Areas.

(2) Reduce pressure on forestland from illegal development.

(3) Provide employment for people returning to rural areas from the city.

At the time of the project appraisal, many farmers in the Land Reform Areas, which suffered from soil degradation and water shortages, were unable to make a living by farming alone and were forced to either find employment away from home or go deep into debt. The first objective above was therefore relevant to these regions; it aimed to diversify crops, increase food self-sufficiency, raise incomes from the sale of agricultural products, and stabilize farmers' livelihoods through assistance with water supply, agricultural technology, and organization of farmers' groups.

On the other hand, there was no clear path toward achieving the second and third objectives above. The second objective mainly entailed encouraging environmentally friendly agriculture such as community forestry[13], tree planting, and farming methods that do not rely on chemical fertilizers or pesticides. The third objective promoted farming vegetables and other labor-intensive crops, which could be expected to lead to job creation as a side effect, but the Project did not include any activities with job creation as their primary goal because that goal's relevance changed over time. When the project was appraised in the midst of the Asian financial crisis occurred in 1997, job creation was seen as important because of the devastating social and economic effects of the crisis. Rural returnees needed work opportunities, and it was hoped that the agricultural sector could provide them. However, after the Project started, the country's economy began to recover and job creation became less relevant, so attention turned toward activities to expand agricultural production and raise farmers' incomes. The economic recovery allowed the Project to focus more on the development of rural areas through the spread of integrated agriculture.

3.1.4 Relevance with Japan's ODA Policy

Japan's ODA Annual Reports (1997 and 1998) regarding its country-by-country aid to Thailand

[13] A system of managing forests as a group and sharing profits among the group.

state Japan's commitment to actively collaborate toward alleviating poverty in Thailand's rural areas by contributing to the agricultural sector, which employs half the working population, as well as aiding the development of rural areas (especially impoverished areas such as the Northeast Region). The Project is therefore relevant with Japan's ODA policy.

In light of the above, this project has been highly relevant with Thailand's development plan, development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Effectiveness[14] (Rating: ③)

As stated in 3.1.3, the Project aimed to raise incomes and contribute to stable livelihoods by increasing crop yields, agricultural productivity and food self-sufficiency through assistance in the development of basic agricultural infrastructure and organization of farmers' groups. In this ex-post evaluation, the External Evaluators regarded helping farmers achieve stable livelihoods as the main objective of the Project. They investigated improvement of agricultural productivity and expansion of yields in terms of effectiveness and increase in incomes and stability of livelihoods in terms of impact. They viewed reduction of development pressure on forestland and job creation for rural returnees as desirable side effects that could occur as a result of activities related to the main objective.

At the time of the appraisal, the Project did not specify indicators or base/target figures by which to judge operation and effectiveness. In this ex-post evaluation, the External Evaluators judged operation—i.e., development of farm ponds, farm roads and other basic agricultural infrastructure—in terms of irrigation area and access to agricultural water supply. They evaluated effectiveness in terms of cropping area and yield volume. They used crop diversity and food self-sufficiency to determine the effectiveness of efforts to promote integrated agriculture.

The loan expiry date period of the Project was extended in 2005 and 2008, allowing revision of initial plans in order to better meet the needs of beneficiaries[15]. Normally, effectiveness is evaluated by comparing initial plans and actual results. However, when laying the groundwork to develop agricultural infrastructure, a mismatch became apparent between the initial plans and the situation on the ground.[16] Consequently, the Project was revised to better suit the actual situation when an extension of loan was requested in 2004. The revised plan, which was issued in 2005, was based on detailed field surveys and considered an appropriate standard for comparison. Therefore, that plan was used to compare results to indicators whose post-Project values were projectable based on plans, such as irrigation area. Items for which the 2005 plan did not provide numerical targets were evaluated based on beneficiaries' survey responses regarding change over the Project period.

[14] Effectiveness should be judged in consideration of impact to determine a rating.
[15] At the time of the appraisal, plans focused on the development of basic agricultural infrastructure such as farm ponds and farm roads. The 2005 revision provided more non-technical assistance, such as community market development. The 2008 version aimed to raise incomes by offering aid with processing and marketing.
[16] At the time of the appraisal, it was not clear how many farmers wanted farm ponds.

3.2.1 Quantitative Effects (Operation and Effect Indicators)

(1) Irrigation Area

The Project developed basic agricultural infrastructure to provide water access, including farm ponds and irrigation. An in-depth survey was conducted post-launch to understand the situation and needs of each of the Project locations in the four provinces. Based on the results of this survey, the number and scale of infrastructure projects were revised in 2005. As shown in Table 2, irrigation area at the time of the plan revision in 2005 was 7,797 rai (1,247 hectares), while irrigation area at the time of the ex-post evaluation in 2012 was 9,898 rai (1,583 hectares), an achievement rate of 127%.

Table 2: Increase in Irrigation Area[17]

Irrigation area: estimates of 2005 revised plan

Unit: rai (0.16 ha)

	KKN	MHS	MKD	SKN	Total
Farm ponds	1,275	303	73	197	1,847
Farm pond enlargement*	200	136	0	16	352
Community ponds**	10	40	20	80	150
Channels/irrigation	3,926	0	1,522	0	5,448
Total	5,411	479	1,615	293	7,797

Irrigation area: Achieved at time of evaluation

Unit: rai (0.16 ha)

	KKN	MHS	MKD	SKN	Total	Achievement rate
Farm ponds	1,453	337	77	204	2,071	112%
Farm pond enlargement*	140	206	1	23	370	105%
Community ponds**	10	40	10	80	140	93%
Channels	5,766	0	1,552	0	7,318	134%
Total	7,369	583	1,639	307	9,898	127%

*Irrigation area of farm pond enl **Some used for non-agricultural purposes; approximate estimate.

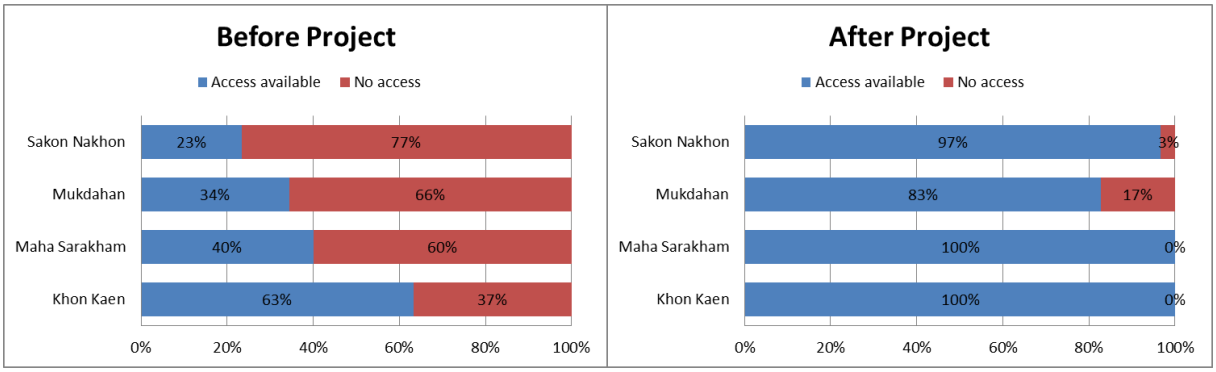
Source: Evaluators, based on interviews with the ALRO Provincial Office Coordinator. Figures from the ALRO Project Completion Report were used for the area of channels and irrigation in Khon Kaen and Mukdahan (Nong No, Nong Waeng, Huai Bang Sai) (2012).
Note: Information was provided by the ALRO regarding the area of farmland that benefitted from large-scale irrigation. The ALRO does not have information regarding land area utilizing farm ponds, farm pond enlargement, community ponds, micro irrigation, or group micro irrigation,[18] so these figures were estimated by the project coordinator in each province's ALRO office, based on their knowledge and experience.

(2) Access to Agricultural Water

In order to evaluate improvement to water access, interviews were conducted with 119 beneficiaries in four provinces (30 in Khon Kaen, 30 in Maha Sarakham, 29 in Mukdahan, 30 in Sakhon Nakhon). Interviewees were randomly selected from ALRO provincial office lists of over 50 beneficiaries in communities that received multiple types of assistance, including water supply aid.

Interviews revealed that prior to the Project, an average 40% of households had access to agricultural water, but an average 95% had access after the Project (Figure 3). The main reason for the dramatic rise in water access was the development of farm ponds. Farm pond water was used to cultivate vegetables and fruit and raise livestock and fish; that is integrated agriculture, which the Project promoted. Farm ponds are seen as essential to this type of farming.

[17] KKN stands for Khon Kaen, MHS for Maha Sarakham, MKD for Mukdahan, and SKN for Sakhon Nakhon.
[18] Micro irrigation and group micro irrigation utilize the same equipment (pipes and sprinklers); the former refers to use by a single household, and the latter refers to shared use by a farmers' group.



Source: Surveys of beneficiaries

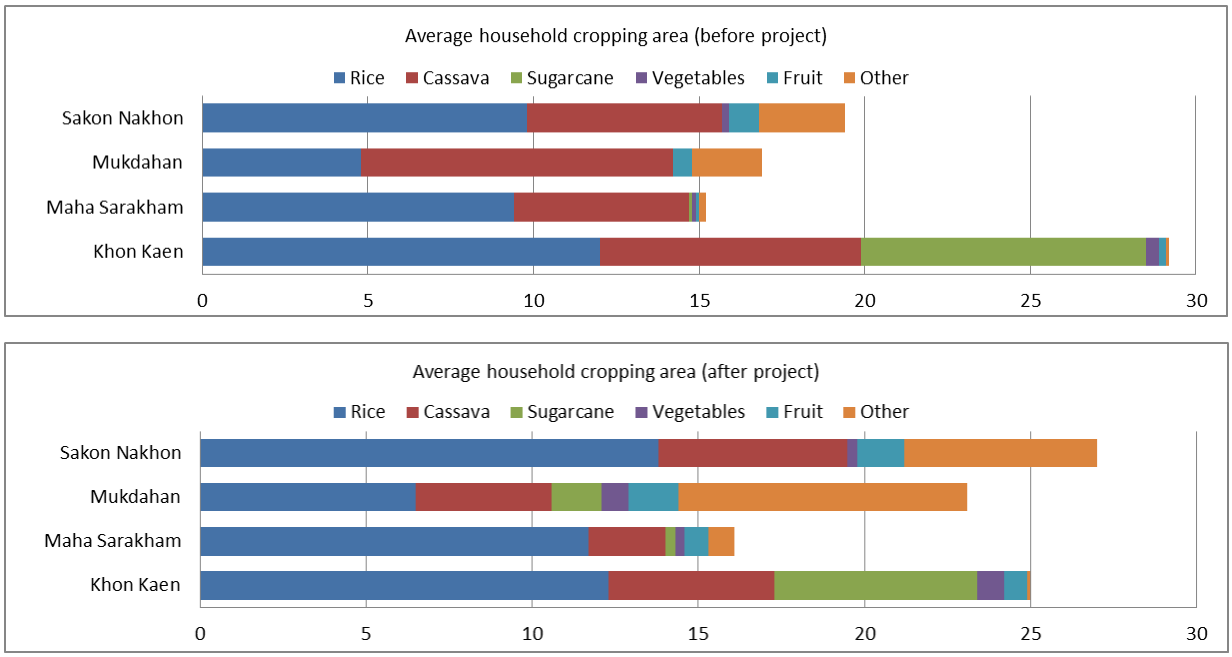
Figure 3: State of Access to Irrigation Water Before and After the Project

(3) Cropping Area

Farmers in the Northeast Region primarily grow commodity crops such as cassava and sugarcane, which are easily affected by yearly weather patterns and market prices. The Project encouraged farmers to grow other types of crops, such as rice, vegetables, and fruit. The goal was to help farmers and their households to grow what they consumed, thereby saving money and achieving food security, and raise their incomes from the sale of extra produce other than commodity crops. Rice cultivation was common before the start of the Project, but few farmers grew vegetables or fruit or had any experience growing them. To help farmers also grow vegetables and fruit in small steps, the Project provided study tours of areas with advanced cultivation techniques, held training sessions, and provided seeds and seedlings.

The survey of beneficiaries investigated average cropping by households in the four provinces and found that cultivation of cassava and sugarcane has declined, while rice, vegetables and fruit have become more widespread (Figure 4). Thus it is fair to say that the Project has succeeded in promoting a shift from monoculture crops such as cassava and sugarcane toward integrated agriculture including rice, vegetables, and fruit. The ALRO's cropping area estimates by province also show that cassava cultivation has decreased and vegetable cultivation has grown significantly (Table 3).

Unit: rai (0.16 ha)



Source: Surveys of beneficiaries

Figure 4: Average Household Cropping Area

Table 3: Cropping Area by Province, Crop

Cropping area (2001)

Unit: rai (0.16 ha)

	KKN	MHS	MKD	SKN	Total
Rice	8,099	8,410	8,099	53,600	78,208
Fruit	1,111	0	1,111	0	2,222
Vegetables	913	0	913	0	1,826
Other agriculture	0	0	0	0	0
Oil palm	0	0	0	0	0
Cassava	29,783	9,466	29,783	38,593	107,625
Replanted forest	25	0	25	694	744
Rubber	347	0	347	325	1,019
Longan	0	0	0	0	0
Eucalyptus	2,037	0	2,037	457	4,531
Sugarcane	3,299	0	3,299	2,719	9,317

Cropping area (2008)

Unit: rai (0.16 ha)

	KKN	MHS	MKD	SKN	Total
Rice	43,693	7,075	7,429	39,468	97,665
Fruit	386	19	833	776	2,014
Vegetables	12,994	0	9	757	13,760
Other agriculture	0	0	0	133	133
Oil palm	0	0	0	103	103
Cassava	18,248	3,503	30,082	14,902	66,735
Replanted forest	0	39	95	598	732
Rubber	24	14	2,235	10,950	13,223
Longan	0	0	0	91	91
Eucalyptus	2,565	221	3,362	2,504	8,652
Sugarcane	11,106	84	1,758	4,494	17,442

Source: Agricultural Land Reform Office

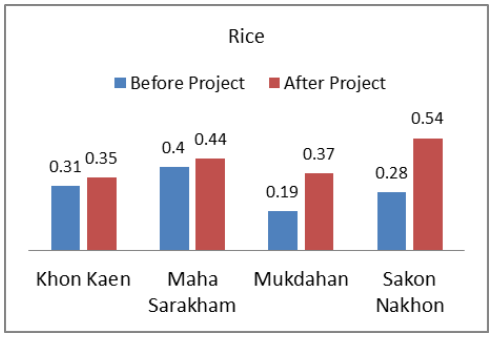
Note: GIS section, through the analysis of satellite images, estimated the area devoted to each crop. The years with available data closest to the start and completion dates of the project were 2001 and 2008, respectively.

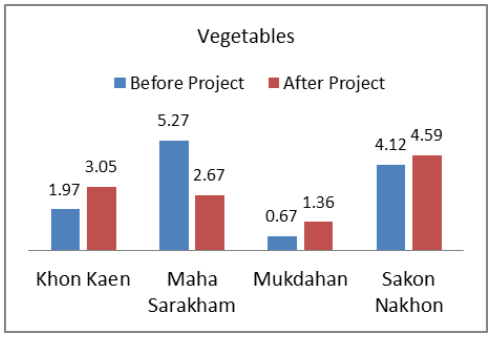
(4) Per-Rai Crop Yields

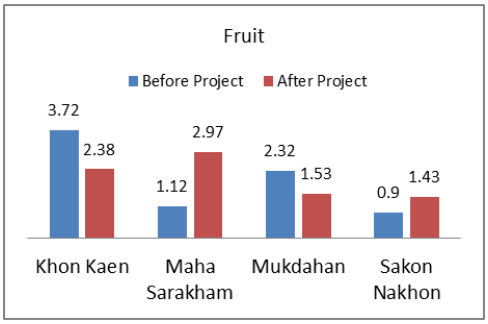
The survey found that per-rai yields of each crop have modestly increased in each province since the Project began (Figure 5). Rice yields grew dramatically, by an average of 43% across the four provinces. Factors that likely contributed to the rise in yields include the use of farm ponds for paddy irrigation (also preventing yield loss during droughts) and the adoption of compost to fertilize paddies, as recommended in project training sessions. Droughts were especially severe in 2012, but this survey found that some farmers were able to alleviate the damage by bringing in water from

farm ponds.

Unit: ton/rai (1 rai=0.16 ha)







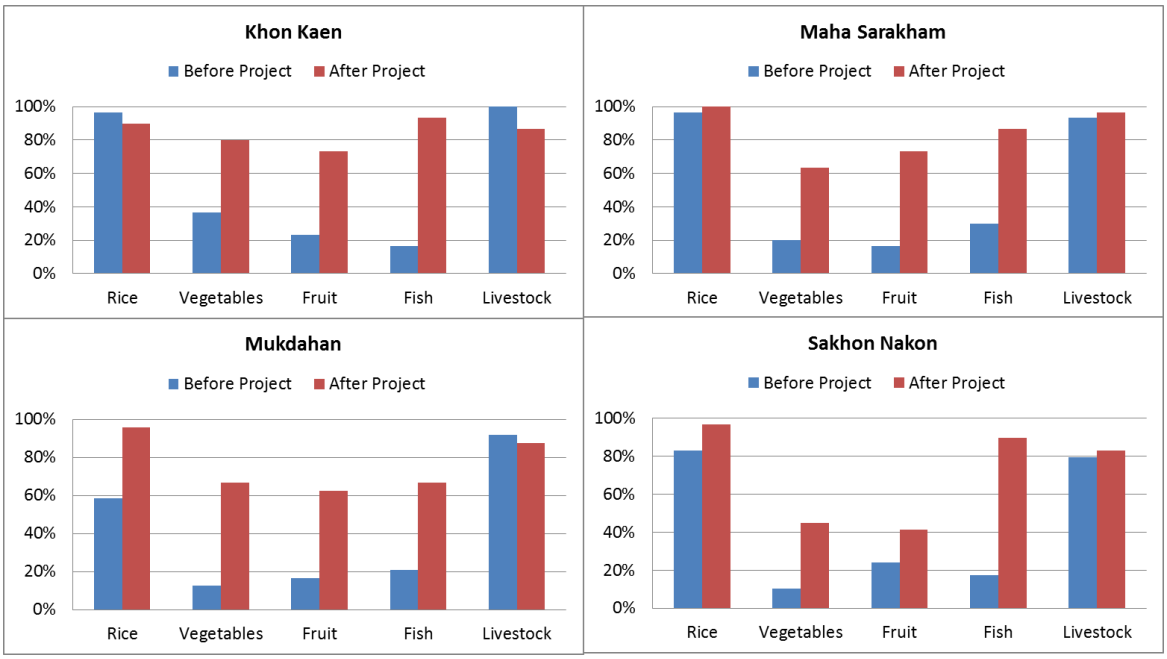
Source: Surveys of beneficiaries

Note: As many farmers grow various kinds of vegetables and fruit in small quantities, it is difficult to estimate overall yields. The figures above may not be precise.

Figure 5: Average Household Yield, Before and After the Project

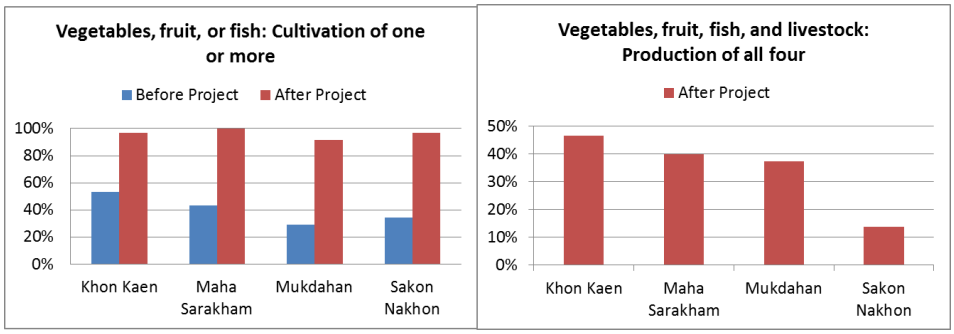
(5) Crop Diversification

Farmers were asked about the number of kinds of crops they grew before and after the Project: on average across the four provinces, 87% answered that they grew more kinds after the Project, while just 5% said they grew fewer kinds. As shown in Figure 6, more than 80% of the 113 farmers who had water access after the Project (95% of all farmers surveyed), cultivated rice and raised livestock before the start of the Project. After the Project, both rice cultivation and raising of livestock had each increased by 10%. Prior to the Project, vegetables, fruit, and fish were each cultivated by around 20% of beneficiaries, but that figure went up dramatically post-Project to 40–90%. This increase in production of vegetables, fruit and rice is attributable to the provision of farm ponds and agricultural training. According to beneficiaries and provincial officials, the farm ponds enabled farmers to cultivate vegetables in rice paddies during the dry season, during which the paddies had not been utilized in the past. Before the Project, 41% of farmers cultivated either vegetable, fruit, or fish, compared to 96% after; this increase signifies the advancement of beneficiaries' efforts to perform integrated agriculture. Furthermore, of 113 households in the four provinces, 39 households (35%) now conduct every type of farming—rice, vegetables, fruit, livestock, and fish—with Khon Kaen the highest at 47% and Sakhon Nakhon the lowest at 14% (Figure 7). The high figure for Khon Kaen is attributable to lower resistance toward growing vegetables because some farmers already grew them before the Project, as well as the close proximity to urban areas where there is a large market for fruit and vegetables.



Source: Surveys of beneficiaries

Figure 6: Production of Rice, Vegetables, Fruit, Fish, and Livestock by Farmers with Access to Agricultural Water



Source: Surveys of beneficiaries

Figure 7: Farmers Cultivating More than One (L) or All (R) of Vegetables, Fruit and Fish

A major reason for the success of efforts to introduce integrated agriculture to regions where farmers mainly grow commodity crops is that the Project provided fine-tuned assistance over the long term that was tailored to the farming-related needs of beneficiaries. First, groups of farmers who had never before grown vegetables were brought on study tours to regions with advanced cultivation techniques, raising their motivation and giving them a goal to aim for. Then, the farmers acquired knowledge and skills for vegetable cultivation by going through training sessions. Simultaneously, the foundation was built for regional collaboration by assisting with the organization of farmers' groups. The combination and continued provision of these programs is seen to have been effective.

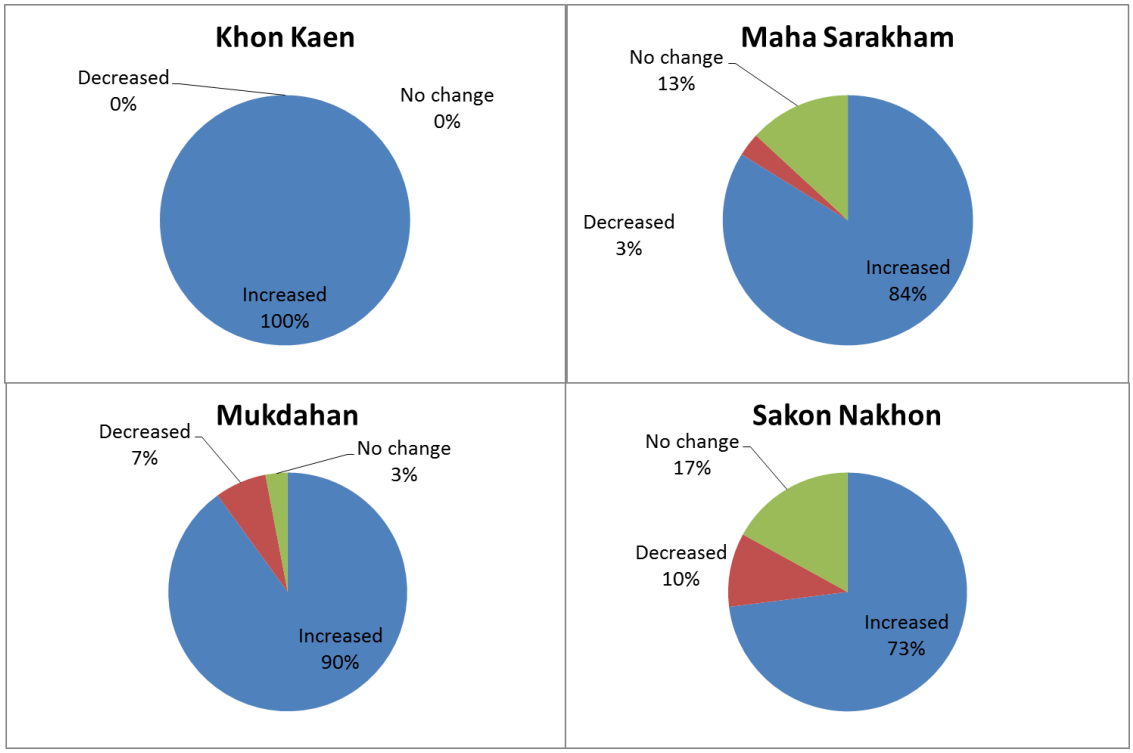
Below is an example of organizational assistance provided by the Project to a farmers' group in Maha Sarakham (Noan Tham Noan Thong Integrated Agriculture Group):

The farmers' group, after frequent communication with the ALRO provincial office, received

permission to use farmland to grow vegetables. The TAO then purchased electronic pumps to draw water, and the Project provided group micro-irrigation kits (sets of pipes and sprinklers to water vegetable fields and fruit trees). Members of the farmers' group individually purchased electric lines and water pipes and set up the irrigation system, completing the infrastructure side of the plan. The farmers voluntarily participated in agricultural training sessions provided by the Project, learning techniques for vegetable cultivation and compost production. The Project also provided assistance with selling the vegetables that farmers had produced: first, the farmers' groups participated in study tours of green markets[19] in Chiang Mai and Surin, and then, they sold their produce in these two locations. According to district records of produce shipped to the green market, 10 to 18 farmers shipped vegetables and fruit every week with monthly sales of 14,000 to 26,000 baht. A member of the Project team also contacted One Tambon One Product (OTOP), area hospitals and other markets in the province and found new sales channels for vegetables and processed goods.

(6) Food Self-Sufficiency

The Project aimed to raise farmers' food self-sufficiency by helping them grow and raise their own rice, vegetables, fruit, fish, and livestock. When beneficiaries were asked whether they had become more self-sufficient over the course of the Project, an average of 87% across the four provinces answered affirmatively (Figure 8). Many farmers who had previously purchased vegetables, fruit and fish are now able to live off what they grow themselves.



Source: Surveys of beneficiaries

Figure 8: Food Self-Sufficiency

[19] In the Project, "green market" refers to markets in urban areas of the district or province for vegetables and fruit grown without use of chemical fertilizer or pesticides.

Figure 9: A Meal Made from Food Produced through Integrated Agriculture (Khon Kaen Farmer)

3.3 Impact

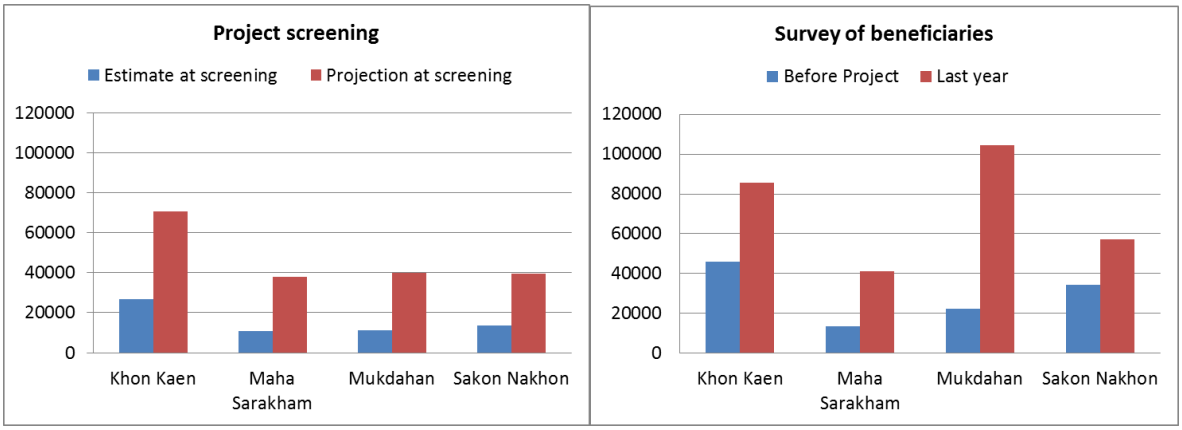
3.3.1 Intended Impacts

(1) Agricultural Income

Over the course of two loan expiry date extensions, the focus of Project assistance gradually shifted from diversifying crops and raising food self-sufficiency toward raising agricultural incomes. Efforts in this area were more successful than had been expected; as shown in Figure 10, at the time of the appraisal, it was projected that beneficiaries' average annual household income from farming would increase by 31,425 baht, but the survey of beneficiaries reported a gain of 43,059 baht or 37% more than had been projected. A major contributor to the gain in income was profits from production of vegetables, fruit, and fish, which had been almost non-existent before the Project.

Many fruits and vegetables have growing cycles of several months to a year, so it takes a long time to learn from experience and grow the crop more efficiently on the next attempt. Therefore, it often takes several years from the start of growing a new crop before farmers can make stable returns. Consequently, the extension of the Project to several years longer than had been initially planned is seen to have had a positive effect on outcomes, as it permitted thorough and sustained follow-up support over a period of ten years. Because the Project was extended, it was also possible to provide assistance with marketing and processing of farm products, which contributed to an increase in farmers' income.

Unit: baht



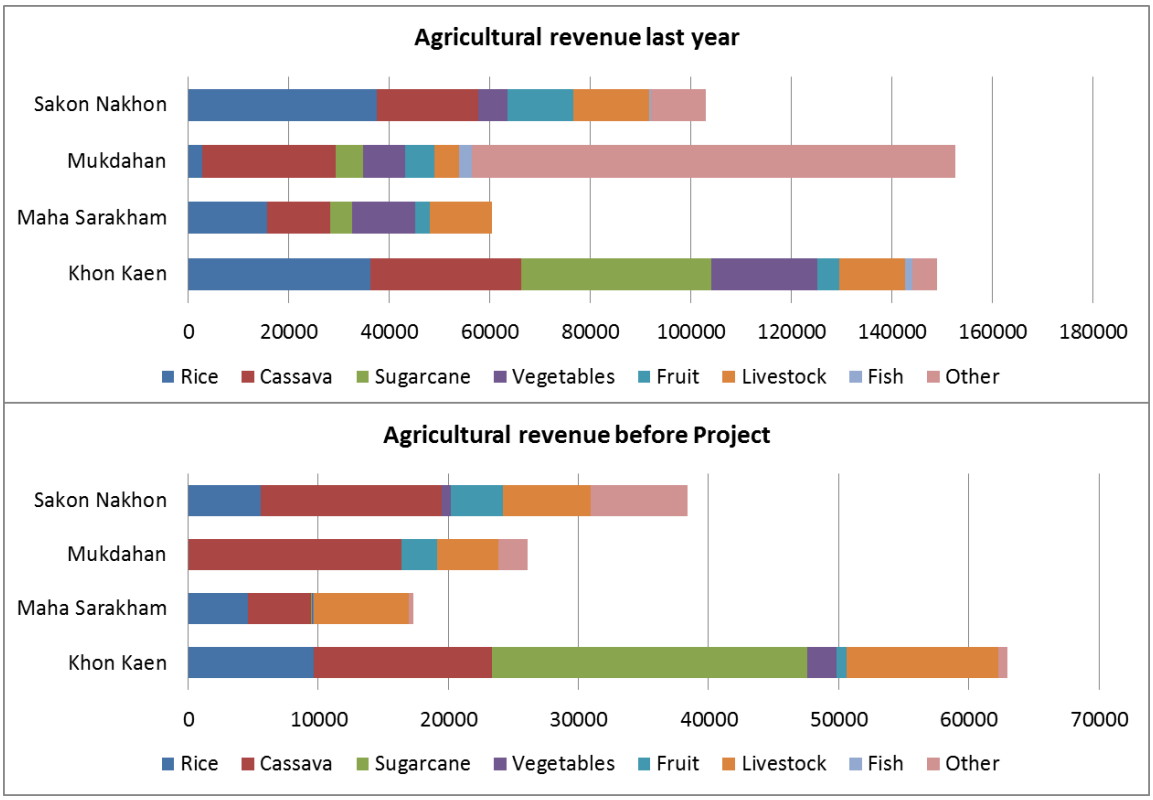
Source: Left - Appraisal materials; Right – Survey of Beneficiaries

Note: The figures above may differ somewhat from the actual averages because the survey only obtained responses from 30 beneficiaries in each province.

Figure 10: Agricultural Revenue

Figure 11 shows the agricultural income per household (before expenses are subtracted), according to the survey of beneficiaries. Vegetables, fruit and fish made up only 7% of total agricultural income before the Project, but by 2012, that ratio had risen to 17%. However, the importance of income from these sources is greater than just the ratio and amount. Commodity crops like cassava and sugarcane are produced and marketed only once a year, so a poor harvest or drop in prices can cause a significant loss of revenue. Vegetables, fruit, and fish, on the other hand, bring in frequent cash revenue, even if each sale is small. That income can offset daily expenses, and growing a diverse range of crops with different harvesting periods also leaves farmers less exposed to the risks associated with monoculture production. Households that cultivate their own vegetables, fruit and fish can save money on food as well. Some households were able to further reduce expenditures by replacing chemical fertilizer with organic compost after receiving training on methods of compost production. The Project also helped some farmers raise new income from the sale of processed food goods by building new facilities and assisting processing groups.

Unit: baht



Source: Surveys of beneficiaries

Figure 11: Agricultural Income per Household, by Province and Crop

Figure 12: Selling Produce at a Green Market (Khon Kaen)

Box 1: Analysis on Value Chain Development

One reason beneficiaries' incomes increased as a result of the Project was the development of a value chain for agricultural products. It was observed that some farmers began cultivating crops for their own consumption and then gradually stepped up production and started selling the produce in or outside their area. The Project is seen to have contributed to the development of a value chain for fruit and vegetables via the following types of assistance.

(1) Careful monitoring and flexible assistance suited to each stage of development

When considering development of value chains for vegetables and fruit, necessary conditions and contributors and constraints differ for achievement of each stage of development, from self-sufficiency to sale of produce outside the area, and continuation of production at each stage. The Project supported the development of value chains by closely monitoring them at each stage and providing the assistance needed in a timely and appropriate manner.

(2) Diverse range of assistance suited to local needs

In order to implement the flexible type of assistance described in section (1), a diverse range of support suited to local needs must be provided. The Project included development of basic agricultural infrastructure, agricultural training, organizational development, and help with processing/marketing, which enabled assistance suited to the characteristics of each area and the issues faced by farmers' groups.

(3) Sufficient time for Project to bear fruit

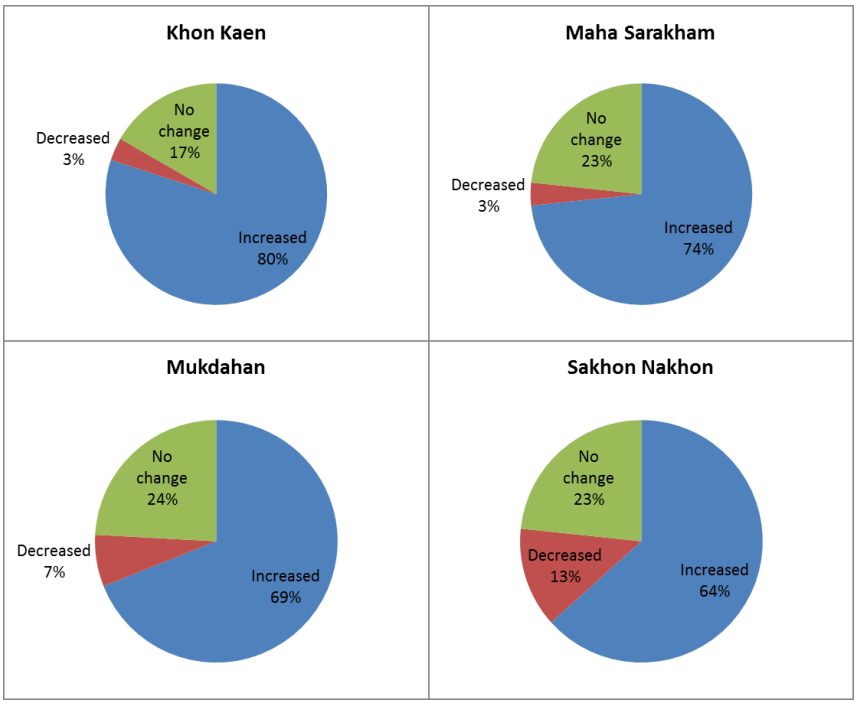
Many fruits and vegetables have growing cycles of several months to a year, so it takes a long time to learn from experience and grow the crop more efficiently on the next attempt. Thus it can take several years from the start of growing a new crop before farmers can make stable returns. Farmers therefore benefitted from the extension of the Project period to 10 years. That beneficiaries could receive the support they needed, when they needed it, is thought to have contributed to the development of value chains.

(4) Motivation connected to technical advancement

The Project attempted to raise and maintain farmers' motivation by introducing successful businesses on study tours, which gave farmers goals to work toward. The Project also contributed to maintaining farmers' motivation by organizing groups of beneficiaries in each area with a skilled and motivated farmer as the leader; the leader assisted members, who also helped one another and learned cultivation techniques via this system.

(2) Achieving Stable Livelihoods

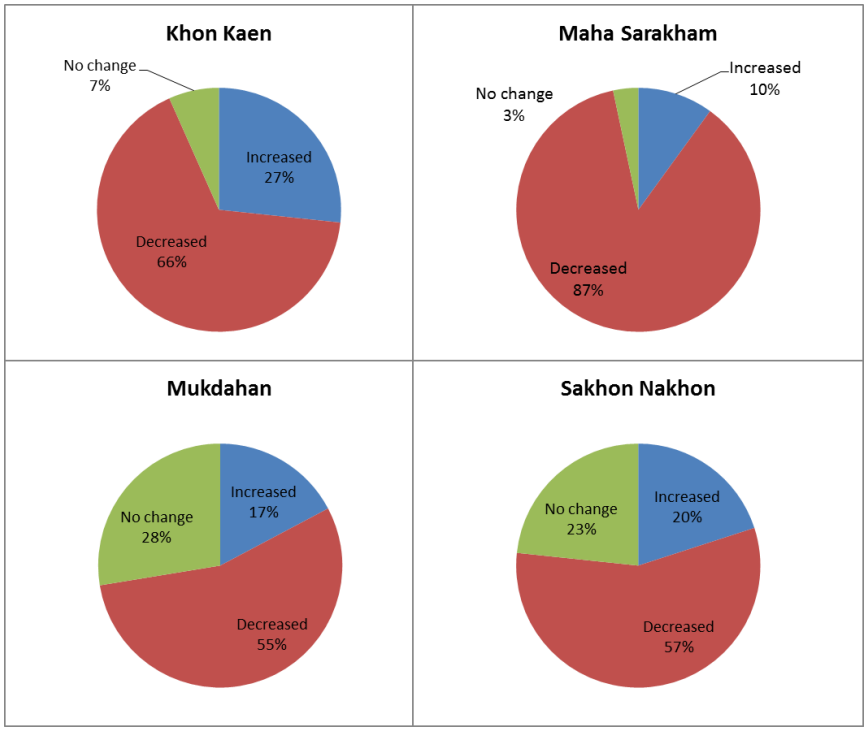
The External Evaluators used the difference in farmers' household savings before and after the Project and the change in yield volatility to evaluate the stability of their livelihoods. The beneficiary survey revealed that 71% of farmers (averaged across the four provinces) had more in savings at the end of the Project compared to the start (Figure 13). The External Evaluators believe that farmers built up a sufficient financial cushion to deal with setbacks such as poor harvests of commodity crops, drops in farm price and unexpected expenditures from sudden events such as family illness, without having to sell off part of their land or other assets.



Source: Surveys of beneficiaries

Figure 13: Increase/Decrease in Savings

A reduction in yield volatility was reported by 66% of beneficiaries, averaged across the four provinces (Figure 14). This is attributable to crop diversification, which lessens the effect of poor harvests for specific crops, as well as the use of water from farm ponds for fruit and vegetable cultivation, which is more stable than relying on rainwater to grow cassava or sugarcane.



Source: Surveys of beneficiaries

Figure 14: Yield Volatility

(3) Environmental Impact

One of the objectives of the Project at the time of the appraisal was to reduce pressure on forestland from illegal development. The 2005 revision added on activities directly related to this goal: assistance with community forestry and distribution of seedlings. Field surveys found that as a result of these efforts, community forests became better conserved, and beneficiaries planted and raised seedlings on their land.

Figure 15: A Community Forest (Maha Sarakham)

Many activities had contributed to environmental protection. Specifically, the Project trained farmers to produce and use compost instead of chemical fertilizer as much as possible and assisted in developing a market for organic vegetables with higher sales prices than non-organic produce. Training in compost production helped farmers reduce expenses by making organic fertilizer from materials available nearby. In Maha Sarakham, assistance was provided toward cultivation, processing, distribution and sale of organic rice. The Project also encouraged farmers to plant fruit and other trees around farm ponds.

These efforts resulted in a number of positive effects on the environment. Before the Project, chemical fertilizer and pesticides were widely used for cultivation of cassava and sugarcane; after the project, many farmers said using organic fertilizer to grow vegetables, fruit and rice had led to improved soil quality. In the survey of beneficiaries, 54% of farmers (averaged across four provinces) reported an improvement in soil. A majority of respondents also said that the Project had a positive environmental impact, with some from each province citing the increase in greenery as a specific example, which is attributable to efforts to promote the planting of fruit and other trees around farm ponds and plots. Interviews also indicated that more respondents saw it as important to care for natural resources as a result of Project activities. The change in farmers' attitude toward the environment is seen as a significant positive impact.

Figure 16: Liquid Compost, Being Aged in a Plastic Bucket (Khon Kaen)

(4) Creating work opportunities

Farmers were asked in the survey of beneficiaries whether they employed more, fewer, or the same number of laborers; overall, 28% answered “more,” 24% answered “fewer,” and 48% answered “the same number,” indicating no significant trend in either direction, although there were slight differences between provinces. Reasons for increase included the need for more hands for farm work and the engagement of more families in farming. A common reason for decrease was children growing up and leaving the house to take up employment elsewhere or pursue schooling.

Looking at the results according to the rainy and dry seasons, previously, many farmers were unable to grow crops during the dry season because of lack of water access, so they had to find short-term jobs in urban areas. Now, many farmers report that the availability of water from farm ponds enables them to cultivate in the dry season as well. Some farmers also say that, because their incomes have grown from producing vegetables and fruit, family members have been able to quit jobs in cities and return to help on the farm and more children are staying to work in agriculture and help their parents after graduating from high school. Cultivation in the dry season is seen to have had a significant positive impact on farmers’ lives, as they can stay with their families rather than having to find work elsewhere.

3.3.2 Other Impacts

The implementation of the Project has not entailed any resettlement of residents or land acquisition.

In light of the above, the Project has largely achieved its objectives; therefore its effectiveness and impact is high.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

(1) Plan Revisions (Project Component)

As shown in Table 4, the plan at the time of the Project appraisal in 1998 was revised significantly in 2005 and 2008 when the loan expiry date was extended. These changes are described in further detail in (3).

The initial plan called for the promotion of integrated agriculture as soon as ponds had been provided to beneficiary farmers. Focused primarily on the establishment of agricultural infrastructure, it did not place much importance on support efforts to popularize agricultural technologies or organize farmers. As the project progressed, however, the executing agency, ALRO, started to recognize just how much farmers engaging in integrating farming for the first time needed them to help popularize agricultural technologies and organize farmers. Employees at provincial offices voiced the opinion that simply digging farm ponds was not enough to allow the beneficiaries to independently engage in integrated agriculture. Revisions to the plan in 2005 led to an increase in non-technical support comprised of agricultural guidance and farmer organization. Farmers who were able to produce more fruits and vegetables than they needed for their own consumption now needed to find a market for their surplus produce. Thus, the development of community markets as distribution and sales-related activities was added to help support to farmers.

Because the Project focused on the development of participatory farming and agricultural communities, the External Evaluators believe that it was reasonable to have decided the plans after requiring an adequate understanding of the willingness of farmers to participate in the Project. As described below, the Project suffered from delays, both in the employment of consultants and in the actual start of the project more than two years later than planned. Based on the fact that there was far less need for farm pond construction than initially expected, the External Evaluators believe that conducting investigations into the specific needs of the target areas of each province and revising the initial plan at the time of the extension were appropriate actions. They also believe that the executing agency intended to use trial and error to ascertain the level of support required by the beneficiaries to construct a model to help promote integrated agriculture and that this was behind their flexible revision of the Project plan. Furthermore, they do not see a particularly large divide between the revised plan of 2005 and its actual achievements.

The plan was revised a second time in 2008. The purpose of this revision was not only to help farmers sell surplus produce at village or county markets, but also to create a model that would help increase farmer income through efforts to process produce and create added value and distribute that produce to outside markets. This revision led to plans for the construction of four processing plants, support for groups that process and sell organic rice, seasonings, and other food items, and processing- and marketing-related training.[20]

[20] The field survey of this evaluation covers the organic rice processing plant group of Maha Sarakham and the seasoning processing plant group of Sakhon Nakhon. The organic rice group consisted of a single TAO and 47 members from multiple villages, while the seasoning group consisted of 25 women from a single village.

Table 4: Changes in Planned Output and the Actual Results

Output		Unit	Initial Plan (1998)	Revised Plan (2005)	Extended Plan (2008)	Results (2011)
Basic agricultural infrastructure	Farm ponds	ind.	10,714	4,232		4,703
	Farm pond enlargement	ind.	1,607	649		650
	Community ponds	ind.	20	29		28
	Farm roads	km	504	830		818.03
	Farm road repair	km		108.2	108.2	215.21
	Channels, irrigation	rai	13,800	5,448		7,288
	Micro irrigation	ind.	N/A	1,624		1,617
	Group micro irrigation	ind.	N/A			11
	Shallow wells	site	N/A	N/A	2	2
	Map (1/4,000)	rai	300,000			300,000
	Construction equipment	unit	33	Cancelled		
Environment	Soil/water conservation	rai	6,000	Cancelled		
	Community forestry	site	N/A			6 community forests established
	Natural resource management		N/A			Numerous nurseries established, over 100,000 seeds planted, etc.
Organizational development	Farmers' groups	group				49 farmers' groups established, 19 groups improved
	Water users organizations	group				2 new groups established
	Farmers' networks	network				4 networks improved
	Executing agency, local government, community cooperation		N/A	N/A		Cooperative relationship w/ 8 TAOs
Processing marketing	Community markets	market	N/A			8 community markets
	Green markets, green corners	market	N/A			4 green markets, 2 green corners (within community markets)
	Processing plants/processing groups	group	N/A	N/A		4 processing plants/processing groups
	Contract cultivation		N/A	N/A		Tobacco cultivation in Mukdahan, etc.
	Training	course	N/A	N/A		8 processing training courses, 5 green market/community market training courses, 2 contract cultivation courses
Youth and new farmer development	Youth in school	course	N/A	N/A		6 school training courses
	New farmer development	person	N/A	N/A		85 new farmers
Low-interest loans to farmers	Low-interest loans	baht				50.59 million baht

Source: Created by External Evaluators based on Project-related data
Note: Blank spaces in the table indicate target values that had not been determined.

(2) Impact of Changes on Project Effectiveness

Plan revisions were a big plus in terms of boosting Project effectiveness. In particular, the activities of several processing groups and vegetable sales groups had a clear effect on improved income. A rice processing group in Maha Sarakham has been using rice sales, labor provision, business investment and other methods to create income for its members. Support for this rice processing group has come from many places: the Project built a processing plant and provided a rice milling machine, special government agencies provided technical guidance on organic rice cultivation, research institutions provided training on the nutritional properties of rice, and NGOs provided training on how to protect indigenous rice varieties and universities developed packaging. From the community markets of villages to district and provincial green markets and hotels, groups within each province's vegetable groups are also cultivating new markets for their produce. This has resulted in increased quantities sold, which, in turn, has led to an increase in sales price. It could be said that gradually supporting the Project's sales methods in accordance with the level of farmer groups has led to expanded markets. Specifically, Project authorities found it difficult to expand into hotels and other outside markets if they did not go out and find customers. This was a case in which the high added value of the agricultural products was successfully marketed. Supporting processing groups allowed the ALRO to accumulate knowledge and experience on how to provide support for agricultural processing, distribution, and sales. These findings were later summarized in a manual at the conclusion of the Project.

Figure 17: Processing Group's Organic Rice Products (Maha Sarakham)

In this way, the flexible and combined provision of basic agricultural infrastructure, agricultural technologies, farmer organization, processing and marketing, and financing in accordance with the needs of the beneficiaries lead to the Project's effectiveness. Farmers were able to grow vegetables and fruits and raise fish to produce food for personal consumption for the first time. Many among the farmers were able to increase their production to levels that resulted in surplus produce that could be sold, while some were even able to add value to their produce and sell it to outside markets.

(3) Individual Component Outputs

1) Basic Agricultural Infrastructure

The numbers of farm ponds, farm pond enlargements and canals and irrigation facilities were dramatically reduced in the revised plan of 2005. The main reason for this reduction was that the Project required that farmers possess a land certificate for their land if they wanted a farm pond to be constructed on it. At the time of the appraisal, the Project team had greatly overestimated the number of land certificates that would ultimately be issued. The External Evaluators believe that the difficulty involved in precisely predicting the number of farming households that would possess these certificates at the time of the appraisal made changes to the plan unavoidable. For basic agricultural infrastructure, the ALRO planned to purchase construction machinery for construction, but Thai government policies led to changes in the scope of the ALRO's work[21] and forced them to outsource construction work.

Micro irrigation, group micro irrigation, shallow wells and other facilities designed to secure water for irrigation were added to the plan in 2005. Micro irrigation consists of sprinklers and water pipes designed to irrigate expanses of fruit and vegetables at reduced labor, and they were introduced to enhance agricultural production. As of this evaluation, the utilization rate is half capacity at best. Farmers cultivating crops bound for the market on large expanses of land found the equipment to have a high utility value despite the electricity and fuel costs required to run the pumps because it allowed them to efficiently irrigate their fields. Farmers cultivating vegetables and fruits for personal consumption, however, found the utility value to be low in terms of labor and cost involved. Consideration of this point when selecting target recipients is believed to have raised the utilization rate of micro irrigation. Shallow wells reduce the amount of agricultural land available and eliminate the option of digging ponds. For this reason, they were introduced to small areas where agriculture land per household is small.

Figure 18: Vegetable Cultivation Using Micro Irrigation (Maha Sarakham)

[21] Agricultural infrastructure development was removed from ALRO responsibilities because of a policy shift within the Thai government. ALRO duties of allotting land and installing infrastructure in place when the Project started have changed, and ALRO now exists to support farmer organizations and networks and promote the spread of agriculture.

Many of the beneficiaries desired farm roads, leading to an upward revision to the plan's budget for them in 2005. Surveys of beneficiaries and interviews with farm road users revealed that the farm roads greatly improved product transport and farm work commutes. The External Evaluators found that these roads worked in synergy with agricultural water and agricultural technical assistance to positively impact the production and distribution of agricultural produce.

Figure 19: Farm Roads Used to Transport Agricultural Products and Materials (Khon Koen)

2) Environment

The Project team made plans for afforestation and facility construction required to maintain soil and water quality around large-scale irrigation facilities. However, these plans were cancelled because the team was unable to receive approval from the private farmers who owned the target areas. On the other hand, activities added to the plan in 2005 included the development of community forestry, the production of seedlings, and the distribution of seedlings to those who desire them. Community forestry established rules for using forests, planting seeds, educating local residents and other activities intended to help regrow abundant forests.

3) Organizational Development

The executing agency decided that it would be best to engage in activities in ways that would enhance cooperation with TAOs that would be responsible for maintaining farm roads and irrigation facilities after Project completion. This led to the 2008 addition of items intended to enhance cooperation among the ALRO, TAOs and the local community. Specifically, these additions included the sharing of information related to Project activities and meetings between Project authorities. Staff members from ALRO provincial offices reported that they were able to establish good working relationships with TAOs during the second half of the Project.

4) Processing and Marketing

The ALRO’s intent to find customers for the surplus agricultural produce of farmers led to the 2005 addition of support for community markets and green markets. Furthermore, the ALRO's desire

to create a model for selling agricultural produce and processed agricultural products with added value to outside markets led to the 2005 addition of support for processing plants and processing groups. These additions significantly increased the farming income of project beneficiaries.

5) Development of Younger and Next Generations of Agriculture

These items were added in 2008. Behind this addition was the awareness of this problem among farmers and the ALRO's desire to respond to the younger generation's loss of interest in agriculture. Agricultural training was offered to high school students, middle school students, elementary school students and other young people interested in farming with the hope that these youth might someday inherit local agriculture. People have said that some youths showed a greater interest in agriculture after participating in the training offered as a part of this assistance.

6) Low-Interest Loans for Farmers

This has not changed since the time of the appraisal. These loans have been used to cover personal expenses for the work of enlarging farm ponds, buy cattle and agricultural machinery and fund a variety of other agricultural investments.

3.4.2 Project Inputs

3.4.2.1 Project Cost

The total Project cost at the time of the appraisal was 4.975 billion yen (3.617 billion yen in Japan's ODA loans). Comparatively, the actual cost was 3.426 billion yen (2.686 billion yen in Japan's ODA loans), or 69% of the planned cost. The primary reasons for the reduced cost were the significant reduction in the number of farm ponds to be constructed following the 2005 plan revision and reductions to the budget for basic agricultural infrastructure due to the cancellation of irrigation facilities.

The Project cost of loans for the installation of basic agricultural infrastructure decreased from 2.975 billion yen at the time of the appraisal to 1.453 billion yen[22]. Considering that the actual irrigation area was 27% greater than what was estimated in the revised plan of 2005, the construction cost per unit area was reduced to a level significantly lower than that of the initial plan.

Reviewing the items of the project changed the scope of consulting services required and led to an increased budget. Reinforcing the areas that ALRO staff members were unable to handle themselves with consulting services was necessary to ensure that activities proceeded smoothly and effectively.

3.4.2.2 Project Period

At the time of the appraisal, the Project was scheduled to last 58 months, from June 1998 to June 2003. In reality, the loan expiry date was extended twice and the Project lasted 150 months, from June

[22] The irrigation area was reduced to 55% of that of the original plan. The planned amount when this reduction is applied is 1.636 billion yen, which is 89% of the actual result.

1998 to February 2011[23] (258% of what was planned).

The primary reasons for the initial extension were delays in the selection of consultants and the construction of farm ponds and other basic agricultural infrastructure. The selection of consultants was delayed approximately two years because of the influence of slow decision-making on the part of the ALRO and delays in domestic procedure. There were a number of reasons for construction delays. First was a change in policy to outsource infrastructure development that, prior to the Project, had been directly managed by the ALRO itself. The ALRO's network of construction companies was inadequate, and the contractors that the ALRO outsourced to were small in scale. Possessing multiple contracts and a shortage of construction equipment and funds tended to delay construction efforts. Because the initial contract was for over 10 million baht, progress could not be made on bidding procedures until the construction of a fair number of farm ponds had been decided. Delays to construction planned for the dry season pushed them into the rainy season, and, having to wait until the next dry season, the construction schedule lagged even further. To deal with these circumstances, the lower limit of the initial contract was abolished, reducing the period between the completion of construction and payment, and improving delays in construction. In response to the problem of construction delays due to construction companies possessing multiple contracts, companies were restricted to only two contracts at a time.

The background and purpose of the second extension differ from those of the first. The ALRO wanted to intensify efforts to process, distribute, and sell the surplus agricultural produce by farmers to increase their income even further after implementing the Project. The ALRO requested the development of agricultural produce processing centers and the creation of a model for support for processing, distribution, and sale of agricultural produce, once again extending the loan expiry date.

It is worth noting that the lengthening of the Project period contributed to its effectiveness. Vegetables and fruits can only be harvested once or twice per year, and farmers need a great deal of time to go through the trial and error required to improve the size and quality of their harvests. The External Evaluators believe that the long period of assistance allowed the cultivation of vegetables and fruits to take hold. Time spent enhancing the organization of farmers' groups and training exemplary farmers whose farms became Learning Centers[24] led to efforts by independent organizations and individuals to promote integrated agriculture even after the completion of the Project.

3.4.3 Results of Calculations of Internal Rates of Return (IRR) (Reference Value)

Assuming a Project life of 30 years, a cost based on the Project cost and the costs to maintain facilities, and a benefit based on increases to the production value of agricultural produce, the economic internal rate of return (EIRR) calculated at the time of the appraisal was 15%. When recalculating this value, cost was based on the Project cost and consulting and service costs submitted by the executing agency and facility maintenance cost estimates determined through interviews.

[23] The last contract for construction of the Nong No Pumping Station in Khon Kean province was completed on 8 February 2011.

[24] Beneficiaries who excel at integrated agriculture initiatives are positioned as Learning Centers that serve to transfer technologies to other beneficiaries.

Positive and negative benefits were calculated based on production value increases in relation to land use and the opportunity cost of production value of agricultural produce lost through the development of basic agricultural infrastructure. The result was an EIRR of 10.9%. Additionally, the calculation method for increases to the production value of agricultural produce used at the time of the appraisal was not specified, so it is possible that the calculation method used during the appraisal differs from that of the post-project evaluation. Because of this possibility, the External Evaluators did not compare appraisal and ex-post project evaluation values.

In light of the above, although the Project cost was within the plan, the Project period was significantly exceeded. Therefore efficiency of the Project is fair.

3.5 Sustainability (Rating: ②)

3.5.1 Structural Aspects of Operation and Maintenance

At the time of Project appraisal, the plan basically called on individual facility owners to take responsibility for their maintenance. In other words and as can be seen in Table 5, it was envisioned that the farmers that owned farm ponds would be responsible for maintaining them while communities would be responsible for maintaining community ponds and the ALRO would assume responsibility for the maintenance of farm roads and various irrigation facilities.

After the start of the Project, there was a shift in Thai government policies that made the operation, maintenance, and management of the agricultural infrastructure established by the Project the responsibility of individuals or TAOs. Control of farm ponds, micro irrigation, and shallow wells was transferred to individuals. Control of community ponds and processing plants was transferred to TAOs and their everyday maintenance to communities and processing groups, respectively. Maintaining farm ponds and community ponds is easy, and the performance of the processing plants so far has revealed few issues in terms of future maintenance of these facilities. On the other hand, the control farm roads transferred to TAOs and of control of irrigation facilities slated to be transferred to TAOs are organizationally problematic because TAOs are short of capable personnel. As described below, there are also technical and financial issues with which to be dealt and a need for TAOs to strengthen their maintenance systems.

Table 5: Agricultural Infrastructure

	At time of investigation	Actual Result
Farm ponds	Individual	Individual
Farm pond enlargement	Individual	Individual
Community ponds	Community	TAOs
Farm roads	ALRO	TAOs
Irrigation	ALRO	TAOs/ALRO
Micro irrigation		Individual
Group micro irrigation		Individual
Shallow wells		Individual
Processing plants		TAOs

Source: Data at the time of the appraisal, Agricultural Land Reform Office

In terms of the dissemination of integrated agriculture, the ALRO policy of making farmer groups self-reliant has enhanced their ability to work together in an organizational capacity. For this reason, focused assistance will not be needed upon completion of the Project. Nonetheless, some groups do not yet share this same level of organizational ability. Similar to what provincial offices have already implemented, it is important that the activities of groups like these are monitored at fixed intervals and that consultation occurs if a problem arises. Specifically, if a machine at a processing plant breaks down, the processing group consults with a provincial office and receives an introduction to a repair service. Additionally, it would be best to continue study tours, equipment procurement and other low cost assistance. The ALRO has already received requests for assistance from farmers' groups and is considering budget allocations for them.

The ALRO has proposed policies that would use the accumulated expertise and model of the Project to expand activities focused around farmer-to-farmer outreach and technology transfer and take advantage of the farmers' groups it has trained up until now to allow farmers to use exemplary farmers as Learning Centers. Provincial offices have also drawn up action plans.

Based on the above, no major problems have been observed in terms of the Project's operation, maintenance and management systems.

3.5.2 Technical Aspects of Operation and Maintenance

No problems are foreseen in terms of farm ponds, micro irrigation, and other facilities transferred to individual control, because they are technically easy to maintain. With farm ponds, for example, the farmers themselves can perform the work of mowing slopes or planting vegetation that will serve as retaining walls on slopes that appear likely to collapse. Micro irrigation sometimes requires minor repairs of pipes and sprinklers or the replacement of broken parts, but this, too, is within the range of what farmers are able to handle by themselves. These maintenance methods were taught in the training offered to farmers as part of the Project. If a larger problem arises, farmers can request repairs from a construction company or consult with coordinators or engineers at ALRO provincial offices. These offices are staffed with a number of university-graduate engineers and technical school-graduate technicians.

Despite control being transferred to TAOs, community ponds maintained on a day-to-day basis by communities are similar to individual farm ponds in terms of the ease of maintenance involved. Day-to-day maintenance, simple repairs, and other tasks at processing centers are the responsibility of processing groups that are able to consult with TAOs or the ALRO in the event that a larger problem arises.

Farm roads placed under control of TAOs are not technically difficult to maintain. They periodically require repair, but the work is easy enough for local contractors to handle. On the other hand, the two irrigation facilities set to be placed under the control of TAOs will require repairs to pumping stations, waterways, and other facilities. Maintenance at this level may prove difficult for the technical capacity of the organizations as they currently exist. TAOs that will control the two irrigation facilities have only one technical school-graduate technician assigned to each TAO, and it will be up to

them to respond to every technical issue faced at those facilities. The small number of technical staff is also likely to complicate management of the irrigation facilities. Although a maintenance manual for the irrigation facilities has been created, the technical abilities of TAO staff members is not at a level that will allow them to use the manual to carry out the maintenance required. Although the ALRO maintenance of the facilities will continue for several years to come, the plan is for control of the facilities to be gradually transferred to TAOs. Whether or not TAOs can improve their maintenance capacity and steadily take control of the irrigation facilities remains an issue.

The ALRO will not have any problems, as they are staffed with the project managers of this project as well as engineers specialized in agricultural infrastructure. They also have engineers stationed at nearby provincial offices.

Figure 20: Irrigation Facility Pumping Station (Mukdahan)

3.5.3 Financial Aspects of Operation and Maintenance

Individuals bear the maintenance costs of farm ponds, micro irrigation and other individually controlled facilities, but the expense is low enough as to not be a problem financially. For example, the biannual mowing of farm ponds is a task that can be performed by a single individual in a day's time. Also, in the case of spare parts of micro irrigation, sprinkler heads (the part that rotates and sprinkles water) cost several dozen baht (100–200 yen), and farmers interviewed reported buying them at agricultural equipment stores in nearby towns.

Community ponds that have been transferred to TAOs but are maintained on a day-to-day basis by communities are similar to individual farm ponds in terms of cost of maintenance. Interviews with staff at ALRO provincial offices revealed that the work of cleaning and mowing the areas around community ponds and planting trees and vegetation as retaining walls typically takes two days per year at a cost of 300–800 baht (980–2,600 yen) per community pond. Heat, electricity, water, and other operating expenses of processing plants, as well as the day-to-day maintenance and repair of buildings and machinery, are the responsibility of the processing groups that use them. Through the major operating expenses of electricity and water differ modestly from facility to facility, annual costs are estimated to be 3,000–10,000 baht (9,780–32,600 yen), which is well within the scale of what

these processing groups are able to handle with the profits they earn from the sale of their processed goods. Because the facilities are still new, there is little in terms of additional maintenance cost. Some processing groups are also planning to start saving money in anticipation of future maintenance expenses.[25]

Farm roads placed under control of TAOs can be damaged by heavy rainfall and will require partial repairs at the close of the rainy season in each year. There will be few financial issues with larger TAOs that will command a budget equally large in scale, but smaller TAOs command smaller budgets that could jeopardize their ability to allot the budget required for farm road maintenance. A measure being considered by the ALRO would loan their own construction equipment to TAOs and allow TAOs to use that equipment to repair roads as long as TAOs are willing to pay for fuel. This method has proved effective in other regions, and it may also be applied to the target areas of the Project.

The two large irrigation facilities that have not yet been placed under the control of TAOs are expensive to maintain. Though the ALRO bears these expenses at the time of survey in September 2012, how TAOs and water users' organizations will bear the maintenance costs in the future remains an issue. According to ALRO estimates, the irrigation facility in Nong No, Khon Kaen will cost 720,000 baht (2.35 million yen) per year to maintain, while the irrigation facility in Huai Bang Sai, Mukdahan will cost 1.1 million baht (3.6 million yen) per year to maintain. In the future, ALRO guidance will probably increase the amount of money collected for water usage by raising the productivity of farmers cultivating in irrigated areas and by enhancing the organizational strength of water users' organizations.

3.5.4 Current Status of Operation and Maintenance

With the exception of micro irrigation, no problems are foreseen in terms of farm ponds, farm roads, irrigation facilities, processing plants, markets and other facilities that are appropriately operated, maintained and used by beneficiary farmers, farmers' groups and ALRO provincial offices. As far as micro irrigation facilities are concerned, it is estimated that less than half of the farmers who received them have continued using them. The External Evaluators believe that this low activity rate is not due to the difficulty in maintaining these facilities; rather, it is primarily because those farmers cultivating fruits and vegetables for personal consumption do not consider these facilities to have high utility value in terms of cost and labor.

Farm ponds and micro irrigation transferred to the control of individuals have generally been maintained properly, though to differing degrees. Processing plants and community ponds maintained on a day-to-day basis by farmers' groups and communities also show no major problems, not even in terms of the procurement and servicing of parts. On the other hand, inadequate repairs to parts of farm roads that have been eroded by rain have been observed in places. The limited budgets of TAOs are

[25] The organic rice processing group in Maha Sarakham estimates future repair costs for buildings and rice milling machines at 20,000 baht (65,200 yen) per year and plans a project that will allow them to cover these maintenance costs with income earned from the processing and sale of organic rice.

likely preventing sufficient allocation of funds for road repair.

Some problems have been observed in the technical and financial aspects of the operation and maintenance of the Project. Therefore, sustainability of the Project effect is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This Project was carried out by the Agricultural Land Reform Office with the objectives of enhancing agricultural productivity, raising incomes, and stabilizing livelihoods in Land Reform Areas of Northeast Thailand. The Project has helped develop farm ponds, farm roads and other basic agricultural infrastructure, and it has provided non-infrastructure assistance in the form of agricultural technical training and help with organization of farmers' groups and the sale and processing of agricultural products. Combined, such support has enabled farmers in the region to cultivate rice, vegetables and fruit and raise fish and livestock in the same area using water from the farm ponds; the Project has introduced integrated agriculture to the farmers. The agricultural development of Northeast Thailand, which has poor agricultural productivity and high rates of poverty, is consistent with Thailand's development policy and needs and is also in line with Japan's ODA policy. Therefore its relevance is high. Over 90% of beneficiaries adopted the integrated agriculture promoted by the Project, resulting in greater yields and profits and more stable livelihoods for farmers. Accordingly, the Project's effectiveness and impact is high. The Project fell considerably behind schedule because of construction delays and plan changes, but final expenses were around 70% of those initially planned, therefore efficiency of the Project is fair. The Project's development impact is attributable to its flexibility, with modifications made and activities added on over 12 years according to the needs of beneficiaries. There are no problems with maintenance of agricultural facilities such as farm ponds, which have been transferred to farmers. Some issues remain regarding maintenance of farm roads, which have been transferred to Tambon Administration Organizations (TAOs), and irrigation facilities, which will be transferred in the future, but there are plans for continued aid from the Agricultural Land Reform Office, so the infrastructure should be managed sustainably. Therefore, sustainability of the Project effect is fair.

In light of the above, the Project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) Although the farm roads placed under the control of TAOs are not technically difficult to maintain, work is required to ensure that TAOs allot sufficient budgets for the adequate maintenance and repair of these roads. If the executing agency is able to cooperate with TAOs, it is recommended that they assist these organizations with the monitoring of road conditions and other related issues. As for the planned transfer of two irrigation facilities to TAOs over the next several years, the large size of these facilities will make it difficult for these organizations to maintain them

adequately at their current technical and financial capacities. Before the official transfer of control, it is recommended that the executing agency provide systematic support for creating a system that will enable TAOs and water users' organizations to technically and financially maintain these facilities.

(2) With the executing agency serving in the capacity of coordinator, a wide range of stakeholders from government agencies, universities, research institutions, local administrations, NGOs, and farmers' networks participated in Project activities and contributed to its effectiveness. Continuing into the future, it is recommended that the executing agency cooperate with other organizations (the Department of Fisheries, Department of Agriculture, Department of Livestock Development, and other special departments of the Ministry of Agriculture and Cooperatives, TAOs, etc.) in the Project's target regions to provide support that ensures that the activities of the beneficiaries that have occurred up until now are continued and expanded to include other area farmers. The executing agency is hoped to establish itself as a facilitator between the beneficiaries and the involved organizations, working to enhance cross-organization cooperation systems and provide support in accordance with the needs of the beneficiaries.

(3) In the Project's target region, the development of new markets for agricultural produce in urban areas and the growth of the agricultural food businesses of processing groups have resulted in valuable experience and a great number of success stories. As the direct results of the Project, Learning Centers (farms of exemplary farmers); vegetable production and sales groups, processing groups, and other personnel and organizations; and guidelines and manuals created from the experiences of the Project should be used to help expand these activities to other farmers in the Project's target region as well as to farmers in other regions.

4.2.2 Recommendations to JICA

In this Project, the executing agency achieved success by flexibly combining a variety of support items and providing them to beneficiaries. Now, loan assistance experts are being dispatched to the area and are continuing to provide support to the beneficiaries while condensing the experiences learned from the Project into a series of guidelines. The investments of loan assistance efforts have led to the documentation of results and have set the stage for the spread of these activities to other regions. The next step is for the executing agency to utilize these guidelines and success stories to expand these activities to other farmers in the Project's target region as well as to farmers in other regions. The results of this project can be effectively expanded with JICA's support. An example is technical cooperation that trains staff members at the executing agency's provincial offices to serve in the capacity of rural development coordinators and enriches functions to connect regional farmers' groups, the government, citizens, NGOs and other assisting organizations. Such support should be an advantage for an executing agency that has had its organization's mission changed from that of

granting land rights and developing infrastructure to one of agricultural extension services.

4.3 Lessons Learned

A characteristic of the Project is that it provided timely support in terms of infrastructure, technical training, organization, marketing and other means over a long period of time to beneficiaries in accordance with their stage of development. Additionally, each of these means of support worked in synergy to develop learning centers and farmers' groups capable of making continuous improvements to agricultural production, processing and sales. The lessons learned from this project are as follows:

(1) Creating synergy requires a variety of activities, including infrastructure development, organizational enhancements, and marketing support. Even if activities span multiple areas, it is important that the executing agency implement them as uniformly as possible. For example, the Project's agricultural infrastructure development, agricultural technical support, organizational enhancement of farmers and support for agricultural sales and processing were all implemented by the same executing agency. In this Project, it proved fortunate that, as an executing agency, the ALRO had jurisdiction over infrastructure development, technical support and a wide range of other tasks concerned with the development of Land Reform Areas. If a project is implemented with infrastructure, cultivation, organization and other fields divided among multiple specialized organizations, mutual coordination of activity content and period of implementation can prove difficult. Sharing money allotted for activities can also prove difficult if the budget for those activities is allotted among separate executing agencies. That one executing agency (ALRO, in this case) could be in control of everything and execute the Project is largely because of its unique characteristics. During the planning stage, the executing agency's range of tasks and organization must be analyzed and a system considered that would allow for the project’s smooth implementation.

(2) Projects that promote integrated agriculture must not only place emphasis on the development of basic agricultural infrastructure but must also offer agricultural technical cooperation, farmer organization and non-technical support, such as agricultural extension services, that are dependent on the progress of the project. In this Project, the change in Project policies from a focus on basic agricultural infrastructure at the time of the appraisal to the use of infrastructure to provide non-technical support for the production and sale of produce proved effective. Particularly in a project like this one, in which attempts are being made to implement a kind of agriculture with which the beneficiaries have no experience, it is often insufficient to provide nothing but infrastructure. It is believed that a system that pays close attention to the growth process of the beneficiaries over a long period of time and offers support as needed in a timely manner is important. This system should teach farmers how to grow crops, provide them with equipment, allow them to observe more advanced regions and give them opportunities to learn alongside their peers. It is recommended that support items such as these be included in plans in advance and that

support be provided in accordance with the circumstances on the ground and the progress of project activities. Additionally, in cases such as these, special care must be taken when establishing a project period.

(3) In the event that attempts are made to expand the development of integrated agricultural over a wide range or the project's target region has not been narrowed down, it is not always possible to implement an adequate feasibility study before the start of the project. In such a project, further investigation can be carried out after the project is already underway in the specified target region. Once the needs of farmers are better understood, ways of reviewing the plan as needed and flexibly responding to changes to it in accordance with the progress of the project are necessary. Additionally, these possibilities of revision should be included during the initial planning stages. Furthermore, if there are means of simplifying the procedures involved in ordering small-scale construction projects in great numbers and hastening the construction work itself, these could also aid in efficient and effective implementation. Because four provinces with differing circumstances were selected as the target regions of this Project, a representative region could not be targeted for further investigation. Additionally, there were many uncertainties, including difficulty in projecting the number of individuals who wished to participate in activities or the number of land certificates to be issued as a standard for the selection of beneficiaries in each region. Circumstances such as these make it difficult to draft a plan in line with the needs of target regions at the time of the appraisal and leave the executing agency with no choice but to review the plan again after the project is underway. As the project progresses, new needs emerged from among the beneficiaries, and these needs differed between regions and beneficiaries. In addition to understanding the situation in the field, it is believed that understanding the needs of beneficiaries through close communication and monitoring and responding flexibly to those needs by adding or changing activities, as a result, has spreaded integrated agriculture and improved the food self-sufficiency rate and income of farmers.

Comparison of the Original and Actual Scopes of the Project

Item	Original	Actual
(1) Project outputs		
Farm ponds	10,714 sites	4,703 sites
Farm pond enlargement	1,607 sites	650 sites
Community ponds	20 sites	28 sites
Farm roads (new)	504 km	818.30 km
Farm roads (repaired)	N/A	215.21 km
Canals, irrigation	13,800 rai (2,208 ha)	7,288 rai (1,166 ha)
Micro irrigation	1,624 sites (2005 plan)	1,617 pcs
Group micro irrigation	N/A	11 pcs
Shallow wells	2 sites (2008 plan)	2 sites
Processing plants	4 sites (2008 plan)	4 sites
Soil/water conservation	6,000 rai (960 ha)	Cancelled
Map (1/4,000)	300,000 rai (48,000 ha)	As planned
Construction equipment	33 machines	Cancelled
Organization strengthening	N/A	Farmers' groups (new: 49, improved: 19), etc.
Processing/marketing	N/A	8 community markets, 4 processing groups, etc.
Development of Younger and Next Generations of Agriculture		6 school training courses, 85 new farmers
Low-interest loans to farmers		50.59 million baht in loans
2) Period	Sep. 1998 – Jun. 2003 (58 months)	Sep. 1998 – Feb. 2011 (150 months)
3) Project cost		
Amount paid in Foreign currency	424 million yen	212 million yen
Amount paid in Local currency	4.551 billion yen (14.24463 billion baht)	3.214 billion yen (1.10862 billion baht)
Total	4.975 billion yen	3.426 billion yen
Japanese ODA loan portion	3.617 billion yen	2.686 billion yen
Exchange rate	1 baht = 3.17 yen (Sep. 1998)	1 baht = 2.899 yen (Sep. 1998 – Feb. 2011 avg.)

Democratic Socialist Republic of Sri Lanka

Ex-Post Evaluation of Japanese ODA Loan Project

Plantation Reform Project (II)

External Evaluator: Hiromi Suzuki S., IC Net Limited

0. Summary

The objective of the project was to contribute to ensuring the sustainability of plantation projects by improving the working and living conditions of plantation workers in of Sri Lanka, through the following measures: providing plantation workers with housing loans for the construction of individual houses; improving and developing infrastructure such as line rooms[1] and latrines; providing ergonomic equipment; providing training for the prevention of alcoholism which has been a serious problem among plantation workers; and providing training such as household cash management.

The relevance between Sri Lankan national development policies, development needs and Japanese aid policies was high both at the moment of appraisal as well as ex-post evaluation. However, the project's degree of relevance was evaluated as fair, because of some issues with the appropriateness in the project planning; for example, the provision of housing loans was canceled although it was one of the pillars of this project, and the funds were reallocated to the rehabilitation of estate roads. The reroofing of line rooms and the construction of latrines were conducted as part of the project and they were effective to a certain extent in improving the working and living conditions of plantation workers. However, the rehabilitation of estate roads, which was added to the original plan at a later stage, did not result in benefiting plantation workers as much as expected. Therefore, the degree of effectiveness and the impact were evaluated as fair. The project cost was lower than planned because of a substantial reduction in the project's scope, but the project period slightly exceeded the planned period. Therefore, the efficiency of the project was evaluated as fair. With regard to the operation and maintenance of the project, there was potential for improvement in terms of the executing agency's personnel and technical skills. However, after the project ended, no problems were found concerning the organizational structures, technical skills and financial situations of the stakeholders including regional plantation companies (RPCs), the Plantation Human Development Trust (PHDT) and NGOs. Similarly, there were no particular concerns about the overall operation and maintenance of the project. Therefore, it is concluded that the sustainability of the project effect is high.

[1] Line rooms are row houses where plantation workers in Sri Lanka have been living for generations. Line rooms are provided to the plantation workers free of rent.

In light of the above, this project is evaluated to be partially satisfactory.

1. Project Description

Figure 1: Project Location

Figure 2: Reroofed Line Room

1.1 Background

Since the 1990s, the government of Sri Lanka has been implementing privatization policies in the state-owned plantation sector, with the aim of improving the inefficient management which had prevented its growth[2] and to improve the quality of crops as well as to adding more value to the crops. More specifically, the management rights for about 460 plantations run by the two public (state-owned) corporations were leased to 22 RPCs in June 1992 and in 1993 and another RPC was established. Initially, a partial privatization method was adopted where only the management rights were leased to the 23 RPCs. However, in April 1995, the policy to completely privatize all the 23 RPCs was decided upon by the Cabinet.

In addition to plantation management reforms, other challenges for the Sri Lankan plantation sector were also recognized, including the need to improve the working and living conditions of plantation workers as well as their social status. The majority of plantation workers are descendants of Tamils who were brought from India as cheap labor during the 19th century British colonial period. For generations, they had lived in small row houses called line rooms built in plantation estates where each dwelling unit had to be shared by seven or eight people on average. They were forced to live in social, economic and cultural isolation from surrounding communities. Many hours of outdoor labor and wretched living conditions resulted in serious problems amongst the plantation workers such as alcoholism and domestic violence against women. For a long period of time, they were not given civil rights and suffered from discrimination thus there was an urgent need to improve the overall status and living conditions of the plantation workers.

[2] Most plantations in Sri Lanka were owned by foreign nationals. By 1975, these plantations were nationalized and run by two major public (government-run) corporations. Under public management, the plantation sector gradually lost its competitiveness because of increases in labor costs, lack of efforts in improving productivity and the Sri Lankan government's policy of prioritizing rice farming, among other reasons (source: JICA internal documents).

These programs to improve the profitability of RPCs and to improve the working and living conditions of Indian Tamil plantation workers were strengthened especially since the 1990s, when the importance of the plantation sector as a source of foreign exchange was recognized by the Sri Lankan government. The Asian Development Bank (ADB) and the Japan International Cooperation Agency (JICA) among other donors provided assistance for the plantation sector. In particular, JICA conducted the Plantation Reform Project (I) (the first phase of the project) from 1996 to 2001, it has continuously been dispatching Japan Overseas Cooperation Volunteers (JOCVs) and has provided support through the JICA Partnership Program (JPP) as well. The Plantation Reform Project (II) (PRP-II) was conducted under a parallel co-financing scheme with ADB's Plantation Development Project (PDP). The ADB conducted the PDP with the aim of achieving two goals: one, improving the profitability of the plantation sector; and two, improving the living and working conditions of plantation workers. PRP-II was conducted with the aim of contributing to the achievement of the PDP's second goal, by supporting one of the PDP's components "social and environmental programs" through parallel co-financing as mentioned above.[3]

1.2 Project Outline

The objective of this project is to improve the working and living conditions of plantation workers in 15 districts where RPCs are located, by providing housing loans, improving line rooms, constructing latrines and providing training, thereby contributing to the sustainability of the plantation sector.

Loan Approved Amount/ Disbursed Amount	1,836 million yen/1,694 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	March 2003 / March 2003
Terms and Conditions	Interest Rate: 2.2% Repayment Period: 30 years (Grace Period: 10 years) Conditions for Procurement: General untied
Borrower / Executing Agency	The Democratic Socialist Republic of Sri Lanka / Ministry of Plantation Industries (MPI)
Final Disbursement Date	May 2010
Feasibility Studies, etc.	<Proposed-Type study> "The Study for the Promotion of the Project for Improving the Living Conditions of Plantation Workers," 2005

[3] PDP's four components include the following: (1) investment: providing financing for RPCs; (2) social and environmental programs: improving the living and working conditions of plantation workers; (3) marketing initiatives: supporting marketing by RPCs; and (4) institutional development and project management: supporting the strengthening of organizations involved in the plantation sector, including the Tea Association (TA). See footnote 31 for the reasons why PRP-II was conducted in the form of parallel co-financing.

Related Projects	<ODA loan> "Plantation Reform Project (I)" (loan agreement: 1996) <Technical cooperation> Dispatch of JOCVs (2000–2012) <Grant aid: Partner Type> CARE International Japan, "Tea Estate Assistance Project (TEA Project)" (May 2003 - May 2006) CARE International Japan, "Assistance for Tea Estate Residents through Enhancing and Advancing CBOs (After TEA)" (July 2006 - June 2008) <Other donors' projects> ADB, "Plantation Development Project" (2002–2010) ADB, "Plantation Reform Project" (1997–2002)

2. Outline of the Evaluation Study

2.1 External Evaluator

Hiromi Suzuki S. (IC Net Limited)

2.2 Duration of Evaluation Study

The external evaluator conducted the ex-post evaluation study as follows:

Duration of the Study: August 2011 - May 2013

Duration of the Field Survey: November 25-December 8, 2012 and March 25-30, 2013

2.3 Constraints during the Evaluation Study

At the time of the appraisal, the plan was to conduct a baseline survey at the time of the launch of the project and to establish appropriate operation and effect indicators, in order to measure the effectiveness of the project. However, in reality no baseline data was collected at the beginning of the project as the survey did not take place until 2005, which was two years after the project started. In addition, as a result of checking with stakeholders such as the executing agency (MPI) and ADB during the field study, it was found that at that moment, the only available document from the 2005 baseline survey was the inception report. The external evaluator identified the indicators that the inception report had stipulated should be collected and an effort was made to collect similar indicator data to the extent possible from the Central Bank of Sri Lanka and the Department of Census and Statistics. Trends from the time of the appraisal to the present time were then checked using the collected data.

In the ex-post evaluation, an attempt to evaluate the effectiveness of the project based on the beneficiary survey results and the plantation sector data obtained from the Central Bank of Sri Lanka and the Department of Census and Statistics was made. However, it was very difficult to quantitatively

identify the direct cause-and-effect relationships between the project and the sector's overall statistical data. Therefore, those evaluation results which are based on statistical data only indicate whether or not assistance (including the project) to the plantation sector in general contributed to its economic and social improvement.[4]

3. Results of the Evaluation (Overall Rating: C[5])

3.1 Relevance (Rating: ②[6])

3.1.1 Relevance with the Development Plan of Sri Lanka

There were two main national development policies at the time of the appraisal. One was "Connecting to Growth: Sri Lanka's Poverty Reduction Strategy" which was formulated in June 2002. With the aim of improving the social status of plantation workers who are recognized as a population living in poverty, the strategy stipulated the promotion of social infrastructure development such as health and education services for plantation workers which had been independently implemented by each RPC in the past. The other was the five-year national development plan "Regaining Sri Lanka" which was formulated in December 2002. It promotes structural reforms based on market economy. This policy was also applied to the plantation sector reforms and the plan aimed to improve the welfare of plantation workers by promoting growth through private sector participation.

At the time of the ex-post evaluation, the national development plan "Mahinda Chintana Ten Year Horizon Development Framework" (2006–2016) was being implemented. The plan stipulates 11 policies including the improvement of plantation workers' housing conditions, the development of educational infrastructure and the improvement of the RPCs' productivity. In the "National Plantation Industry Policy Framework" (2009–2016) which is a policy dedicated to the plantation sector, it is stipulated that productivity, profitability and sustainability should be ensured and living conditions and the welfare of plantation workers' communities should be improved through the promotion of public-private partnerships in the plantation sector.

As can be seen, the role of the plantation sector in the Sri Lankan economy and the importance of improving the working and living conditions of plantation workers have not changed since the time of the appraisal. Therefore, the project has been highly relevant with the country's development plan as well as plantation policies.

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[4] In the ADB Project Completion Report (December 2010) which is the ADB equivalent of the JICA ex-post evaluation report, it was pointed out that the 2005 baseline survey did not reflect the baseline situation and therefore was not taken into consideration when evaluating the PDP.

[5] A: Highly satisfactory; B: Satisfactory; C: Partially satisfactory; D: Unsatisfactory

[6] ③: High; ②: Fair; ①: Low

3.1.2 Relevance with the Development Needs of Sri Lanka

At the time of the appraisal, the plantation sector accounted for 3% of the Gross Domestic Product (GDP), 27% of the total agricultural output, and 16% of total exports and 3.5% of total employment in the agricultural sector. The plantation sector was an important sector in terms of both acquisition of foreign currency and the provision of jobs in rural areas. At the time of the ex-post evaluation, the figures showed a slightly decreasing trend compared to the time of appraisal; for example, the plantation sector accounted for 2.4% of the GDP, and 24% of total agricultural output. The main causes for this trend include the increase in production costs (wages, fertilizers, fuels, etc.) in the plantation sector in recent years and the unstable weather. With regard to employment, by 2010, the percentage of people employed in plantations had declined to 2.8% of total employment in the agriculture sector, reflecting the fact that a shortage of plantation workers is becoming a serious problem in recent years. However, exports from the plantation sector accounted for 24% of total exports, which shows that it is still an important source of foreign exchange.[7] The main crops continue to be tea, rubber and coconut, but the production of cinnamon, cloves, pepper, etc. were also on an upward trend at the time of the ex-post evaluation, mainly due to the efforts towards product diversification which have been ongoing since the 1990s. Although the contribution by the plantation sector to the Sri Lankan economy is showing a slightly declining trend, it is still an important sector at the time of the ex-post evaluation. Its role in the acquisition of foreign currency was particularly significant.

Assistance for the plantation sector is important not only from the standpoint of the Sri Lankan economy but also from the social standpoint of reducing regional disparities and poverty. At the time of the appraisal, plantation workers were working and living under wretched conditions with decrepit dwellings and degraded or undeveloped water supply, roads and other basic infrastructure. They were recognized as a population living in poverty.[8] At the time of the ex-post evaluation, the working conditions at plantations (including wages and welfare systems), the housing conditions and basic infrastructure were steadily improving and the national poverty rate including the plantation sector was decreasing.[9] However, there were still economic disparities between the "estate sector" and other sectors (the "urban sector" and the "rural sector"). In addition, because of the historical background,

[7] Central Bank of Sri Lanka, Economic and Social Statistics of Sri Lanka 2012. The latest figures available at the time of the evaluation were the 2010 figures for employment and the 2011 figures for other indicators.

[8] The average monthly salary of plantation workers in 2001 was above Sri Lanka's national poverty line of 792 rupees per month per capita.

[9] According to the Household Income and Expenditure Survey (HIES) conducted in 2009/10, the national average poverty rate was reduced from 15.2% in 2006/07 to 8.9% in 2010. The poverty rate in the estate sector was also reduced from 32% to 11.4% in the same period. In the Sri Lankan statistics, three categories are used including the "urban sector", the "rural sector" and the "estate sector." Although the poverty rate is showing a decreasing trend in all the three sectors, the poverty rate in the estate sector remains the highest.

plantation workers are still marginalized socially, economically and culturally. As mentioned above, various measures have been taken with the support of the ADB, JICA, other donors and NGOs, but the social mobility of plantation workers is still limited. Even if the overall working and living conditions of plantation workers have improved, deep-rooted problems require more time before they can be completely solved. In light of this situation, development needs in the sector still existed both at the time of the appraisal and at the time of the evaluation. Therefore, the project is relevant to the development needs of Sri Lanka.[10]

3.1.3 Relevance with Japan's ODA Policy

JICA's assistance policies at the time of the appraisal were the Medium-Term Strategy for Overseas Economic Cooperation Operations (2002–2005) and the Country-Specific Project Implementation Plan for Sri Lanka (1999). In the Medium-Term Strategy, prioritized assistance areas included the strengthening of measures to reduce poverty, the improvement of economic and social infrastructure for economic growth as well as support for human resource development, environmental improvement and rural development. In particular, it is stipulated that poverty problems in the plantation sector should be addressed by improving the living conditions of its workers. In the Country-Specific Project Implementation Plan, the prioritized assistance areas included the reduction of economic disparities between regions including the plantation sector, the development of technologies, human resources and infrastructure for the promotion of export industries, as well as comprehensive environmental improvements in major cities. In April 2004, in the course of the project's implementation, the Country Assistance Program for Sri Lanka was published. The Program addressed the need to support workers in the plantation sector as part of poverty reduction measures. It prioritized infrastructural development for daily life (drinking water, public hygiene, health and medical care, securing basic education, etc.) while taking into consideration the economic disparities between different ethnic groups and different regions. It also prioritized the development of economic infrastructure (agriculture, fisheries and rural manufacturing industries). In addition, it stipulated continuous support for the streamlining of the tea industry where privatization was progressing at a particularly fast rate, as well as continuous support for the improvement of the lives of plantation workers.

From the above, it is concluded that the project is consistent with the Japanese ODA policies that

[10] At the time of the project appraisal, the effects of social and environmental programs conducted as a component of the ADB Plantation Reform Project (PRP) were studied. The study results showed that the reroofing of line rooms led to a reduction in health problems among residents that had been caused by leaking roofs, low room temperatures and wet floors during rainy season. The study results also showed that the construction of latrines reduced contamination (caused by outdoor excretion) of the environment surrounding residential areas. Based on these findings, JICA decided to continue supporting these components through PRP-II.

existed both at the moment of appraisal as well as those formulated during the project implementation.

3.1.4 Appropriateness of the Project Planning

As explained above, the project was designed to support the "social and environmental programs" which was one of the four components of the ADB's Plantation Development Project (PDP), through parallel co-financing. The "social and environmental programs" were made up of two pillar projects, namely: the housing loan project for building new individual houses which aimed at improving the working and living conditions of plantation workers; and the social and environmental project which included amenity improvement (reroofing of line rooms, construction of latrines, etc.) and training. The plan to provide housing loans was a follow-up to the Plantation Reform Project (I) which focused on the reroofing and expansion of line rooms. It was considered an important component from the standpoint of supporting the construction of individual houses for plantation workers. Originally, the reroofing of line rooms was considered a temporary measure to improve housing conditions before the construction of individual houses.[11] However, since there was no progress on the provision of housing loans, the ADB cancelled the housing loan component in 2006 and agreed with the Sri Lankan government on the reallocation of the corresponding funds to the rehabilitation of estate roads (the memorandum was signed on May 26, 2006). In 2008, JICA also approved the reallocation of funds from the housing loan component to the improvement of estate roads. This section analyzes the appropriateness of the changes made to the project plan in reference to the cancellation of the housing loan component and the addition of the estate road improvements instead.

3.1.4.1 Appropriateness of the Housing Loan Component

The original plan which incorporated the improvement of housing conditions for plantation workers was in line with the Sri Lankan national plans, development needs and the Japanese assistance plans. However, the project's relevance was reduced as a result of the cancellation of the housing loan component. The provision of housing loans was canceled for the following two reasons.

Firstly, there was a change of government in 2005 and a major restructuring of ministries and agencies followed. As a result, the number of ministries and agencies responsible for the plantation sector increased to six, including the Ministry of Plantation Industries (MPI). The Ministry of Livestock and Rural Community Development (MLRCD) became responsible for the working and living conditions of plantation workers and the MLRCD started to provide a housing loan scheme

[11] ADB, Report and Recommendation of the President (RRP) (2002).

which had better conditions than the JICA housing loan scheme (implemented by the MPI).[12] Attempts were made aimed at eliminating the differences between the MPI loan conditions and the MLRCD loan conditions in order to provide housing loans to a larger number of plantation workers through coordination and cooperation between the two ministries; however the discussions were not successful. In summary, although there were no changes to national policies and development needs, the framework for implementing those policies lacked consistency.[13]

Secondly, assessment and coordination process at the planning stage was not sufficient. It was a necessary to assess the restrictions on land ownership especially in the plantation sector, as well as understanding the opinions and circumstances of all the stakeholders. A realistic plan should have then been formulated at the planning stage by taking into consideration each stakeholder's opinions more thoroughly. However, these procedures related to assessment and coordination was not sufficient. The following explains the problems in detail. The housing loans in this project were to be provided as three-step loans via participating financial institutions (PFIs), and it was decided that the pensions of plantation workers would be used as collateral. Yet, only two PFIs were interested in this scheme (see "Project Outputs" for details of the housing loan scheme). For the PFIs, the risks involved in financing plantation workers were too high unless the collateral would be fixed assets such as land and buildings. In addition, the opportunity cost was high because the maximum loan amount for each loan was only 100,000 rupees (slightly below 80,000 yen). Later, there was a proposal that estate workers' housing cooperative societies (EWHCS) would borrow money to finance housing loans for plantation workers, although EWHCSs were not PFIs. However, although EWHCSs are now well-organized and working actively with the trust of plantation workers' communities, it did not have sufficient personnel and capacity to handle such a task in the initial stage of the project. Therefore, the provision of loans via EWHCS was not a realistic option. There was also the problem of land ownership. In Sri Lanka, plantation land is owned by the state. The RPCs lease the land from the government for 50 years. At the time of the appraisal, the plan was to provide 7–10 perches[14] of land each through housing loans to 12,000 people. It was planned that the land leasing rights would be transferred from the RPCs to the workers when the loan repayments had been completed. However, under this scheme, there was a

[12] In the JICA housing loan scheme, the maximum loan per person was 100,000 rupees, no grant aid was provided, the annual interest rate was the average weighted deposit rate (AWDR) plus a maximum of 5%, and the repayment period was 15 years. In the MLRCD housing loan scheme, the maximum loan per person was 100,000 rupees, the maximum grant aid was 125,000 rupees, the annual interest rate was 7.5%, and the repayment period was six years. The National Housing Development Authority (NHDA) also offered a housing loan scheme. Both the MLRCD and NHDA loan schemes included grant aid, and the total amount provided for each person exceeded the maximum amount provided by the JICA scheme to each person (100,000 rupees).

[13] The executing agency explained in its Project Completion Report that the reason for the cancellation of the housing loan component was mainly due to changes in the Sri Lankan government's policy, which is contrary to the findings of this ex-post evaluation report. However, the Project Completion Report also states as a lesson learned that there should have been a consistent policy framework during project implementation.

[14] Perch is a unit of land used in Sri Lanka. 1 perch equals to 25.293m^2

possibility that the workers might sell the land leasing rights to a third party outside the plantation sector, which would result in the RPCs losing their control to manage the plantations. The RPCs needed to avoid this risk and therefore had negative views on the implementation of the housing loan scheme.[1516] In addition, plantation workers' need for individual houses was different from what was expected. It was true that the improvement of wretched housing conditions was the top priority at the time of the appraisal. Nevertheless, it should also be noted that for many plantation workers there was a sentimental value in these row houses, where they had lived for generations this psychological attachment made it difficult for them to move out. Incentives for them to get a loan to purchase individual houses were limited when they could have their existing row houses repaired or expanded. In addition, the maximum loan amount of 100,000 rupees provided by the project was insufficient to build individual houses and they needed to finance the shortfall by themselves. Since plantation workers do not have land or other fixed assets, it was very difficult for them to receive loans from banks to cover the shortfall.[17]

In summary, the housing loan project was canceled for the following reasons. There was lack of consistency in the Sri Lankan government's framework for implementing its development policies; sufficient analysis should have been conducted at the project designing stage regarding the restrictions on land ownership in the plantation sector, the needs of the RPCs, the plantation workers, and the financing conditions of PFIs. These factors resulted in a partially inappropriate project planning which led to a difficulty in reaching a consensus between the stakeholders including the MPI, the RPCs and the PFIs.

3.1.4.2 Appropriateness of Adding the Estate Road Improvement Component

Since there was a substantial delay in the progress of PDP and PRP-II, the ADB dispatched a mission in 2006 to assess the situation. In July of the same year, the ADB agreed with the Sri Lankan government that the housing loan component would be canceled and estate road improvements would be added as part of amenity improvements.[18] JICA assessed the appropriateness of the estate road

[15] JICA internal documents state that there were no potential positive effects in investing in housing from the standpoint of the RPCs. During the ex-post evaluation study, such opinions as "The legal frameworks were not yet in place" and "It was premature to implement the scheme" accounted for a majority of the opinions collected through interviews with the RPCs, the PHDT and NGOs. The MPI which is the executing agency of the project said in its project completion report that the needs of the RPCs, which are the important stakeholders, were not sufficiently understood at the project planning stage.

[16] In 2004, the MPI established the Committee on Collateral in order to resolve the problems of collateral and land ownership. As a result of discussions in the committee, a new scheme was devised, but a consensus could not be reached. The proposed scheme was: (1) EWHCSs should become the borrowers, the RPCs' land leasing rights should be registered as collateral and the land leasing rights should be transferred to workers when repayments were completed; (2) only the members of EWHCSs should be eligible to receive the loans; and (3) when plantation workers want to sell their houses, EWHCSs buy the houses (Source: Minutes of meetings of the Project Coordination Committee).

[17] It was confirmed from interview surveys that at least double the maximum loan amount was required to build an individual house at the time of the project implementation.

[18] ADB, Project Completion Report (December 2010) and MPI internal documents.

improvement component using its own procedures including the implementation of pilot projects, before approving the addition of this component the project.[19] In Sri Lanka, a rural road development program called "Maga Neguma" has been implemented since 2004 under the Ministry of Ports and Highways (MPH). Under this program, rural roads totaling 84,000 km nationwide including estate roads are being improved with the aim of improving living standards in rural areas including plantations. The program was considered as an important program for rural area development which indicates that adding estate road improvements to the project do meet the Sri Lankan development policies and the development needs for improving the working and living conditions of plantation workers. It also meets the Japanese ODA policies because the improvement of plantation infrastructure is included in the goals of the Medium-Term Strategy for Overseas Economic Cooperation Operations (2002–2005) and the Country-Specific Project Implementation Plan for Sri Lanka. Therefore, it was confirmed that adding the estate road improvement component to the project is consistent with the Sri Lankan policies, the development needs and the Japanese ODA policies.

As explained above, JICA assessed the appropriateness of adding the estate road improvement component to the project and then approved the plan. However, there was not enough evidence as to confirm that JICA conducted an appropriate monitoring of the progress including the effects and benefits to the plantation workers. At the time of the ex-post evaluation, it was found that the level of impact on the improvement of plantation workers' lives was lower than expected at the time of the appraisal (see "3.3 Impact" for details). Therefore, it was concluded that the appropriateness of adding the estate road improvement component was less than expected.

In light of the above observations, it is concluded that the project's overall relevance is fair. There were some problems in the appropriateness in the project planning, although the implementation of the project was relevant to the country's development plan, development needs and Japan's ODA policy.

[19] Details of the assessment process were as follows. (1) JICA requested the MPI to submit evidence that show how the estate road improvement component would contribute to the achievement of the project goal i.e. the improvement of the working and living conditions of plantation workers. JICA also requested the MPI to submit written consents of the RPCs, the organizational charts of each stakeholder (the MPI, RPCs, EWHCSs, the PHDT and the RDA) as well as materials clearly explaining the division of roles between the stakeholders. (2) As pilot projects, estate road improvements were implemented on 17 sites in 2007, through which the organizational structures, costs and effects of implementing these projects were checked. (3) JICA then officially approved adding the estate road improvements as part of the amenity improvement component. As the conditions for applying for an estate road improvement project, the relevant Estate was required to attach the Internal Road Profile Sheet for the estate roads subject to the project as well as the written consents of the plantation workers. The Estate was also required to submit monthly progress reports as well as photographs taken before, during and after the improvements. On the Internal Road Profile Sheet, "operation and effect indicators" were stated including the improvement of plantation workers' access to markets and hospitals, the reduction of traveling time, traffic safety, reduction in the maintenance costs for estate roads, as well as the number of beneficiaries.

3.2 Effectiveness[20] (Rating: ②)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

As explained in "2.3," operation and effect indicators, baseline values and targets were not set at the beginning of the project. Therefore, in this ex-post evaluation, mainly data provided by the Plantation Human Development Trust (PHDT) was used because it was the most reliable data available at the time of the ex-post evaluation (Table 1). Based on PHDT's data, it was identified that the reroofing of line rooms and the construction of latrines conducted as part of the project made a significant contribution to meeting the needs in the plantation sector. A quantitative evaluation of the effects of these two components, based on the data of the Department of Census and Statistics was attempted.[21]

Table 1: The Project's Contribution to Meeting the Needs of Improving Housing Conditions and Infrastructure in the Plantation Sector as of 2003

	Housing	Water supply development	Construction of latrines	Nursery schools	Reroofing
Infrastructure development needs as of 2003*	225,458 units	225,458 units	225,458 units	1,541 units**	206,321 units
The number of units developed/improved by the project and the level of contribution by the project	0 unit (0%)	180 units (0.1%)	6,798 units (3%)	37 units (2%)	23,831 units (12%)

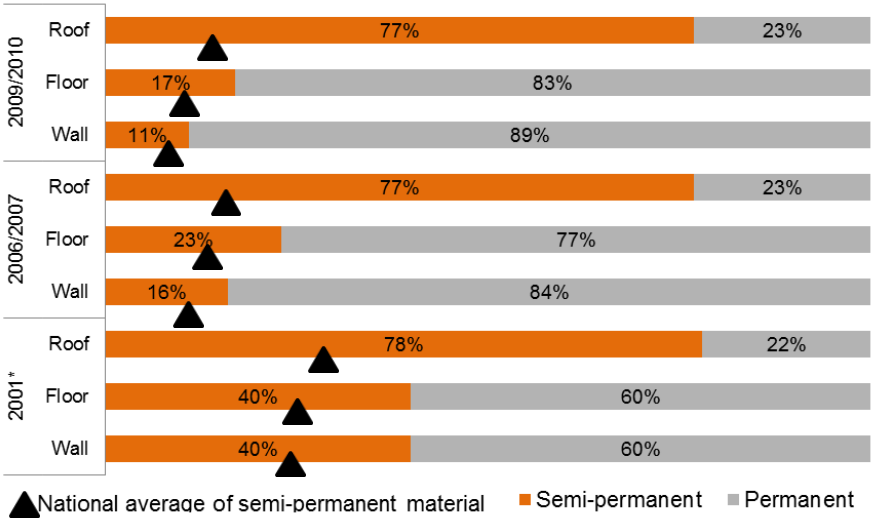
*The infrastructure development needs were calculated by the PHDT based on the population and the number of households working on plantations as of 2003.
**The data for nursery schools is from 2012.
Source: PHDT

(1) The Effects of the Reroofing of Line Rooms

In regard to housing materials, statistics in Sri Lanka are divided into "permanent" and "semi-permanent." As shown in Figure 3, in the estate sector, the percentage of housing walls made of semi-permanent materials was reduced from 40% in 2001 to 16% in 2007 and to 11% in 2010. Similarly, the percentage of housing floors made of semi-permanent materials was reduced from 40% in 2001 to 23% in 2007 and to 17% in 2010, indicating that in regard to floors and walls, there was an improvement in the housing environment. However, the percentage of roofs made of semi-permanent materials has remained at the same level, i.e. 78% in 2001, 77% in 2007 and 77% in 2010. As shown in Table 1, the project's contribution to meeting the needs of reroofing as of 2003 was 12%. However,

[20] Sub-rating for Effectiveness is to be put with consideration of Impact.
[21] In the ex-post evaluation, nine indicators including education, healthcare, water supply and sewage systems were identified based on the inception report for the baseline survey conducted in 2005. Data for the nine indicators was then collected to the extent possible from the Department of Census and Statistics, the PHDT, among other sources. The external evaluator then attempted an evaluation of the project's effectiveness, based on the trends shown in the data from the time of the appraisal to the time when the latest data is available. However, for most indicators it was very difficult to quantitatively identify the direct relationship between the project and these data.

as explained above, in the project reroofing was considered as a temporary measure to improve housing conditions before constructing individual houses, and thus semi-permanent materials such as corrugated iron were used for reroofing. This fact explains why there is no change in the proportion of semi-permanent materials used for roofing in the plantation sector as can be seen in Figure 3.[22] Even in the future periodic reroofing will be required more often compared to walls and floors.



Source: The 2001 data is from Census of Population and Housing 2001, the Department of Census and Statistics. Other data is from "Household Income and Expenditure Survey," 2006/07 and 2009/10.

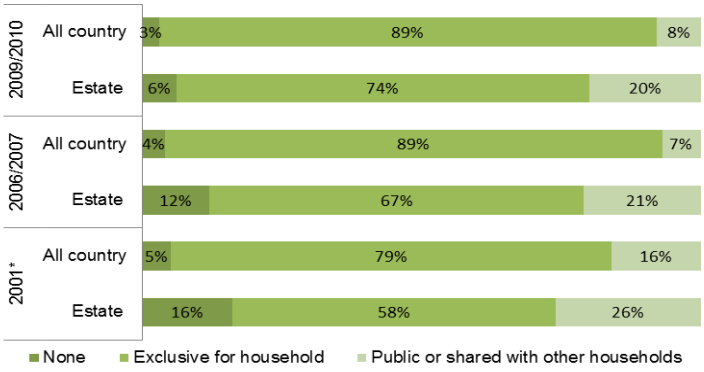
Figure 3: Housing in the Plantation Sector: Distribution by Type of Material, 2001-2010

According to the beneficiary survey, it was found that the reroofing conducted by the project had the effect of increasing the income of plantation workers because they no longer need to take days off work as frequently as before in order to repair the roof. Workers can now work for 21 days or more every month (see "3.2.2 Qualitative Effects" for details).[23]

(2) The Effects of the Construction of Latrines

In the estate sector, the percentage of households with no latrine was reduced from 15% in 2001 to 6% in 2009/10; percentage of households using shared or public latrines was reduced from 25% to 20% (Figure 4) while percentage of households with their own latrines increased from 58% to 74%. As can be seen, condition of toilet facilities is clearly improving. The number of latrines constructed by the project was 6,798 units, which accounted for 3% of the needs as of 2003 (Table 1). This suggests that the project contributed to the improvement of hygiene on plantations to a certain extent.

[22] Corrugated iron, which is a semi-permanent material, was used in the project. Corrugated iron is thin (about 5 mm) and requires periodic maintenance (once every 3-4 years) such as applying water-resistant coating.
[23] In the mountainous and highland area, workers need to work for at least 21 days in a month in order to maintain the wage rate of 515 rupees a day. If less than 21 days, the wage rate is reduced to 385 rupees a day.



Source: The 2001 data is from Census of Population and Housing 2001, the Department of Census and Statistics. Other data is from "Household Income and Expenditure Survey," 2006/07 and 2009/10.

Figure 4: Status of construction of latrines: 2001～2010

(3) The Effects of Estate Road Improvements

The expected effects of the estate road improvement component when it was added to the project were that it would contribute to: an improvement in safety of the daily lives of plantation workers (such as a reduction in traffic accidents and injuries caused by landslides and in the rainy season); and the improvement of convenience (such as an improvement in access to markets and public institutions, a reduction in traveling time and a reduction in the number of days that roads are closed because of natural disasters). However, the lengths of the sections of roads improved were 100 meters on average (the shortest 50 meters and the longest 3 km) and the estate roads on either side of these sections were left unimproved. Therefore, no significant effects were observed in the daily lives of the majority of plantation workers because they mainly use estate roads on foot. It was found that the main direct beneficiaries of the project were the RPCs who use the estate roads in vehicles. As shown in Table 2, according to interviews with estate managers, a reduction in vehicle maintenance costs and a reduction in driving time were recognized as the most important quantitative effects.

On the other hand, the majority of plantation workers' opinions were that they did not recognize any quantitative effects such as a reduction in traveling time or a reduction in injuries, because they often travel on foot on partially improved estate roads. Thus, no significant quantitative effects were observed in the ex-post evaluation.

Table 2: The Quantitative Effects of the Improvement of the RPCs' Estate Roads

[Norwood Estate] Total length of roads improved: 2.4 km Number of beneficiaries: 305 households, approximately 1,200 people 10 vehicles use the estate roads improved by the project. The maintenance cost for the vehicles was 300,000 rupees per month in total before the improvement. This was reduced to 15,000–20,000 rupees per month (in the dry season). Time required for rounds (patrolling the estate): Before the improvement (2008): 1.5 hours per round. After the improvement (at the time of the ex-post evaluation in 2013): 45 minutes per round
[Laxapana Estate] Total length of roads improved: 1 km Number of beneficiaries: 55 households, approximately 570 people The Estate owns 56 vehicles. After the estate road improvement, annual vehicle maintenance costs were reduced by: 700,000–800,000 rupees

Source: Interviews with estate managers
Note: The reduction in traveling time and maintenance costs shown in Table 2 includes the effects of estate road improvements conducted outside the project. Therefore, these effects are not exclusively the effects of the JICA project.

Figure 5: Rehabilitation of Estate Roads

3.2.2 Qualitative Effects

The qualitative effects expected from the project were improvements to the working and living conditions of plantation workers and an increase in work motivation. The verification of these effects was conducted mainly through the beneficiary survey.[24] Tables 3 and 4 summarize the details of the beneficiary survey and the characteristics of the samples.

[24] Four Estates in the mountainous and highland areas and in lowland areas near to the southern coastline were selected out of the 23 RPCs which were subject to the project. A beneficiary survey was then conducted for a total of 185 plantation workers on the four estates. The estates were selected so that the survey would include beneficiaries of all the components of the project. However, there were many cases where workers were using ergonomic equipment and vehicles without knowing which ones had been purchased by the project. Therefore, a focus group discussion was conducted with 15 workers who use the ergonomic equipment purchased by the project on the Laxapana Estate.

Table 3: Details of the Beneficiary Survey

	Name of the RPC	Name of the Estate	Sample size	Survey period
Low-country (Tea plantations located at an altitude of less than 600 meters)	Kotagala	Gikiyanakanda	100 people	Early December, 2012
	Watawala	Homadola		
Up-country (Tea plantations located at an altitude of more than 1,200 meters)	Agrapathana	Diagama West	85 people	Early January, 2013
	Bogawanthalawa	Poyston		
	Maskeliya	Laxapana	15 people*	
Total			200 people	

* Participants of the focus group discussion

Table 4: Sample Characteristics of the Beneficiary Survey

The number of males and females	Male: 126; female: 59 (percentage of valid responses: 92%)
Average age	44 years old
Average wage income	9,280 rupees/month
Household size	Five members on average
Occupation	Tea (114 people), rubber (34 people), oil palm (1 person), retired (11 people), working outside plantations (14 people), without job (8 people), RPC staff (3 people)
Working hours	Plantations: six hours/day on average Factories: 10 hours/day on average

(1) Amenities (Improvement in infrastructure, acquisition of ergonomic equipment and vehicles)

- Overall satisfaction level: Plantation workers' satisfaction levels were surveyed regarding amenities introduced in order to improve living conditions. A large percentage of respondents replied "good" or "very good" for reroofing of line rooms (97%), construction of latrines (95%) and estate road improvements (86%).[25] With regard to water supply development, 100% of the respondents replied that their satisfaction levels were "average" or "low". In this regard, it was found that there were some technical problems on the Estates subject to the beneficiary survey and that water was not supplied stably during the dry season because the water sources dried up. On the other hand, 87-100% of respondents were satisfied with all the amenities (factory and field rest rooms, RPC staff quarters among others) introduced in order to improve working conditions.
- Effects on daily life and quality of life: Most of the respondents answered that "they feel more dignified" as a result of the construction of latrines which secured privacy; "number of hours that can be dedicated to work increased" because need for reroofing was reduced; and "the number of hours required to complete the same amount of work was reduced (efficiency increased)" as a

[25] The overall satisfaction level for estate road improvements was high (86%) which seems to contradict the results of "3.2.1 Quantitative Effects." Explanations from plantation workers were that they were satisfied with the high quality of the estate roads although they did not feel significant effects on aspects such as convenience.

result of the improvement in housing conditions which increased comfort levels. In sum, many workers mentioned that there were improvements in work motivation and work efficiency. However, no respondents answered that "there were major changes" regarding health improvements. Many of the respondents who said that "they feel more dignified" and "the number of hours dedicated to work increased" were beneficiaries of the construction of latrines and reroofing of line rooms. Before the project, they frequently had to take days off work to repair the roofs, but after the project, they can now engage in work without any worries.

- Effects of providing ergonomic equipment and vehicles: At Laxapana Estate where the focus group discussion was conducted, 50 crates, two tea plucking machines and 10 pruning machines were introduced. However, since the safety gear (rubber boots and goggles) needed to use the pruning machines was not purchased; many workers said that they are not keen on using the machines because of health and safety concerns. On the other hand, before crates were introduced, tea leaves were put in polyethylene bags and carried on the workers' backs. Since crates can be carried on trolleys, the workers replied that crates were "very effective" and they were "satisfied" with them in terms of work safety, efficiency and ensuring the quality of tea leaves. Plucking machines broke down two weeks after their introduction (currently not in use).
- Effects of the rehabilitation of estate road: As mentioned above, the largest beneficiaries of estate road improvements were the RPCs. A small number of plantation workers said that "convenience increased particularly in the rainy season" and "ambulances can now use the roads more easily."[26] However, with regard to reduction in traveling time, many workers answered that they "do not recognize clear effects, although there might be some". There were no effects on reduction of injuries or accidents as well. The results show that, although there is a strong need to improve safety and convenience for workers who mainly travel on foot, which was the expected effect of this component, in order for it to be effective, it would be necessary to improve longer lengths of the main estate roads rather than short distances as was done by project. The beneficiary survey results showed that estate road improvements are still very much needed, following other infrastructure developments including reroofing of line rooms, construction of latrines and water schemes.

(2) Social development programs (prevention of alcoholism, gender issues, household cash management, etc.)

[26] It is worth mentioning as a reference that ADB's Completion Report (December 2010, p25.) indicates that *"At project conclusion, all stakeholders, including workers and management, agreed that the rehabilitation of roads has improved access to schools, hospitals, and rural markets*". However, this conclusion is not the result of a specific study/survey on the road rehabilitation component; therefore, in this evaluation this conclusion is taken solely as reference information.

- Overall satisfaction levels: The number of respondents who attended social development programs was 23 in total (gender issues: one person, alcoholism prevention: 20 people, household cash management: one person, EWHCS training: one person). All respondents answered that the programs were "good" or "very good", which shows a high level of satisfaction of these programs.
- The effects on daily life and the quality of life: With regard to "the reduction of alcoholism," many people answered that the program was "good" or "very good." Respondents said that the training program which most directly influenced daily life and had the largest impact was the "alcoholism prevention program." In the impact assessment conducted by the PHDT which was one of the main service providers for these training programs, it was confirmed that "alcohol consumption had been reduced" and "alcohol-related expenses had been reduced" after people had taken part in the program.[27]

  According to the interview survey of estate managers, the "alcoholism prevention program" led to changes in workers' attitudes and greatly reduced the incidence of alcoholism; for example, in Kotagala Estate the incidence of alcoholism was reduced by 60%. The estate managers said that social development programs were very important not only for workers but also for the RPCs. More specifically, they said that the training of estate managers and staff had deepened their understanding of plantation workers' needs concerning working and living conditions, which contributed to improvements in management-worker relationships and in turn led to an increase in productivity. Therefore, it can be said that these programs contributed to changes in the attitude of the estate managers as well.

[27] In the project, it was expected that gender training, alcoholism prevention training, etc. would lead to changes in plantation workers' attitudes. In the project, it was initially decided that the RPCs should pay 50% of the training costs. The RPCs' interest in the training programs was low because the RPCs' share of the costs was increased from 20-25% in phase one of the project to 50%, and also because the Sri Lankan government was providing similar programs free of charge. Therefore, hardly any of the programs were implemented in the first three years of the project. The programs only began after the RPCs' share of the costs was eliminated (see "3.4.1.2 Project Scope (2) The Social and Environmental Project" for details of the RPCs' share of the costs). The PHDT was the main coordinator of the training programs. The programs were completed within the project period, thanks to the PHDT's active efforts to cooperate with other service providers (NGOs, expert organizations and individual experts) and the RPCs, to check the training content and to coordinate with plantation workers via EWHCSs. In 2009, the PHDT conducted an impact survey on eight of the RPCs and 16 estates using its own financial resources, regarding gender training and alcoholism prevention training which were conducted as part of the project.

Table 5: Effects of Social Development Programs on the Attitudes of the Participants

Training program	Impact
Gender	Respect for women within the family increased. Women started to recognize that they are contributing to the livelihoods of their families by earning income through tea picking.
Household cash management	Plantation workers started to save money. More workers started saving money with the EWHCS which is being used to improve living standards such as the expansion of line rooms and the purchase of three-wheeled vehicles.
Strengthening the EWHCSs	Understanding of the EWHCS roles deepened and the number of members increased considerably. At some EWHCS visited during the site survey, nearly 100% of the workers in the area were members of the EWHCS, and all EWHCS were planning and implementing an action plan every fiscal year.
Social development programs for plantation managers	Managements' levels of understanding about plantation workers' social and economic problems increased. All the RPCs now consider tackling these problems to be part of their corporate social responsibility.
Team building	Workers' understanding of the importance of teamwork increased and conflicts between workers and management were reduced. Since the program was introduced, the number of strikes on the plantations started to decrease and has now gone down to zero.

Source: Based on interview surveys of estate managers, regional PHDT officers and EWHCSs.

With the exception of rehabilitation of estate roads, in general, it was confirmed that the project did bring about a certain level of qualitative effect in regard to the improvements on both the working and living conditions of the plantation workers, and on an increase in their motivation to work. With regard to rehabilitation of estate roads, the main beneficiaries were the RPCs and effects for the plantation workers have been limited, although the project's original plan was to benefit the workers. The introduction of ergonomic equipment contributed to improving working conditions, and through social development programs, there were changes in attitude of both the plantation workers and the RPCs. Therefore, it can be concluded that certain qualitative effects can be recognized as a result of the project.

3.3 Impact

3.3.1 Intended Impacts

The impact intended by the project was to "ensure the sustainability of the plantation sector." At the time of the appraisal, the word "sustainability" was not clearly defined, thus in the ex-post evaluation, "sustainability" was defined as an increase in plantation workers' income and the reduction of poverty problems in the plantation sector.

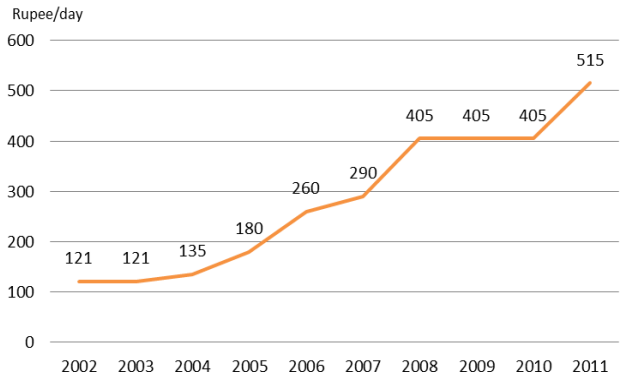
As shown in Table 6, the population in the plantation sector has not changed since 2002. The average income per household increased from 7,346 rupees per month on average in 2002 to 24,162 rupees in 2010, although income levels in the plantation sector are still low when compared to other sectors. This substantial increase is due to an increase in the wages of plantation workers (Figure 6)

and an increase in income from sources other than wages. Wages have increased every two years since 2000. Since 2005, bonuses such as the work attendance bonus have been paid in addition to wages.[28] In addition, an increasing number of households are earning additional income through pig farming, poultry farming and growing vegetables in household gardens although they are in small scale, which are then sold in markets. In recent years, the income of young people who work outside the plantations while living on the estates as well as remittances from young people who work overseas have increased. As of 2007, income other than wages already accounted for 50% of total income.

Table 6: Changes in the Population and Income in the Plantation Sector

FY	Population (million people)*				Average family income (rupees/month)			
	Sri Lanka	Urban sector	Rural sector	Estate sector	Sri Lanka	Urban sector	Rural sector	Estate sector
2002	17	2	14	1	13,038	23,436	11,819	7,346
2006/07	18	3	15	1	26,286	41,928	24,039	19,292
2009/10	20	3	16	1	36,451	47,783	35,228	24,162

*Population data is from 2001.
Source: The Department of Census and Statistics, HIES 2009/10, May 2011



Source: Statistical Information on Plantation Crops, 2011(MPI)
Figure 6: Wages of Plantation Workers between 2002 and 2011

As indicators for the reduction of poverty problems in the plantation sector, the Head Count Index (HCI) and the Poverty Gap Index (PGI) were used (Table 7). The HCI is the percentage of people with consumption levels below the poverty line out of the total population. Although the HCI increased from 30% in 2002 to 32% in 2006/07, it had been substantially reduced to 11.4% by 2009/10. The PGI indicates how far the consumption levels of people in poverty are below the poverty line. Similarly to the HCI, the PGI improved as it was reduced from 6.0 in 2002 to 2.1 by 2009/10. Although the

[28] Increases in wages for plantation workers are decided through negotiations between plantation labor unions (the Ceylon Workers' Congress and the Lanka Jathika Estate Workers Union) and the estate managements (the Employers' Federation of Ceylon and the RPCs), which are followed by the signing of labor agreements.

poverty rate in the estate sector is still high when compared to the urban and rural sector, the differences are steadily narrowing.[29]

Table 7: Poverty Indicators

FY	Head Count Index (HCI) (%)				Poverty Gap Index (PGI)			
	Sri Lanka	Urban sector	Rural sector	Estate sector	Sri Lanka	Urban sector	Rural sector	Estate sector
2002	22.7	7.9	24.7	30.0	5.1	5.6	1.7	6.0
2006/07	15.2	6.7	15.7	32.0	3.1	1.3	3.2	6.2
2009/10	8.9	5.3	9.4	11.4	1.7	1.2	1.8	2.1

	Inequality indicator: Gini coefficient				Living standards indicator: The percentage of food and drink expenditure out of the total household consumption expenditure (%)			
	Sri Lanka	Urban sector	Rural sector	Estate sector	Sri Lanka	Urban sector	Rural sector	Estate sector
2002	0.47	0.48	0.45	0.34	44	36	45	60
2006/07	048	0.55	0.45	0.41	36	28	38	53
2009/10	0.49	0.48	0.49	0.43	42	36	44	51

Source: The Department of Census and Statistics, the Ministry of Finance and Planning, HIES 2009/10, May 2011

When looking at the Gini coefficient[30] which measures the level of inequality in income distribution, the income distribution within the estate sector was more equal than in other sectors. However, the coefficient increased from 0.34 in 2002 to 0.43 in 2009/10. This indicates that the income distribution within the estate sector was becoming less equal during this period. It became clear from the interview survey that one of the causes is that young people tend to choose work in urban areas or overseas (particularly in the Middle East) rather than working on plantations and the percentage of remittances out of the total household income is showing an increasing trend. In addition, parents do not want their children to become plantation workers. This trend is particularly strong on plantations in the low-country area which have easy access to job opportunities in other industries or city centers. As a living standards indicator, the percentage of expenditure on food and drink out of general household consumption expenditure was used. It is known that radically cutting back on food expenditure is difficult and that a higher percentage of expenditure on food and drink out of total household consumption expenditure indicates lower living standards. Although the percentage decreased from 60% in 2002 to 51% in 2009/10 in the estate sector, the percentage is still the highest

[29] JICA General Training Center for International Cooperation, "Various Forms of Poverty in Each Region from the Standpoints of Health, Education and Gender Based on Quantitative Poverty Indicators" (June 2003)

[30] The Gini coefficient shows how far the income distribution in a specific economy has deviated from the coefficient zero where distribution is completely equal. The closer the value is to one, the greater the disparities are.

when compared to other sectors in Sri Lanka. Therefore, living standards are still lower than in the urban sector and the rural sector, although they are improving.

In general, income has increased and poverty problems have been reduced in the plantation sector in the period between 2002 and 2010. However, since various organizations including the Sri Lankan government, other donors and NGOs have been providing assistance to the plantation sector, the causal relationship between the above results and the project are not clear.

3.3.2 Other Impacts

3.3.2.1 Impacts on the Natural Environment

The project did not require an environmental impact assessment (EIA) according to Sri Lankan environmental laws. However, an initial environmental survey was conducted in 1993 and the project was approved by the Central Environmental Authority (CEA). With regard to rehabilitation of estate roads which were added to the project in 2006, an initial environmental survey was conducted based on a request from the ADB and the component was approved by the CEA. In addition, no negative impacts on the natural environment were found from interviews with the executing agency, the RPCs and the beneficiaries.

3.3.2.2 Land Acquisition and Resettlement

It was confirmed from interview surveys with the executing agency, the RPCs, the PHDT, beneficiaries and through on-site visits during the evaluation, that the project required no land acquisitions or resettlements. The same can be said for rehabilitation of estate roads, which was later added to the project, because they were all improvements to existing estate roads.

3.3.2.3 Other Impacts

(1) Reducing the Water Fetching Burden on Women

At the time of the appraisal, the water fetching burden on women was expected to be reduced because the project included the development of infrastructure for living on plantations such as water supply development. Although water supply systems were installed on the premises of line rooms, it was found from interview surveys that there were cases where the running water stopped in the dry season, when women still have to fetch water. Therefore, the originally intended impact could not be confirmed.

(2) Negative Impacts due to the Cancellation of the Housing Loan Component

There was a concern that the cancellation of the housing loan component in 2006 would have negative impacts on the living conditions of plantation workers. However, the need to cancel or reject

plantation workers' housing loan applications did not arise because the housing loan component was cancelled while discussions on the loan scheme and coordination within stakeholders were still going on. There were also other housing loan schemes which had better conditions targeting the same population at the same period of time. Therefore, the cancellation of the housing loan component of the project did not have any negative impacts.[31]

(3) Cooperation with Related Projects and Its Impacts

As mentioned above, the project was designed to support the "social and environmental programs" which were a component of the ADB's PDP through parallel co-financing. Cooperation between ADB and JICA were mostly limited to opinion exchanges at the project Coordination Committee (PCC) level and no closer cooperation was observed. According to the executing agency, although a coordinated and cooperative framework which would enable more efficient project implementation had been originally expected from the two institutions, since the project was conducted in the form of parallel co-financing, the JICA portion and the ADB portion ended up being two separate projects which supplemented each other, each contributing to the improvement of the working and living conditions of plantation workers.[32]

Figure 7: Nursery School Built by the Project (Waverley Estate)

With regard to cooperation with other JICA projects and its impacts, close cooperation with a project conducted by NGO CARE International Japan had been expected. The said project was carried out in the form of JPP. However, due to the delay in the project, this

[31] According to the statistics on housing characteristics from the Department of Census and Statistics, the number of households living in housing units provided free of rent (line rooms) in the estate sector remained at the same level (a little more than 60%) from 2001 to 2009/10. In the urban sector and the rural sector, the percentage of households owning their houses is over 70%, but the percentage is 10% in the estate sector. From these numbers, it is evident that line rooms are still the main housing units used in the estate sector. This shows that housing loan schemes have hardly been utilized in the plantation sector since 2001.

[32] The main reasons why the project was conducted in the form of parallel co-financing were because: (1) JICA decided to support only the "social and environmental programs" out of the four components of the ADB's PDP; and (2) JICA had different conditions for financing the RPCs from those of ADB in the same "social and environmental programs." With regard to (2), the ADB put as a precondition that the RPCs should sign an agreement with the Sri Lankan government which set a ceiling on the "management fees," while JICA did not put any preconditions. Since JICA and the ADB had different overall project goals and different methods, they conducted their projects separately, under the name of the "Plantation Development Project" for the ADB and the "Plantation Reform Project" for JICA (the names were written in the official document issued by the MPI addressed to the Ministry of Finance on November 17, 2003). "Management fees" are arrangements that are unique to the Sri Lankan plantation sector. The RPCs as parent companies collect a specified percentage of the EBITDA as management fees from their subsidiary companies which run the plantations. Each RPC sets a different percentage for its management fees. In the PDP, the ADB set a ceiling for management fees because there was a concern about the possibility that the parent companies would invest the funds collected as management fees into other businesses, resulting in the outflow of profits made in plantations into other sectors.

collaboration did not materialize.[33] With regard to JOCV activities, a total of 12 JOCVs were dispatched to the MPI and the PHDT from 2000 to 2012.[34] It was found from the interviews with the PHDT and the estate managers, that the JOCV activities in nursery schools on estates were particularly appreciated (e.g. improvement in nursing care, development of playground equipment, awareness raising, etc.). Although the synergy between the project and the JOCV activities was not prominent because of the limited scale of activities as well as number of volunteers dispatched, JOCV activities played an important role as activities that were rooted in the plantation workers' communities.

To conclude, it was confirmed that the reroofing of line rooms and the construction of latrines had some quantitative and qualitative effects and contributions. It was also confirmed that the social development programs resulted in some changes in the attitudes of both the plantation workers and the RPCs. On the other hand, with regard to the rehabilitation of estate roads which were later added to the project, the main beneficiaries were the RPCs in terms of both quantitative and qualitative effects, and there were only very limited effects for the plantation workers, contrary to what was originally intended. With regard to the project's intended impacts "an increase in the plantation workers' incomes and the reduction of poverty problems among plantation workers," it was confirmed that income increased and poverty was reduced in the period between 2002 and 2010. However, because various organizations including the Sri Lankan government have been providing a variety of support in this regard, direct causal effect between these reductions in poverty and the project could not be specified. In general, the project has achieved its objectives to a certain extent; therefore its effectiveness and impact are evaluated as fair.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

3.4.1.1 Project Area

The project area comprises 15 districts where the RPCs are operating their plantations (Badulla, Chilaw, Colombo, Galle, Gampaha, Kalutara, Kandy, Kegalle, Kurunegala, Matale, Matara, Monaragala, Nuwera-Eliya, Puttalam and Ratnapura). The project area has not changed since the appraisal.

[33] NGOs focusing on support for plantation workers were expected to participate in the project as training service providers of the social development programs. More specifically, 14 NGOs had passed the preliminary screening, as of 2005. However, the NGOs withdrew their participation because of constant delays in the project. JICA strived to utilize the knowledge and experience obtained through JPP by interviewing and exchanging ideas with the NGOs about how to improve plantation workers' living conditions and how to change their attitudes as well as what would be the different approaches to tackling these issues.

[34] JOCVs were six infantile education personnel; one youth activity personnel; four rural development personnel; and one nurse.

3.4.1.2 Project Scope

(1) Housing Loan Project

The housing loan project was cancelled in 2006 before it was implemented at all for the reasons explained in the "Relevance" section. The project funds were reallocated to rehabilitation of estate roads in 2008.

(2) Social and Environmental Project

The social and environmental project components were amenity developments (infrastructural development, the provision of ergonomic equipment and vehicles) in order to improve the working and living conditions of plantation workers, and "social development programs" which were training programs for both the RPCs and the plantation workers. As shown in Table 8, some items had pre-established output targets. The items with targets are the ones whose needs were deemed high at the time of the appraisal.[35] The items without targets are the ones that were added after the project started, and were conducted on a request-basis from the RPCs.

Table 8: Outputs from the Social and Environmental Project and Target Achievement Rates

(PRP-II)	Planned (2003)	Actual (2012)	Achievement rate (%)
B-I. Amenities			
B-I-I Infrastructure development			
Repairing roofs of line rooms	11,000 units	23,831 units	212%
Construction of playgrounds	200 sites	29 sites	15%
Construction of rest rooms in factories	180 sites	142 sites	79%
Construction of rest rooms on tea plantations	1,500 sites	444 sites	30%
Construction of latrines	-	6,798 sites	-
Ground leveling and infrastructure development resulting from the provision of housing loans	-	Cancelled	Cancelled
[Added outputs]			
Rehabilitation of estate roads	750 km	711 km	95%
Construction of estate staff quarters	-	840 sites	No planned values or target achievement rates*
Concrete paving of walkways	-	24,655 ft	
Repairing factories (mainly floor repairing)	-	46 sites	
Construction of water pipes, etc.	-	3,889 sites	
Water supply development	-	180 sites	
Nursery schools (construction or repair)	-	37 sites	
Others (electric power, chimneys, volleyball courts, religious worship places, etc.)	-	190 units or sites	

[35] With regard to the assessment of needs and setting project output targets, the ADB assessed the needs through its Project Preparation Technical Assistance (PPTA) in 2001 and then set specific planned values for some of the intended outputs in its RRP (2002).

(PRP-II)	Planned (2003)	Actual (2012)	Achievement rate (%)
B-I-II Ergonomic equipment, vehicles			
Tea plucking machines	5,575 units	424 units	8%
Trimmers	6,275 units	1,006 units	16%
Improved tea picking baskets	31,000 units	1,600 units	5%
Improved pruning shears	25,000 units	1,270 units	5%
[Added outputs]*			
Crates	-	23,220 units	No planned values or target achievement rates*
Jumbo crates	-	14,921 units	
Mist sprayers	-	281 units	
Subsoil injectors	-	171 units	
Chain saws	-	153 units	
Tractors	-	56 units	
Other 11 types of equipment in total (water tanks, backhoes, solar panels, etc.)	-	190 units	
B-II. Social development programs (Number of times the programs were conducted. Numbers between parentheses are the number of total direct/indirect beneficiaries.)			
Gender programs for plantation workers	500 times	33 times (12,306 people)	7%
Alcoholism prevention programs for plantation workers	500 times	71 times (2,586 people)	14%
Household cash management programs for plantation workers	500 times	203 times (36,715 people)	31%
Programs for strengthening estate workers' housing cooperative societies (EWHCSs)	500 times	166 times (24,027 people)	33%
Social development programs for the RPCs	2,500 times	138 times (317 people)	6%
Team building programs for the plantation workers	2,500 times	37 times (1,872 people)	1%
[Added outputs]			
RPC staff orientations	-	22 times (164 people)	No planned values or target achievement rates*
Others (Quality Circle training)	-	16 times (523 people)	

* Since these outputs were added in 2006 on a demand-basis from the RPCs, target achievement rates were not calculated as no target values were set.

With regard to amenities, planned output values were set for nine items, but the target achievement rate was only exceeded in the repairing of line room roofs (212% of the planned value). 95% of the planned value was achieved for rehabilitation of estate roads which were added to the project in 2006, and 79% of the planned value was achieved for the construction of rest rooms in factories, but the target achievement rates for all the other items were much lower than 100%. This was because,

although it was decided at the time of the appraisal that the RPCs should pay 50% of the social and environmental project costs, RPCs interest was low and their demand for amenity improvements was lower than expected. The reasons for the low interest were that the RPC's financial situation worsened from 2002 onwards because of declines in the prices of plantation crops and requests from labor unions for higher wages. The fact that the RPCs' share of the social and environmental project costs was increased from the 40% set in the first phase of the project to 50% in second phase was also a factor that decreased RPCs interest in this components.[36] When in 2006 the housing loan component was canceled and the rehabilitation of estate roads was added, it was also agreed that the project should be flexibly implemented by changing or adding output items on a request-basis from the RPCs. Since then, items that were included in amenity improvements were changed and/or added. Applications for these changes were submitted based on the need on the ground; therefore, this component of the project was conducted efficiently.

With regard to social development programs, planned output values (the number of times the programs were to be conducted) were set for six types of programs. "Programs for strengthening estate workers' housing cooperative societies (EWHCSs)" had the highest target achievement rate, but it was only 33%. The reason for the low target achievement rates for social development programs was that the project decided that the RPCs should pay 50% of the costs (the RPCs' share of the costs in phase 1 of the project was 20–25% for these programs) while the Sri Lankan government was providing similar programs in other areas for free. In addition, the RPCs did not understand the necessity for changing the attitudes of plantation workers at the beginning of the project. The RPCs' share of the costs was eliminated and the programs were funded totally by the project from 2006 onwards while also the RPCs gradually understood the importance of social development programs. Therefore, similarly to amenity improvements, the implementation of these programs was concentrated in the latter half of the project period.

3.4.2 Project Inputs

3.4.2.1 Project Cost

The total project cost was planned to be 5,838 million yen (foreign currency portion: 3,306 million yen; local currency portion: 2,533 million yen). The actual total project cost was 4,017 million yen, which was lower than planned (69% of the planned value).[37]

[36] According to the interview with the executing agency, the RPCs' share of the costs was raised from 40% in phase 1 of the project to 50% in phase 2 because the RPCs were expected to understand their corporate social responsibility as private companies and to take responsibility. However, since the share of the costs (50%) was set without the RPCs' consent, the percentage was reduced back to the same level as in phase 1 of the project (40%) in 2006.

[37] When considering the allocation status of the Japanese loan, the approved amount was 1,836 million yen, and the actual disbursed amount was 1,694 million yen. 92% of the Japanese loan was allocated for the project.

3.4.2.2 Project Period

At the time of the appraisal, the project period was planned to be a total of 72 months, from July 2003 to June 2009. The actual project period was from July 2003 to March 2010, a total of 81 months (9 months longer, i.e. 113% of the planned period). Therefore, the actual project period was slightly longer than planned.

The main reason was that there was a 15-month delay in strengthening the Project Implementation Unit (PIU)[38], which was planned for July–December 2003, and the establishment of the administrative processes and procedures needed for the implementation of the project. In addition, there were delays in the launch of amenity improvements and social development programs, as explained in 3.4.1.2(2) above.

3.4.3 Results of Calculations of Internal Rates of Return (IRR)

The internal rate of return was not calculated at the time of the appraisal. Therefore, the internal rate of return for the project was not calculated because it is not possible to compare the estimated and actual internal rates of return.

In conclusion, although the project cost was within the plan due to the significant change (reduction) in the project's scope, the project period slightly exceeded the planned period. Therefore, efficiency of the project is fair.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

(1) Before the Project's Completion

As mentioned above, the MPI was the executing agency of the project. A PIU was established within the MPI and was in charge of the coordination between the ADB's PDP and the project, as well as supervision, fund management and evaluation of the project. At the time of the appraisal, it was concluded that there was no problem with the institutional structure of the PIU, but in reality it was necessary to make some improvements. More specifically, it was found at the beginning of the project that the expertise and the number of staff members were insufficient and the need to employ additional experts arose several times.[39] Eventually, a total of 13 staff members were engaged in the implementation of the project, namely a project manager, an agricultural expert, a financial expert, an agro economic expert, a road expert (engineer), an environmental expert, a gender expert, a person in charge of statistics and monitoring, as well as five other members including those in charge of general

[38] When the need to hire an outside financial consultant instead of a civil servant at the PMU aroused, procedures for making the necessary arrangements took time which caused a delay in the project. The wage mandated by the public servant pay scheme (the pay scheme based on the government administrative directive No. 10) was not enough to attract an outside expert at that time. The cost of employing the consultant was borne by the ADB.

[39] Report on a Study conducted in 2005 by JICA, PCC minutes of meeting and ADB's PCR.

affairs, assistants and programmers. With regard to rehabilitation of estate roads, the executing agency could not conduct sufficient monitoring or provide reports up to the standard required by JICA, which clearly shows that having one person in charge of monitoring was not enough.

On August 1, 2003, the Project Coordination Committee (PCC) was established as a decision making body for the policies of the project. The Secretary of the MPI chaired the committee and the representatives from the External Resources Department (ERD) of the Ministry of Finance and Planning, the Central Bank of Sri Lanka (CBSL), the PIU and the Planters Association (PA) were selected as the committee members. According to the minutes of meetings obtained from the MPI, the PCC meetings have been held almost every month since the third quarter of 2003, as well as when it was deemed necessary, where they had discussions about the progress of the project, issues and challenges, etc. The PCC served as an effective platform for checking the progress of the project and for discussing solutions to various problems.

(2) After the Project's Completion

With regard to the amenities introduced or improved in order to improve working conditions including the ergonomic equipment provided by the RPCs and the rest rooms constructed in the factories and on the tea plantations as well as the rehabilitated estate roads, the estate managers from each RPC are in charge of their operation and maintenance. Technical management officers maintain the amenities and ergonomic equipment under the guidance of the estate managers. There were no significant problems with this institutional structure (Table 9). As for the maintenance of the estate roads, plantation workers get organized to clean the side ditches as part of their volunteer activities.

Table 9: The Institutional Structure of an Estate
(Average for the Estates Visited for the Evaluation)

	Number of personnel
A. Managerial positions	
Estate manager	1
Assistant manager	2-3
Factory manager	1
Medical and welfare officer	1
Estate doctor	1
Technical management officer (including maintenance)	1-2
B. Staff	
Clerical work	5-10
Factory	30-40

Source: Interviews with the RPCs

After the project concluded, the plantation workers continued to maintain the amenities introduced

or improved with the aim of improving their living conditions, using their own household budgets in some cases. These amenities include the improved roofs through the reroofing of line rooms, the latrines constructed and the water supply systems installed among others. However, many workers think that the estate managers are responsible for reroofing when roofs become old and need replacing. This shows that it is still necessary for workers to change their attitudes by recognizing the importance of making independent efforts to improve their living conditions rather than completely relying on outside support.

With regard to the social development programs, the PHDT (whose mission is to improve the housing conditions, the working conditions and the living standards of plantation workers) mainly coordinated the programs. The PHDT continues with trainings related to alcoholism, gender, household cash management, health management and reproductive health, with the cooperation of the RPCs. Since the PHDT is under the jurisdiction of the MLRCD, these training are being conducted using the MLRCD budget, funds from RPCs and donors. The PHDT has seven regional offices with personnel who have knowledge and experience in the plantation sector. These personnel with expertise conduct tailor-made activities for each plantation. The PHDT is highly trusted by the RPCs and the plantation workers. The efforts of the PHDT are largely responsible for the increase in the number of EWHCS members and the continuous implementation of social development programs including the ones conducted in the project.

In addition, Corporate Social Responsibility (CSR) has become an important issue in recent years and all the RPCs are continuing social development programs as part of their CSR activities.[40] In particular, with regard to the tea industry, the RPCs have obtained certifications which can only be obtained by estates which met strict social and environmental criteria set by Rainforest Alliance, Ethical Tea Partnership, Fairtrade Labelling Organizations International (FLO) among others, in addition to criteria set by the International Organization for Standardization (ISO). The conditions for maintaining these certifications include the provision of training for plantation workers every year, and there is an established structure for cooperating with the PHDT in order to implement the training programs. Therefore, the institutional framework for the operation and maintenance of the project was confirmed to be sustainable and no major problems have been observed.

3.5.2 Technical Aspects of Operation and Maintenance

(1) Before the Project's Completion

At the time of the appraisal, it was concluded that there were no problems with the technical skills of the PIU. In reality, it was found at the beginning of the project that the expertise of the PIU staff

[40] CSR reports for the RPCs are available on the website of each RPC.

was insufficient and additional experts needed to be employed in the areas of gender, environment, etc. during the project's implementation. Although staff members with expertise were added every time the need arose, it was still necessary to improve technical skills for the operation and maintenance of the project. In particular, the monitoring capacity of the PIU was insufficient. JICA asked the executing agency to frequently monitor the progress and maintenance systems for rehabilitation of estate roads, asking the executing agency to submit monthly reports and to attach photographs taken before, during and after the improvements. However, the reports were not submitted every month, inconsistencies were sometimes found between the reports and no photographs were attached.

With regard to rehabilitation of estate roads which were added in 2006, the Road Development Authority (RDA) (which is responsible for the operation and maintenance of national roads) joined the project based on a strong request from the ADB. The main roles of the RDA were the calculation of the total length of estate roads subject to the project, the preparation of the quantity records, the supervision and monitoring of civil engineering work and giving approvals on standards. Thanks to the cooperation of the RDA, procedures to ensure quality control and the safety of estate roads were followed and the technical sustainability of the project was ensured.

(2) After the Project's Completion

With regard to the amenities managed by the RPCs, one or two technical management officers in charge of maintenance are permanently stationed at every estate. They mainly conduct corrective maintenance for equipment such as changing the blades of trimmers and pruning shears when the blades become chipped. The officers do minor repairs by themselves whenever needed, and they outsource the job when major repairs are required. In the site visits, no particular problems were observed, as the ergonomic equipment which seemed to have passed their expected life and the semi-consumable crates were being maintained in good condition and are still being used. With respect to estate roads improved by the project, these are of a higher quality and are more durable than the estate roads improved with other funds, because they were rehabilitated according to RDA's standards. Daily maintenance such as cleaning side ditches is also conducted as required and no particular problems have occurred.

As for social development programs, there are no technical problems with the PHDT. Personnel in regional offices are experts with a deep knowledge of the plantation sector as they have been involved with plantations for many years. The PHDT outsources the implementation of the social development training programs to external expert training organizations and NGOs. In order for the NGOs to conduct activities on estates, they need to be registered at the PHDT and obtain permission from the PHDT. The PHDT set criteria for controlling program quality. The main NGOs include the Alcohol

and Drug Information Centre (ADIC), CARE International and the World University Service of Canada (WUSC) among others, all of which have considerable expertise. Therefore, the technical sustainability of the programs has also been ensured.

3.5.3 Financial Aspects of Operation and Maintenance

The operation and maintenance costs are included in the budget of each RPC every year. During the ex-post evaluation, the "2013 Budget Guidelines" for a particular estate (one of the RPC estates inspected in the field study) was obtained. It was confirmed by checking the details of the budget requests of this estate that the costs of maintaining the amenities and social development programs provided by the project, i.e. those items shown in Table 10 were included in the budget every year. The maintenance costs related to the project accounted for 40% of total maintenance costs in the FY 2012 budget for and 32% of total maintenance costs in the FY 2013 budget.[41] Other RPCs also secure budgets based on their respective budget guidelines, for the maintenance of amenities and training related to the project, using almost the same items as the ones shown in Table 10.

Table 10: An Example of the Items in the Estate Maintenance Budget (Estate A)

Item in the budget	Description
Vehicles	Frequency of changing tires, oil and filters and detailed budget
Machinery	Mainly budget for factory machinery, but maintenance costs for ergonomic equipment are also included
Factory	Maintenance costs for the factory building
Plantation workers' housing conditions	Costs of reroofing line rooms and changing water pipes
Estate roads	Maintenance costs for each type of estate road
Welfare and sports	Payment to the EWHCS for festivals, sport activities, funerals for plantation workers, etc.
Nursery school	Labor costs and maintenance costs for nursery schools
Human resource development cost	Costs of providing training for estate managers, staff and plantation workers

Source: Documents provided by the RPC (The name of the RPC is undisclosed because they are internal documents.)

The financial sustainability of the project largely relies on the financial indicators of the RPCs. According to the financial statements of 18-20 RPCs for the past three years which could be collected, the financial situation improved in FY 2011 because of good weather and a surge in the world market price of tea in particular. However, in FY 2012, profitability deteriorated because of a wage increase which takes place every three years, unstable world market prices for fuels and chemical fertilizers and

[41] The names of the RPCs and the estate are not disclosed. The estate included 30,000 rupees for "the maintenance of 6.7-km PDP estate roads" in the FY 2012 budget.

delayed crop diversification. Therefore, there were only minor increases in the financial status compared to the status at the time of the appraisal (Table 11).

Table 11: The Profitability and Financial Stability of the RPCs

	Indicator	FY	Average for RPCs*
Profitability	Return on assets (Current net income/total assets)	2002	0.2%
		2010	4.0%
		2011	5.4%
		2012	2.5%
	Return on equity (Current net income/equity capital)	2002	0.8%
		2010	10.9%
		2011	11.0%
		2012	-0.8%
	Sales profit ratio (Current net income/sales)	2002	0.4%
		2010	5.5%
		2011	7.6%
		2012	1.8%
Financial stability	Equity ratio (Equity capital/total assets)	2002	27.5%
		2010	38.9%
		2011	42.4%
		2012	59.1%
	Current ratio (Current assets/current liabilities)	2002	74.0%
		2010	129.6%
		2011	134.9%
		2012	134.5%

* The FY 2009/10 figures are the average for 18 RPCs, the FY 2010/11 figures are the average for 20 RPCs and the FY 2011/12 figures are the average for 19 RPCs.
Source: The 2002 data was taken as reference data from the FY 2003 Ex-post Evaluation Report for PRP Phase 1 (the average for 20 RPCs). Other data is based on RPC annual reports provided by the MPI.

However, the equity ratio and the current ratio, which are the indicators for RPCs' financial stability, have substantially improved in the past three years when compared to the time of the appraisal. This shows that the RPCs' finances have strengthened. Although profitability is dependent on the weather and fluctuation of world market prices, the RPCs' finances have become more stable as a result of past efforts including crop diversification, modernization of processing facilities and development of highly value-added products. Since the improvement in the financial stability of the RPCs (which was a concern at the time of the appraisal) was confirmed, there should be no major problem with securing funds for the project's future operation and maintenance.

3.5.4 Current Status of Operation and Maintenance

With regard to the amenities managed by RPCs, corrective maintenance is the main method currently used. Although some improvements are needed such as more systematic maintenance record keeping, there are no major problems in the operation and maintenance in general. All the equipment

is used relatively carefully, although they have many consumable parts. There were no particular problems with estate roads and the quality of the roads was highly appreciated by all the beneficiaries. Daily maintenance such as the cleaning of side ditches is conducted at the estate community level, for example the manager of each estate cooperates with the EWHCS and plantation workers clean the ditches as part of their volunteer activities.[42]

With regard to the reroofing of line rooms which should be directly maintained by plantation workers, some households were maintaining the renewed roofs by applying a waterproof coating. Since they are made of semi-permanent material, it is expected that reroofing will be needed in several years' time. With regard to latrines, the majority of the latrines are maintained in a clean condition, thanks to continuous awareness-raising and guidance activities for workers by the PHDT.

With regard to social development programs, the RPCs and estate managers did not understand the importance of the programs at the beginning of the project. However, the social development programs are currently continuing (mainly the programs on household cash management and alcoholism prevention) thanks to successful examples set by the estates which introduced training for estate managers or the project's training programs at an early stage of the project. As mentioned above, all the RPCs have been conducting CSR activities and have been certified by meeting the ISO, FLO criteria among others. In order to maintain certified status, they are implementing training for plantation workers in cooperation with the PHDT and NGOs. On some estates, medical staff members have developed training materials for preventing tuberculosis, parasitic diseases, anemia, etc. and are implementing their own training. Therefore, there is no problem with the current status of operation and maintenance of these programs.

In light of the above findings, it has been concluded that no major problems have been observed in the operation and maintenance system. Therefore, sustainability of the project effect is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of the project was to contribute to ensuring the sustainability of plantation projects by improving the working and living conditions of plantation workers in of Sri Lanka, through the following measures: providing plantation workers with housing loans for the construction of individual houses; improving and developing infrastructure such as line rooms and latrines; providing ergonomic equipment; providing training for the prevention of alcoholism which has been a serious problem among plantation workers; and providing training such as household cash

[42] In Sri Lanka, there are volunteer activities called "Shamadana" which are conducted at the community level. The maintenance of estate roads is sometimes conducted as part of Shamadana activities.

management.

The relevance between Sri Lankan national development policies, development needs and Japanese aid policies was high both at the moment of appraisal as well as ex-post evaluation. However, the project's degree of relevance was evaluated as fair, because of some issues with the appropriateness in the project planning; for example, the provision of housing loans was canceled although it was one of the pillars of this project, and the funds were reallocated to the rehabilitation of estate roads. The reroofing of line rooms and the construction of latrines were conducted as part of the project and they were effective to a certain extent in improving the working and living conditions of plantation workers. However, the rehabilitation of estate roads, which was added to the original plan at a later stage, did not result in benefiting plantation workers as much as expected. Therefore, the degree of effectiveness and the impact were evaluated as fair. The project cost was lower than planned because of a substantial reduction in the project's scope, but the project period slightly exceeded the planned period. Therefore, the efficiency of the project was evaluated as fair. With regard to the operation and maintenance of the project, there was potential for improvement in terms of the executing agency's personnel and technical skills. However, after the project ended, no problems were found concerning the organizational structures, technical skills and financial situations of the stakeholders including regional plantation companies (RPCs), the Plantation Human Development Trust (PHDT) and NGOs. Similarly, there were no particular concerns about the overall operation and maintenance of the project. Therefore, it is concluded that the sustainability of the project effect is high.

In light of the above, this project is evaluated to be partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) The executing agency MPI mentioned in its Project Completion Report that the needs of the RPCs, which were one of the major stakeholders of this project, were not sufficiently understood at the project planning stage, especially with reference to the fact that the housing loan component had to be canceled. In this regard, conducting the necessary coordination during the project implementation is an important role for an executing agency. When similar projects are to be conducted in the future, it is expected that the executing agency will recognize the ownership of the project and become more involved in the project from the planning stage. More specifically, it is desirable that the executing agency should actively communicate and exchange opinions with all stakeholders and propose and implement necessary correction measures by convening PCC meetings when necessary.

(2) The executing agency should monitor the projects and prepare materials to implement necessary correction measures. For example, it would be important to secure personnel and create manuals with the correction measure procedures.

(3) It is recommended to create a database with all the information related to the project as part the institutional memory, because labor fluctuates very often in Sri Lanka. A database would prevent the information to be lost with changes in the project members.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

(1) When supporting part of a component of a project conducted by another donor, JICA should conduct independent assessments and analysis during the project planning stage, so as to check the feasibility of the project components which will be subject to JICA's assistance, rather than relying only on other donor's appraisal results. In this project, JICA studied how the plantation sector was financed and the need for government policy-based financing, but the scope of the study was limited to the RPCs and the PFIs. JICA did not interview other stakeholders such as the PHDT or the NGOs, nor did it understand correctly the needs of plantation workers who were intended to be the main beneficiaries of the project. In case of sectors like the plantation sector, there are many stakeholders that should be considered. In order to ensure the efficient and effective implementation of the project, it is important to check in detail the characteristics of the stakeholders, their relationships, the historical background and whether or not the legal framework needed for support schemes is in place.

(2) It is important for the departments responsible for a project to correctly understand its effects and impacts. For this purpose, it is necessary to conduct a baseline survey at the time of the launch of the project and to share the survey results with all the stakeholders, as well as assessing the project's effects after the project has been completed.

(3) Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Outputs*		
Housing loan	12,000 people	None
[Amenities]		
Repairing roofs of line rooms	11,000 units	23,831 units
Construction of playgrounds	200 sites	29 sites
Construction of rest rooms in factories	180 sites	142 sites
Construction of rest rooms on tea plantations	1,500 sites	444 sites
Rehabilitation of estate roads	750 km	711 km
Tea plucking machines	5,575 units	424 units
Trimmers	6,275 units	1,006 units
Improved tea picking baskets	31,000 units	1,600 units
Improved pruning shears	25,000 units	1,270 units
[Social development programs**]		
Gender programs for plantation workers	500 times	33 times (12,306 people)
Alcoholism prevention programs for plantation workers	500 times	71 times (2,586 people)
Household cash management programs for plantation workers	500 times	203 times (36,715 people)
Programs for strengthening estate workers' cooperative societies (EWHCSs)	500 times	166 times (24,027 people)
Social development programs for the RPCs	2,500 times	138 times (317 people)
Team building programs for the plantation workers	2,500 times	37 times (1,872 people)
2. Project Period	July 2003 - June 2009 (72 months)	July 2003 - March 2010 (81 months)
3. Project Cost		
Amount paid in Foreign currency	3,306 million yen (2,563 million rupees)	2,282 million yen (2,615 million rupees)
Amount paid in Local currency	2,533 million yen (1,963 million rupees)	1,402 million yen (1,607 million rupees)
Total	5,838 million yen (4,525 million rupees)	4,017 million yen (4,603 million rupees)
Japanese ODA loan portion	1,836 million yen (1,423 million rupees)	1,694 million yen (1,942 million rupees)
Exchange rate	1 rupee = 1.29 yen (As of November 2002)	1 rupee = 0.8728 yen (Average between July 2003 and March 2010)

* Only items for which the planned output values were set are shown in the table.
** The numbers in parenthesis are the numbers of total beneficiaries (both direct and indirect).

Republic of the Philippines

Ex-Post Evaluation of Japanese ODA Loan

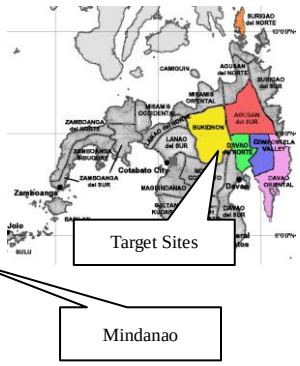
Mindanao Sustainable Settlement Area Development Project

External Evaluator: Miyoko Taniguchi, IC Net Limited

0. Summary

The Department of Agrarian Reform (DAR) carried out this project in 123 barangays (smallest level of administrative unit) in eight settlement areas, special agrarian reform communities (ARC) on Mindanao Island to increase farmers' income from agriculture and improve access to infrastructures, such as roads and bridges, barangay health station, and school buildings. The objective of this project is to promote poverty reduction in the special ARCs in Mindanao where priority on development is lower than in other areas and the poverty incidence (family) is higher. This objective is consistent with the Philippine Government's development policy and needs and the Japanese Government's aid policy to the Philippines. Therefore, the relevance of the project is high. The effectiveness and impact also are high, for the project generated the following effects: reduction in the cost and time of delivery of farm products as a result of the construction of rural roads and bridges, improvement in market access, an increase in farmers' income from agriculture as a result of an increase in farmers' motivation for production of farm products, improvement in the access to social infrastructures for public health and education, improvement in total income and living environment, and revitalization of the local economy. Although the project cost was far lower than estimated because of a change in the exchange rate, the efficiency was fair because the project period was longer than planned as a result of a delay in starting the project. Sustainability of the project effect is judged to be fair because of minor problems in technology and finance for management and maintenance. In light of the above, the Project is evaluated to be satisfactory.

1. Project Description



Map of the Philippine

Jumbo Bridge in Agusan del Sur

1.1 Background

The origin of the Philippines' settlement projects is the Public Land Act, which was promulgated in 1902. The Act made it possible to allocate land with an area of up to 16 hectares to a settler from an

overpopulated area to an underpopulated area. After that, the Philippines' resettlement programs were carried out by the US colonial government at the beginning of the project and by the National Land Reform Council and others after independence. After the Department of Agrarian Reform (DAR) was established according to the Republic Law No. 6389 in 1971, settlement projects were integrated under the Department.

When the Comprehensive Agrarian Reform Law (CARL) was enacted in 1988, DAR formulated the Comprehensive Agrarian Reform Program (CARP) to increase the incomes of farmers without land. Since 1993, to promote the program effectively and efficiently, DAR has authorized Agrarian Reform Community (ARC)[1] as the basic unit of development and has promoted development, centering on the communities. However, because the total area of settlements located in 56 places all over the country is as large as 5,000 hectares, the development under CARP only covered ARCs dotted in settlement areas and did not cover the entire settlement areas. Thus, in 1997, DAR authorized all the settlement areas as "Special ARCs"[2] according to the Executive Order No. 429 and decided to develop them within the framework of CARP.

Of the 56 settlement areas throughout the country, 26 are located on Mindanao Island and account for about 60% of the total area of all the settlement areas and the total number of beneficiary farmers in the settlement areas.[3] Most of the settlement areas on Mindanao Island are located in frontier areas and have many hilly and mountainous regions. Most of the cultivated land is bare and inclined. Because they have rain-fall intensity peculiar to the tropics, soil flowage has occurred. As a result, agricultural productivity is low and agricultural activities other than rice cropping have been needed for securing additional revenues. Moreover, because roads and other basic infrastructures have not been established, it is difficult to transport products and inputs, and the development of social and educational infrastructure has been delayed. In this situation, it was imminently necessary to carry out comprehensive measures for supporting beneficiary farmers according to the local characteristics of Mindanao Island.

1.2 Project Outline

The objective of this project is to improve farmers' income and access to infrastructures in 123 barangays in eight settlement areas[4] on Mindanao Island by development of infrastructures, support for agricultural technology, support for organization of farmers, and strengthening of local

[1] A community that consists of one or more barangays where agrarian reform beneficiary farmers live. Each ARC member is a farmer who owns land, with an average area of 2 hectares.

[2] The Settlement Management Committee (SMC) and the Settlement Development and Coordinating Unit (SDCU) were established. The SMC plays a role in promoting and coordinating development to make settlement areas vital agrarian reform settlements through the SDCU. The SMC aims for comprehensive development of settlement areas and provides programs on the following themes: (1) establishment of distributed land ownership; (2) organization development and strengthening; (3) education and training; (4) industrial development; (5) development of social infrastructures; (6) productivity improvement; and (7) agrarian finance, investments, and marketing.

[3] 500,000 hectares in area; about 84,000 beneficiary farmers

[4] Bukidnon Settlement (Province of Bukidnon), Davao Settlement 1 (Province of Davao del Norte), Davao Settlement 2 (Province of Compostela Valley), Cateel Settlement (Province of Davao Oriental), Surigao del Norte Settlement 1 (Province of Surigao del Norte), Surigao del Norte Settlement 2 (Province of Surigao del Norte), Agusan del Sur Settlement 1 (Province of Agusan del Sur), Agusan del Sur Settlement 2 (Province of Agusan del Sur)

governments, thereby contributing to the poverty reduction of the people on the target areas.

Loan Approved Amount/ Disbursed Amount	6,515 Million yen/ 5,791 Million yen
Exchange of Notes Date Loan Agreement Signing Date	March, 30, 2001/ March 30, 2001
Terms and Conditions	Interest Rate: 2.2%, Repayment Period 30 years (Grace period: 10 years): General untied Consulting service: Interest Rate: 0.75%, Repayment Period40 years (Grace period: 10 years): Tied between two countries
Borrower/Executing Agency	The Government of the Republic of the Philippines/Department of Agrarian Reform
Final Disbursement Date	September, 2009
Main Contractor	None
Main Consultants	Sanyu Consultants Inc. Nippon Jogesuido Sekkei, Co, Ltd,Katahira & Engineers International, Inc, Engineering and Development Corporation of the Philippines, Pacific Rim Innovation and Management Exponents, Inc, Desarollo International Consultant, Inc, Center for Integrated Development and Social Marketing, Inc.
Feasibility Study, etc	None
Related Projects	＜Japanese ODA loan project＞ Agrarian Reform Infrastructure Support Project (I), L/A: 1998 ＜Japanese ODA loan project＞ Agrarian Reform Infrastructure Support Project (II), L/A: 1999 ＜Japanese ODA loan project＞ Agrarian Reform Infrastructure Support Project (III), L/A: 2007 ＜Japanese ODA loan project＞ Agrarian Reform Infrastructure Support Project (III), L/A: 2007 ＜Japanese ODA loan project＞Mindanao Sustainable Agrarian and Agriculture Development Project, L/A: 2012

2. Outline of the Evaluation Study

2.1 External Evaluator

Miyoko Taniguchi, IC Net Limited

2.2 Duration of Evaluation Study

The study for this ex-post evaluation was carried out as follows:

Duration of the Study: August 2012–June 2013

Duration of the Field Study: November 11–December 1, 2012; April 3–11, 2013

2.3 Constraints during the Evaluation Study

The settlements covered by this project are scattered among six provinces, 16 municipalities, and 123 barangays in Mindanao. The contents of this project vary, ranging from small-scale infrastructure development for better living to agricultural infrastructure development, agricultural technology training, and people's organization (PO). The total number of subprojects is 986. Of the subprojects,

770 aim for infrastructure development [5] and 216 aim for agricultural and environmental development.[6] Given constraints in time and other aspects, it was impossible to conduct field studies for all the subprojects. Moreover, the areas covered by this project are characterized by a variety of natural conditions and social and economic conditions.

Accordingly, a beneficiary survey and an interview survey in the field were conducted in two provinces, four municipalities, and four barangays[7] (sample size: 122).[8] With regard to information on all the subprojects, in order to improve the accuracy of the surveys, the effect of the project as a whole was grasped from a variety of information sources, including the following: (1) interviews with the head and provincial offices of DAR; (2) a questionnaire survey on the head office of DAR and the provincial offices of DAR in the six provinces covered by the project; (3) a simplified beneficiary survey on 104 barangays where the evaluator was unable to conduct field surveys[9]; and (4) literature reviews.

When this project was appraised, operation and effect indicators were not set completely and the standard and target values for each indicator were neither set nor measured. Thus it was decided that, in this survey, operation and effect indicators should be arranged and the effectiveness and impact of the project were measured by reference to the logframe that was established during this project and was agreed upon between DAR and JICA.

3. Results of the Evaluation (Overall Rating: B[10])

3.1 Relevance (Rating: ③[11])

3.1.1 Relevance with the Development Plan of the Philippines

When this project was appraised, the Philippine Government declared an objective in the Mid-Term Development Plan for 1999 to 2004: sustainable development based on social equality – especially, poverty reduction and improvement of unequal income distribution in rural areas. In the Mid-Term Development Plan for 2005 to 2010, the Philippine Government declared poverty reduction as the development objective. As a comprehensive approach to poverty reduction in rural areas in

[5] Rural roads, 113; bridges, 55; irrigation, 27; post-harvest facilities, 111; water supply, 39; schools, 218; barangay health stations , 96; multipurpose buildings, 20; multipurpose roads

[6] Agro-forestry, 65; home forestation, 64; forestation, 26; livestock, 62; demonstration farm, 66; nursery of seedling, 8

[7] The evaluator conducted surveys in the following barangays: (1) Bukidnon, Malamag, Kuya; (2) Bukidnon, Kalilangan, Kinura; (3) Agusan del Sur, Prosperida, San Vicente; and (4) Agsan del Sur, Veruela, San Gabriela.

[8] The settlements covered by the beneficiary survey were selected according to the following criteria: (1) security situation; (2) provinces other than those where DAR previously conducted surveys for similar projects; (3) variety of social and economic conditions; and (4) covering as many subprojects as possible. The respondents of the survey in each barangay were selected by random sampling in principle. The stratified sampling method was used for those subprojects that covered only some beneficiaries. The number of samples in each barangay was planned to be about 30 and determined based on the investment size of the subproject (Kuya, 25; Kinura, 35; San Vicente, 30; San Gabriela, 32).

[9] The survey consisted of the evaluator's preparation of questionnaires, orientation to and explanation about the survey method to the provincial offices of DAR, and data input and analysis. Enumerators hired by DAR gained responses through group discussions in each barangay. Although, of the 123 barangays covered by the project, the survey was planned to be carried out in 119 barangays, or all except for the four barangays where the evaluator conducted field surveys, the survey became impossible in 15 barangays in the Province of Davao Oriental due to a typhoon in December 2012 which brought about a big damage in the special ARCs, when administration of the survey had been planned. As a result, the survey was conducted in 104 barangays in total.

[10] A: Highly satisfactory; B: Satisfactory; C: Partially satisfactory; D: Unsatisfactory

[11] ③: High;②: Fair;①: Low

particular, the Government came out with the promotion of agribusiness, including not only agricultural production but also post-harvest facility of farm products, values addition, and distribution, and added the agrarian reform beneficiaries to persons covered on a priority basis. In the plan, from a viewpoint other than agricultural development, agrarian reform was positioned as a measure for satisfying basic needs of the poor. In the development plan for 2011 to 2016, under the development framework of "inclusive growth," CARP is one of the concrete strategies for achieving the security of food and the improvement of rural incomes. In this way, from the appraisal of this project to the ex-post evaluation, agricultural and rural development and poverty reduction for agrarian reform beneficiaries have been consistently was indicated as a priority issue in the Philippines' national development policy. Therefore, this project, which aims for improvement of agricultural production and poverty reduction through infrastructure development, is consistent with the Philippines' development policy.

3.1.2 Relevance with the Development Needs of the Philippines

This project was found to be highly relevant to the development needs of the Philippines at the time of the appraisal of the project. Although it has been pointed out that Mindanao has high development potential because of its rich natural resources, it has been regarded as an underdeveloped area in the Philippines mainly because of domestic conflicts, except in some regions. Most of the settlement areas in Mindanao are located in hilly or mountainous regions. The agricultural productivity of farmland is low mainly because of soil flowage, and the development of infrastructures has been delayed.

According to the National Statistical Coordination Board, the average poverty incidence (family) in five provinces covered by this project[12] was 40.3% in 2000, far higher than the national average of 27.5%[13] (Table 1). To improve living standards in such areas, it was necessary for farmers to increase agricultural productivity and the quantity of main farm products, increase additional income through the production of vegetables and fruits and the breeding of livestock, and decrease expenses. Moreover, the fulfillment of basic needs required the development of social infrastructures, such as water supply systems, barangay health stations, and classrooms.

[12] The Province of Compostela Valley is excluded from the six provinces covered by this project, because the poverty incidence in the province in 2000 is unknown.

[13] Although there are no data on the poverty incidence in the barangays covered by this project, because the ratio shown here is the provincial average, the poverty incidence in the barangays located in remote regions are expected to be higher than the provincial average.

Table 1: Poverty Incidence (Family) in the Philippines and Target Provinces of the Project

(Unit: %)

Country/Province	2003	2006	2009
Philippines	**24.9**	**26.4**	**26.5**
Bukidnon	40.0	39.3	41.5
Davao Del Norte	32.7	38.2	33.9
Compostela Valley	40.7	36.8	36.7
Davao Oriental	45.9	46.9	52.7
Surigao Del Norte	49.3	50.2	57.0
Agusan Del Sur	56.0	53.9	58.1

Source: National Statistical Coordination Board

From the beginning of this project to the ex-post evaluation, no change in the relevance of this project was caused by a change in the external environment.[14] As indicated by the poverty incidence in Table 1, the covered six provinces in Mindanao were still poor in 2009 (year of latest data). Agriculture is the key industry in the special ARCs in Mindanao, and the need for agriculture-related support and support for development of infrastructures has continued to be high.

3.1.3 Relevance with Japan's ODA Policy

The country assistance program for the Philippines in 2000 identified the following as priority issues: (1) securing of sustainable economic growth; (2) poverty reduction; (3) environmental conservation; (4) development of human resources; and (5) improvement of governance. Concretely, the program stated that it is important to promote agricultural and rural development that contributes also to poverty reduction. JICA's Mid-Term Strategy for Overseas Economic Cooperation Operations in 1999 clearly states that JICA would focus on strengthening the economic systems for sustainable growth of the Philippines, conquering the constraints on growth, reducing poverty, correcting regional disparity, providing support for environmental conservation measures, and providing support for the development of human resources and systems. Therefore, it is fair to say that this project is consistent with Japan's assistance policy.

Given what was described above, this project has been highly relevant with the Philippines' development plan and development needs, as well as Japan's ODA policy. Therefore its relevance is high.

3.2 Effectiveness[15] (Rating: ③)

As described above, the objective of this project is to increase farmers' agricultural income and improve their access to infrastructures through development of infrastructures, support for agricultural technology, support for organization of farmers, and strengthening of local government units (LGU),

[14] Executive Order No 34 on setting up inter-departmental committees for institutional reform on rural development and land management was issued. The committee include the DAR, the Department of Agriculture and the Department of Environment and Natural Resources. It is planned to come up with concrete recommendations for institutional reform within six months from the date of issue on the Order. It is expected that support services for agrarian reform beneficiaries will be continued by the present Aquino Administration, as agriculture and agri-business development are prioritized.

[15] Rating is based on the judgment about effectiveness plus impact.

thereby promoting poverty reduction. Regarding poverty reduction as the main objective of this project, this evaluation examined improvement in farmers' agricultural income and their access to infrastructures in terms of effectiveness and examined improvement in their income and living standard in terms of impact.

The evaluation of effectiveness is usually based on comparison between the initial plan (at the time of the appraisal) and the actual results. However, comparison with the Settlement Area Development Plan and the Project Investment Plan is judged to be relevant because of the following: (1) there is no standard value at the time of the appraisal; (2) in this project, the plan has been reviewed based on the Settlement Area Development Plan and the Project Investment Plan for each of the special ARCs established in 2004 after the beginning of the project; and (3) in 2004, when the project was being carried out in earnest, a logframe, which included operation and effect indicators different from those at the time of the appraisal, was established between the Philippine government and JICA, and project management has been consistently carried out during the implementation of the project. Therefore, in this ex-post evaluation, the operation and effect indicators were arranged based on the plans and the logframe, and evaluation indicators were set up as follows:

3.2.1 Quantitative Effects (Operation and Effect Indicators)

(1) Annual average agricultural income of farm household and total income[16]

Because agricultural income is one of the project objectives in the logframe, it is the main indicator for judging effectiveness. In addition, total income is an indicator for judging impact. However, in the case of household income and expenditure surveys, the survey results often differ greatly because of the number of samples and the sampling and other survey methods. In this survey, in order to increase the reliability of the evaluation results, the consistency of data was examined based on three information sources on income[17], and survey results from different information sources were used complementarily.

1) Farm households' annual average agricultural income and total income (information source: Assessment of the Level of Development of Agrarian Reform Communities (ALDA)[18])

According to data extracted from the Assessment of the Level of Development of Agrarian Reform

[16] This section deals also with total income, which is an indicator for "impact."

[17] The information sources for this indicator include the following: (1) the Assessment of the Level of Development of Agrarian Reform Communities (ALDA) by DAR; (2) the beneficiary survey by the evaluator; and (3) the simplified beneficiary survey (awareness survey). They have the following characteristics: (1) because the ALDA has no data on each item of income sources, detailed analysis is impossible concerning the causal relationship with the project effect; however, it is possible to quantitatively observe secular changes in the income in the special ARCs covered by this project; (2) Although the beneficiary survey enables detailed analysis of each item of income resources, only four barangays are covered among the 123 barangays covered by this project; although the four barangays were selected to grasp the whole image of the project effect, because the number of samples (122) is small compared with the population, it is hard to say that representativeness for all the barangays covered by the project has been secured; and (3) although the simplified beneficiary survey covers 104 barangays among the 123 barangays, no household income and expenditure survey (amount of income) is included, because it is a questionnaire survey in the form of group discussion in each of the target barangays.

[18] DAR has been monitoring the ARCs, using the following six items as indicators: (1) improvement of land ownership relations; (2) organization maturity level; (3) economic infrastructure support; (4) agricultural productivity and income; (5) basic social services; and (6) gender development.

Communities (ALDA), which DAR has conducted every year, farm households' annual average agricultural income (price-adjusted) in the ARCs covered by this project is 121% of the planned income at the time of completion (target value: 20% increase). As shown in Table 2, the rate of increase varies greatly among settlements. Because the settlements covered by this project are located in remote regions, even if some of them are located in the same province, agricultural potential, market access, and the content and cost of each subproject of this project differ because of geographical features.

Table 2: Farm Households' Annual Average Income

ARC	2004			2009（adusted Consumer Price Index) 2004=100, 2009=117）			Actual Agricultural Income Increase Rate against Plan (20% Increase)*	2011（adusted Consumer Price Index, 2004=100, 2011=133）			Increase Rate	
	Agricultural Income	Non-agricultural Income	Total Income	Agricultural Income	Non-agricultural Income	Total Income		Agricultural Income	Non-agricultural Income	Total Income	(2004-2009)	(2009-2012
Unit	Peso	Peso	Peso	Peso	Peso	Peso	%	Peso	Peso	Peso	%	%
Bukidonon South												
South Pangantucan	45,000	20,000	65,000	38,462	17,094	55,556	71	54,189	57,994	112,183	73	102
Bacusanon	80,000	40,000	120,000	70,940	35,897	106,838	74	60,843	22,451	83,294	-31	-22
Kalilangan	57,330	10,000	67,330	44,872	32,051	76,923	65	79,332	32,347	111,680	66	45
Lelar	n.a	n.a	n.a	n.a	n.a	n.a	n.a	72,208	51,879	124,086	n.a.	n.a.
Compostela Valley												
Davao Settlement No.2	53,364	8,256	61,620	176,068	13,675	189,744	275	43,456	14,852	58,308	-5	-69
Davao del Norte												
Davao Settlement No.1	86,280	8,000	94,280	74,359	27,350	101,709	72	115,763	38,182	153,946	63	51
B.E. Dujali Cluster	50,000	10,000	60,000	102,564	25,641	128,205	171	180,940	7,079	188,019	213	47
Davao Oriental												
Cateel Settlement	66,279	24,091	90,370	65,046	19,833	84,879	82	46,629	56,091	102,720	14	21
Agusan del Sur												
Agusan Resettlement	41,700	26,325	68,025	37,534	65,086	102,620	75	48,127	34,035	82,162	21	-20
Kaunlaran	42,000	26,525	68,525	61,859	60,331	122,191	123	63,680	42,064	105,743	54	-13
Surigao del Norte												
Dinagat	14,400	21,000	35,400	68,930	45,692	114,622	399	50,742	37,674	88,415	150	-23
San Jose	21,500	29,550	51,050	49,564	101,054	150,618	192	39,897	115,016	154,913	203	3
Tubajon	14,300	21,874	36,174	39,658	59,701	99,359	231	76,872	67,348	144,220	299	45
Average	47,679	21,469	68,148	69,155	41,951	111,105	**121**	71,744	45,268	116,130	**70**	**5**

*In the logframe of the Project, the target upon the completion of the Project (2009) is 20% increase. Thus, the rates in Table 2 are the achievement rate against the plan (GDP deflator-Consumer Price Index: 100 in 2004, 117 in 2009)
Source: DAR

Generally, it can be said that the rate of income increase is higher in settlements where the standard income of farm households was lower in 2004 (before this project). In the provinces as a whole, although the poverty incidence has been on an upward trend, the amount of agricultural income has been increasing in the ARCs covered by this project. It can be inferred that one of the reasons is the effect of this project.[19] In these settlements, the poverty incidence is higher than that in the other settlements in Mindanao or the national average (Table 1). This seems to be because the infrastructure development rate in the settlements where the poverty incidence is high is lower than in the other settlements and, to satisfy needs, the number of subprojects and the amount of investments became

[19] However, because no data exist about the average agricultural income in the provinces as a whole, it is impossible to show correlativity statistically.

higher than in the other target areas. On the other hand, as in the case of Davao Settlement 2, there are cases where no consistent trends are shown in changes in the amount of income among the years of measurement. This seems to be because, even in the same settlement, the areas covered by this project are vulnerable to natural disasters, such as floods and landslides, and the production of farm products changes according to each year's weather conditions.

The average increment in farm households' annual average total income in all the areas covered by this project increased from 68,148 pesos in 2004, before the implementation of this project, to 111,105 pesos in 2009 (when this project was completed), up by 63%, and 116,139 pesos in 2011, up by 70% (Table 2). The average total income increased by 5% between the completion and 2011. While the average total income annually increased by 13% during the project period (2004 to 2009), it increased by 2% between 2009, when the project was completed, and 2011. Therefore, the total income greatly increased during the project period, which can be recognized as a direct effect of this project.

2) Farm households' annual average agricultural income and total income (information source: beneficiary survey)

As a result of a survey on 122 beneficiaries in four barangays in Bukidnon Settlement and Agusan del Sur Settlement (special ARCs), as shown in Table 3, the annual average agricultural income in the four barangays increased by 27% over the course of this project.

Table 3: Farm Household's Annual Average Income (before and after the Project)

	Kuya (Bukidnon)			Kinura (Bukidnon)			San Vicente (Agsan Del Sur)			San Gabriela (Agusan Del Sur)			Increase Rate (%)
	Before (peso)	After (peso)*	Increase Rate (%)	Before (peso)	After (peso)*	Increase Rate (%)	Before (peso)	After (peso)*	Increase Rate (%)	Before (peso)	After (peso)*	Increase Rate (%)	
	Peso	Peso	%	Peso	Peso	%	Peso	Peso	%	Peso	Peso	%	
Agricultural Income													
Rice	16,019	19,076	19	4,145	2,018	-51	22,605	43,921	94	28,990	44,166	52	29
Corn	17,032	13,115	-23	26,094	21,219	-19	0	0	0	94	0	n.a.	-14
Sugercane	53,400	63,068	18	14,086	12,256	-13	0	0	0	0	0	0	1
Vegetables	160	180	13	523	1,130	116	24	90	276	0	2	n.a.	135
Fruits	20	9	-55	1,029	1,319	28	37	634	1,629	0	79	n.a.	534
Livestock	3,352	4,962	48	4,348	3,579	-18	480	1,102	130	794	1,089	37	49
Fish	0	0	0	0	0	0	256	0	n.a.	94	70	-25	-8
Others	720	1,624	126	7,976	6,405	-20	15,757	16,491	5	670	2,162	223	83
Sub-Total	90,703	102,034	12	58,200	47,926	-18	39,159	62,238	59	30,641	47,568	55	27
Non-agricultural Income													
Trade	160	150	-6	0	1,289	n.a.	17	2,341	13,945	2,250	2,227	-1	4,646
Handi-craft	0	0	0	0	0	0	0	0	0	0	153	n.a.	0
Carpentery	240	2,075	765	3,669	3,313	-10	0	0	0	0	592	n.a.	252
Mining	0	3,089	n.a.	0	0	0	0	0	0	0	0	0	0
Public officers	1,680	0	-100	2,661	5,860	120	3,720	3,489	-6	32,653	22,056	-32	-5
Private company	3,782	3,429	-9	291	1,485	410	0	0	0	2,250	1,410	-37	91
Emigration	200	0	-100	857	2,170	153	0	802	n.a.	4,221	4,229	0	18
Agricultural labor	1,660	2,526	52	4,937	5,368	9	10,509	8,361	-20	9,494	5,146	-46	-1
Remittance	3,920	3,789	-3	5,486	4,855	-11	4,800	6,720	40	0	3,745	n.a.	8
Others	5,280	8,499	61	12,503	14,751	18	6,288	6,071	-3	10,039	11,438	14	22
Sub-Total	16,922	23,558	39	30,405	39,091	29	25,334	27,783	10	60,907	50,996	-16	15
Total Income	107,626	125,593	17	88,605	87,017	-2	64,493	90,022	40	91,548	98,564	8	**16**

*Adjusted based on the Consumer Price Index, 100 in 2004 against 133 in 2012
Source: Beneficiary survey at ex-post evaluation

Given what has been described above, it can be confirmed that the effect of this project has

continued even after the end of this project. Although the rate of increase differs among the barangays, there are the following general trends. The Province of Bukidnon is advanced in agricultural development in Mindanao and the agricultural income in the province before the project was higher than in two barangays in the Province of Agusan del Sur. On the other hand, the rate of income increase after the project is higher in Agusan del Sur. This is because of the following reasons in two barangays in the Province of Bukidnon: (1) areas where irrigation facilities can be provided are limited because of geographical or technical conditions; and (2) land productivity has declined because of soil erosion and acidification caused by deforestation and constant cultivation.[20] There have been changes in the social and economic circumstances of farm households, resulting in a decline in farm households' incentive for agricultural production. In the areas surrounding Barangay Kuya, around 2005, multinational companies such as Delmonte, Dole established pineapple and banana plantations. Because farm households can stably gain income, farmers tend to lend farmland to companies and work as day laborers.[21] The rate of increase in agricultural income has been decreasing in Barangay Kinura. This seems to be because agricultural expenditure has increased, while the prices of sugarcane declined.

On the other hand, because logging has been traditionally prosperous in the Province of Agusan del Norte, agricultural development has been delayed there, compared with the other areas in Mindanao. According to the Municipality Agricultural Office of the LGU, because the total logging ban to prohibit deforestation totally came into force recently, the inhabitants have become more interested in agriculture than before. The results of the beneficiary survey in both barangays revealed that all the respondents answered "road and bridge construction was effective for an increase in our agricultural income." The beneficiary survey and interviews with LGU officer showed that the construction of farm to market road led to the expansion of farmers' access to farm product markets and sales channels, reduction in the cost and time of transportation, and improvement in traders' access to the barangays, resulting in an increase in farmers' motivation for production.[22] On the other hand, because irrigation and other infrastructure support, which contributes directly to agricultural development, agricultural technology promotion, and marketing, and other soft-type support was provided to a limited number of beneficiaries, the contribution of these support programs is limited.

The results of the beneficiary survey show that farm households' annual average income changed as follows. The rate of increase over the course of this project was 16% (Table 3). As in the case of agricultural income, the status of achievement has varied among barangays. While the ratio of agricultural income decreased over the course of this project in the two covered barangays in the

[20] To deal with these issues, in this project, training was held on the production of organic vegetables and the production of livestock, and seeds and saplings were distributed. However, because the number of target farmers was limited, these efforts have not led to an increase in agricultural income. The interviews with the participants of the two barangays in the training on the production of organic vegetables reveal that they have not continued to cultivate vegetables. This is because organic farming takes labor and time, while production volumes are small and selling prices are low. During the project period, no support was provided for the marketing of produced farm products.

[21] While companies give 275 pesos as the daily wage for a day laborer, the daily wage for assistance to a neighboring farmer is about 200 pesos.

[22] Because roads were underdeveloped and access to the barangays was difficult before this project, no traders visited the barangays to buy farm products.

Province of Bukidnon, the ratio increased in the two covered barangays in the Province of Agusan del Sur. Non-agricultural income increased over the course of this project in all the barangays other than San Gabriela. This is because the construction of farm to market road activated not only agriculture but also local economic activities through the development of the road networks within the barangays. In Barangay Kinura, improvement in access to the urban settlement through the market access road has increased job opportunities in peddling and the private sector and has compensated for the decline in agricultural income. In the two target barangays in the Province of Bukidnon, land prices have increased because of the construction of the farm to market road, and farmland lease fees have become a source of additional income.[23]

3) Farm households' annual average agricultural income and total income (information source: simplified beneficiary survey)

In the simplified beneficiary survey, 89% (93 barangays) of the surveyed barangays answered "agricultural income increased" after the project. The main reasons are as follows: (1) expansion of the area planted with farm products; (2) an increase in the volume of farm products; (3) improvement in market access; (4) application of new agricultural technologies (farm products and livestock); and (5) increases in the prices of some farm products, such as rubber, coffee, and banana. Subprojects that greatly contributed to an increase in the amount of agricultural income were those for (1) roads and bridges (40%); (2) livestock revolving scheme[24] (13%); and (3) agricultural training (9%) and irrigation (6%). The construction of roads and bridges in particular has led to an increase in the motivation for production through a reduction in the cost of transporting farm products and the securing of markets (traders' purchase of farm products in barangays).

The above-described results are relevant to the results of the beneficiary survey. Given that the construction of roads and bridges in particular has been carried out in almost all the target barangays, it is possible to certify that improvement in market access has contributed to the expansion of the area planted with farm products, an increase in the volume of farm products, and the diversification of farm products.

The following results have been attained by an awareness survey on total income based on the simplified beneficiary survey. Of the target 104 barangays, 92% answered "total income increased" after the project, with 61% answering "highly increased" and 31% answering "somewhat increased,"

[23] As a result of the construction of farm to market road, land prices in the target barangays have been on an upward trend. Because of temporary financial demand, some agrarian reform beneficiaries have partially leased or resold their land. Article 27 of the Republic Act No. 6658 provides that agrarian reform beneficiaries may not transfer land titles obtained through the agrarian reform to anyone other than the following: (1) inheritance to family members; (2) Land Bank of the Philippines; and (3) other agrarian reform beneficiaries who have lived on the land for 10 or more years. However, they have transferred land titles to other people by clandestine agreement. The interviews with beneficiaries revealed that, in Barangay Kuya, where Delmonte and Dole have been expanding plantations, about 95% of the farm households have leased land acquired through agrarian reform. For example, in Barangay Kuya, farmers lease farmland at an annual fee of about 15,000 pesos per hectares and sell farmland at 60,000 pesos per hectares.

[24] The livestock rotation scheme consists of the following processes: (1) distribution of livestock to beneficiaries, such as water buffaloes, milk cows, pigs, goats, chickens, and ducks; (2) beneficiaries' breeding of distributed livestock; and (4) beneficiaries' delivery of born offspring to other beneficiaries. During the implementation of this project, by support of an NGO, each PO established operation rules. At present, the POs are operating the scheme according to the established rules.

which indicates this project's effect of increasing income. Because these results are consistent with the above-described results, an increase in total income can be recognized in all the target areas of this project.

Therefore, increases in agricultural income and total income, central indicators for effectiveness and impact, can be recognized.

(2) Production value by kind of main farm product

Although the acquisition of data on the production volume of each farm product was attempted in the beneficiary survey, because various products are made in a small quantity in each target barangay, and farmers themselves consume most of the main products, and only limited data on indicators could be acquired. In this survey, to confirm the state of achievement of agricultural productivity, an attempt was made to calculate the production values of main farm products for self-consumption and for conversion into cash based on the results of the beneficiary survey (Table 4).

Table 4: Production Value of Main Farm Product

	Kuya (Bukidnon)			Kinura (Bukidnon)			San Vicente (Agsan Del Sur)			San Gabriela (Agusan Del Sur)			Increase Rate (%)
	Before (peso)	After (peso)*	Increase Rate (%)	Before (peso)	After (peso)*	Increase Rate (%)	Before (peso)	After (peso)*	Increase Rate (%)	Before (peso)	After (peso)*	Increase Rate (%)	
	Peso	Peso	%	Peso	Peso	%	Peso	Peso	%	Peso	Peso	%	
Home Consumption													
Rice	14,581	14,579	0	2,217	1,931	-13	8,203	11,224	37	8,978	10,639	18	11
Corn	945	563	-40	486	290	-40	283	218	-23	0	0	0	-26
Vegetables	474	770	62	737	1,247	69	2,152	1,768	-18	719	712	-1	28
Fruits	174	505	190	333	667	100	483	787	63	394	421	7	90
Livestock	906	1,704	88	393	1,180	200	1,183	1,500	27	239	281	18	83
Fish	57	206	259	0	0	0	7	13	88	616	688	12	90
Others	40	90	126	0	22	0	52	136	161	94	0	0	72
Sub-Total	17,177	18,417	7	4,165	5,337	28	12,363	15,646	27	11,039	12,741	15	19
Cash Crop													
Rice	16,019	19,076	19	4,145	2,018	-51	22,605	43,921	94	28,990	44,166	52	29
Corn	17,032	13,115	-23	26,094	21,219	-19	0	0	0	94	0	0	-10
Sugercane	53,400	63,068	18	14,086	12,256	-13	0	0	0	0	0	0	1
Vegetables	160	180	13	523	1,130	116	24	90	276	0	2	0	101
Fruits	20	9	-55	1,029	1,319	28	37	634	1,629	0	79	0	401
Livestock	3,352	4,962	48	4,348	3,579	-18	480	1,102	130	794	1,089	37	49
Fish	0	0	0	0	0	0	256	0	0	94	70	-25	-6
Others	720	1,624	126	7,976	6,405	-20	15,757	16,491	5	670	2,162	223	83
Sub-Total	90,703	102,034	12	58,200	47,926	-18	39,159	62,238	59	30,641	47,568	55	27
Production Value	107,881	120,451	**12**	62,365	53,263	**-15**	51,522	77,884	**51**	41,681	60,309	**45**	**23**

*Adjusted based on the Consumer Price Index, 100 in 2004 against 133 in 2012

Source: Beneficiary survey at ex-post evaluation

The production value of farm products in the target four barangays increased by 23% over the course of this project (for self-consumption: 19%; for conversion into cash: 27%). Although the ratio of farm products for self-consumption to total agricultural income is small, the production values of vegetables, fruits, and livestock have been on an upward trend. Trends in the production volume of farm products differ among the target barangays; the production values of sugarcane and corn have been decreasing because of shift to other farm products as a result of a decline in selling prices and an increase in agricultural inputs. The production value of rice, the staple good, has been increasing in the two barangays in Agusan del Sur. This indicates that this project led to an increase in the food

self-sufficiency ratio and a decrease in household expenditure. It can be inferred that the production value of fishes has been decreasing in the barangays because an increase in agricultural production has reduced the incentives to fish production.

(3) Irrigation area

Of the 123 barangays covered by this project, irrigation facilities were constructed in 27 barangays. According to DAR, although the planned irrigation area was 1,717 hectares when the detailed plan was reviewed in 2004, the irrigation area increased to 2,732 hectares. Therefore, the achievement rate is 159%. This is because the number of subprojects increased from six at the time of planning to 27 in reality, and the irrigation area increased accordingly (for the reasons for this increase, see "Efficiency.")

(4) Degree of maturity of irrigation associations

The irrigation association (IA) maturity level is monitored every year by the National Irrigation Administration (NIA) as the level of organizational maturity of the IAs all over the country. This level of maturity is calculated mainly from the following indicators: (1) the number of IA members; (2) agricultural production volume and amount of expenditure; (3) net revenue; and (4) the loan repayment rate to NIA. Because it is assumed that a correlation exists between agricultural productivity and the maturity and functionality of an IA as an organization, the IA maturity level is used also as the indicator for the effect of an irrigation project. According to the results of the latest survey on 12 irrigation associations of the 27 associations covered by this project, the overall evaluation is "satisfactory," the second from the bottom on the four grades.[25]

(5) Total number of livestock (information source: simplified beneficiary survey)

The results of the simplified beneficiary survey show that a change in the number of livestock in the barangays covered by the project (104 barangays) over the course of the project differs according to types of livestock (Table 5). A change in the number of livestock has been influenced also by the condition of procurement of livestock. For example, distributed water buffalos (*carabao*) and milk cows are different from those designated by beneficiaries. Their ages are low and several years' breeding is necessary until they can be used for farming (water buffalos) and dairy farming. Thus, at the time of the ex-post evaluation, both the increasing number and the number of beneficiaries through the revolving scheme were limited.

[25] Four-point scale: "Excellent," "Highly satisfactory," "Satisfactory," and "Failed"

Table 5: No of Livestock in Target 104 Barangays

	Before	No of distribution	After* (upon ex-post evaluation)	No of Increase	Net Increased No.
	A	B	C	C-A	C-(A+B)
Water Buffalos (Carabao)	2,551	1,525	4,175	1,624	99
Milk Cow	1,817	688	2,832	1,015	327
Pig	7,953	871	6,604	-1,349	-2,220
Goat	2,292	2,146	3,932	1,640	-506
Poultry	18,641	1,656	24,702	6,061	4,405

*Excluding the number of livestock that were already sold.
Source: DAR (Simplified beneficiary survey at ex-post evaluation)

During the interviews with the beneficiaries, many other problems were pointed out about the procurement of livestock. For example, (1) because livestock was procured from remote places, they became weaker when distributed to beneficiaries and many died just after the distribution; (2) goats died just after the distribution because they were not suitable for weather conditions; and (3) contrary to the condition of water buffalos and milk cows, goats were too old and their productivity and market value were low. According to DAR, there were the following causes: (1) because the market price was higher than the approved budget, DAR had to procure young livestock; (2) the policy of provincial governments that livestock should be procured from the outside to increase the number of livestock in the Provinces; and (3) because beneficiaries procured livestock during almost the same period under this project, it was difficult to procure the designated livestock in the region. As shown in Table 4, an increase in income by the introduction of livestock was small, and it is fair to say that the effect of this subproject is limited.

Figure 1: Pumping Irrigation Facilities in San Gabriela, Agusan del Sur


Figure 2: Swine Production Business through Revolving Fund and Training in Kinura, Bukidnon

(6) Synergy effect among subprojects

The External Evaluator has so far confirmed the status of achievement of indicators to measure the effect of each subproject. This project consists of multi-sector subprojects. Given the geographical limitations of the target areas, the livestock and agricultural subprojects were carried out to diversify agricultural income sources into not only main farm products, but also vegetables and livestock. Therefore, the External Evaluator will examine the synergy effect among subprojects in the improvement of agricultural income, the main purpose of this project, based on the results of a field survey.

Because geographical conditions differ among the target barangays, and the type and period also differ among the subprojects, it is difficult to generalize the condition of occurrence of synergy effects. However, it was confirmed through the field survey that some target barangays did not take an implementing approach that can generate synergy effect. For example, when technical training was held about farm products other than main ones such as rice and corn, the introduced agricultural technologies were not firmly established due to the following reasons. First, farm products were not selected from the viewpoint of marketing. Second, the training period lasted only one cropping period. Third, promotion service or market support was lacking. If training is given to farmers, there is no guarantee that they can soon apply the acquired skills and abilities. Although it was necessary for the executing agency, other relevant agencies, and contracted NGOs to continue technical monitoring, such monitoring was not fully carried out in this project. In addition, there was no system that would promote organic farming through matching vegetable farmers with livestock producers.

Improvement in the ability of POs did not lead to the promotion of agricultural development. Although the subproject period was two to three years in the target areas because of a delay in the beginning of the subprojects, each barangay in the target areas simultaneously carried out ten or more subprojects on average. It was planned that PO would be evaluated a level of competency by contracted NGOs according to the Implementation Manual and, if they satisfies the standards, they would serve as executing organizations. However, because only a small number of POs in the target areas satisfied the standards, it was necessary to organize and strengthen new POs. However, because many subprojects were carried out in the target areas and there were time constraints, there were limitations in the absorptive capacity of POs engaged in agricultural development. Moreover, because it was unclear what function to be given to POs, training on the abilities necessary for them could not be provided and group activities about agricultural development, such as trading, could not be carried out.

Although this project contributed to improvement in markets of main farm products through the farm to market road and bridge, effect was not fully gained for diversification of agricultural income sources. This seems to be because the structure, contents, and processes of the subprojects and the support period were not designed enough in some areas so as to produce synergy effect among the subprojects.

3.2.2 Qualitative Effects

(1) Access to safe water

According to the results of the simplified beneficiary survey, access to safe water has been improved in all the target barangays, and 80% of the barangays answered that water quality was improved (number of valid responses: 39). The concrete effects after this project include the following: (1) reduction in time and labor for carrying water; (2) improvement in access to drinking water; (3) improvement in convenience; and (4) improvement in the hygienic environment. The reduced time for fetching water every day differs among the target barangays, ranging from about five minutes to three hours. In the Barangay Kinura in the Province of Bukidnon, because children were in

charge of carrying water before this project, it was confirmed that the establishment of the facilities has increased children's time for study and leisure. In this way, this project contributes to the improvement of children's educational environment and the quality of living, such as improvement in families' hygiene environment.

(2) Access to medical services

The results of the simplified beneficiary survey show that, after the construction or rehabilitation of barangay health stations, 96% answered that access to medical services was improved, and 100% answered that the quality of services was improved (number of valid responses: 72). According to the results of the survey, 96% answered that the improvement of the barangay health stations resulted in reduction in access time and distance to medical services (number of valid responses: 72). Concrete improvements in access and medical services include the following: (1) provision of places for the Department of Health's vaccination programs and monitoring of malnutrition prevention; (2) expansion of the territory for provision of medical service because of improvement of medical equipment; and (3) provision of constant medical services because of placement of midwives. The barangay health stations have caused synergy effect with other programs promoted by the Philippine Government (Department of Health) and are increasing the rate of utilization of the programs. It can be said that the construction and rehabilitation of the barangay health stations have resulted in improvement in access to medical services and their quality and are effective for promotion of people's health.

On the other hand, some barangays have problems. Although this project was carried out on condition that municipalities and LGUs should place regular midwives and public health nurses, in LGUs with a severe financial situation, officials in charge of several barangay health stations cannot be stationed at each of them more than several times a week, thereby limiting regular access to medical services.

(3) Improvement in the educational environment

The results of the simplified beneficiary survey reveal that 88% of the target barangays answered that addition of classrooms and armchairs resulted in improvement in the educational environment (number of valid responses: 88). Initially, this subproject was carried out to improve the enrollment rate. However, in the Philippines, including the target areas of this project, the construction of school buildings and the addition of classrooms has not caught up with population growth. According to interviews with school staff in the target areas, the number of students per classroom was reduced from 60 before this project to about 50. In the survey, teachers cited the following advantages of a decrease in the number of students per classroom: (1) teachers can fully grasp students' state of study; (2) students have increased their motivation for study; and (3) the situation of school attendance has improved.

However, even after the implementation of this project, the number of students per classroom has not reached the number recommended by the Department of Education (45 students in one classroom). Although all the schools were required to add classrooms in the four target barangays where the field survey was carried out, it can be said that this project contributed to preventing the deterioration of the educational environment.

Figure 3: Barangay Health Station in Kinura, Bukidnon

Figure 4: Classroom and Armchair, Kuya, Bukidnon

3.3 Impact

3.3.1 Intended Impacts

(1) Farm households' annual average total income

As shown in the section on effectiveness, as a result of examination of farm households' annual average income from three information sources, an increase in the total income can be recognized.

(2) Changes in the living environment and the local economy as a result of construction of farm to market road

According to the results of the simplified beneficiary survey and the beneficiary survey, the construction of farm to market road led to the activation of economic activities, including agriculture, the convenience of life, and the improvement of quality – concretely, (1) reduction in the transportation cost and time (opportunity cost) of farm products; (2) expansion of the planted area of farm products and an increase in the production volume as a result of improvement in market access and securing of markets; (3) traders' advance into barangays as a result of improvement in access and the rise of a farm price; (4) an increase in job opportunities (peddling, retailing, farming, etc.) as a result of activation of economic activities, and an increase in retailing sales as a result of improvement in purchasing power[26]; and (5) an increase in the number of private companies, public works, and assistance services as a result of improvement in access to barangays through the construction of roads.

It should be noted that, because of the development of infrastructures and the activation of local economic activities in the barangays, the number of people who moved in from other areas exceeded the number of those who moved out to other areas, resulting in an increase in the population (field

[26] The results of the surveys and the beneficiary survey in the above-mentioned four barangays have also confirmed that improvement in purchasing power led to an increase in the number of small grocery stores, which are called "*Sari-Sari* Stores" by people, and their sales.

survey). This caused the following: (1) an increase in the amount of internal revenue allowance granted from the central government (the Department of Budget and Management) to the barangay LGUs; (2) an increase in the amount of taxes to the barangay LGUs as a result of an increase in household incomes; (3) as a result of (1) and (2), an increase in development project funds in the barangay LGUs; and (4) as a result of (3), improvement in the governance capacity (provision of public services and security) of the barangay LGUs.

Accordingly, it is fair to say that this project has contributed not only to economic effects, such as improvement in household incomes, but also to improvement in living convenience as a result of improvement in mobility, activation of local economic activities, and improvement in the quality of life, and has produced synergy effect in social and political aspects both inside and outside of the barangays.

According to interviews with DAR and LGUs, many of the project target areas were hideaways for communist guerillas. The New Peoples Army (NPA), a communist guerilla group,[27] established a base in a mountainous area and recruited soldiers and supporters from among the inhabitants. Because of the security problem, the government's provision of public investments and services was limited, and the inhabitants increased their dependence on the NPA. After this project, the development of roads resulted in improvement in access to barangays, strengthening of the connection between isolated poor areas and outside society, and activation of economic activities. This decreased the inhabitants' dependence on the guerilla army and greatly contributed to the stability of people's livelihoods. In this sense, this project's contribution to social and political stability can be recognized.

BOX 1: Effect of Construction of Farm to Market Road and Bridge

In most of the target areas of this project, the largest factor for hindrance of agricultural development lies in reduction of the time and cost of transportation of farm products. The target farm households produced, transported, and sold main farm products, such as rice and sugarcane, to gain cash necessary for a minimum level of living. This is because, even if they increase production volume, transportation cost is considerable. Given the geographical features of the target areas, an increase in the production volume of main farm products requires not only the fulfillment of the conditions for production, such as the securing of farmland, agricultural water, and agricultural technology, but also the improvement of physical market access and the expansion of sales channels. Because the Department of Agrarian Reform, the executing agency, paid attention to this point and effectively selected target areas, the beneficiaries became able to expand sales channels, which enhanced their motivations for increasing production. The construction of farm to market road and bridge contributed to the development of value chains of farm products, in terms of not only the development of production, but also the development of physical market access and sales channels.

[27] In 1969, the New Peoples Army (NPA) was formed by communist forces in the Philippines to organize a revolution and change the regime under Maoism in barangays in the central part of Luzon Island. NPA has carried out activities all over the country, has repeated armed attacks against the armed forces, the police, infrastructures, and private companies in the Philippines, and has collected "revolution tax" even from farmers in poor rural areas. At the time of the ex-post evaluation (in May 2013), preliminary peace negotiations had been conducted repeatedly between the Philippine Government and the National Democratic Front, the political arm of NPA.

(3) Value added by post-harvest facilities[28]

According to the results of the simplified beneficiary survey, 45% of the target barangays (67 barangays) answered that post-harvest facilities are "good enough." According to the results of the beneficiary survey, which covered four barangays, the number of users was limited to 37% (45) of the target farmers (122). Interviews with beneficiaries confirmed that the users of the facilities are limited to farmers around the facilities. The interviews with the users also confirmed that the facilities were effective for securing rice for self-consumption and for gaining cash from rice in case of emergency to respond to crisis.

(4) Hygiene and health conditions

According to the results of the simplified beneficiary survey, 80% of the target barangays where supply systems were constructed in this project answered that water-borne diseases decreased. According to interviews with beneficiaries, this decrease in water-borne diseases has led to reduction in medical expenses and improvement in labor productivity. Of the target barangays, 93% answered that living conditions "improved" as a result of the construction of the facilities. This result indicates a positive impact of the construction of the water supply systems on hygiene and health conditions.

3.3.2 Other Impacts

At the appraisal, environmental impact was not expected through this project. It was planned that the Environment Compliance Certificate or the Certificate of Non-Coverage would be issued for infrastructure related sub-projects according to the JBIC Environmental Guidelines for ODA Loans (October 1999). In practice, necessary certificates were issued. During the project period and also even after the completion of the Project, environmental monitoring has been carried out. The results show that the natural environment received no negative impact. During the project period, there was no problem about land acquisition and resettlement.

This project has largely achieved its objective. Therefore, its effectiveness and impact are high.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

(1) Review of plan[29]

The unit and indicator of the quantity of each component at the appraisal in 2001 were corrected according to the settlement area development plan and the project investment plan revised in 2004

[28] Concreted level land (facilities) where harvested paddy rice is dried. If there are no such facilities, paddy rice is usually dried on roads. However, because impurities are mixed with paddy rice, the selling price drops.

[29] The final right to select subprojects was held by the Project Coordination Committee established in the head office of the DAR. The selection procedure is as follows: each target area consulted with the residents, the local government, and relevant organizations based on the local government's development plan, revised the existing the settlement area development plan, and submitted it to the Project Coordination Committee through the DAR's settlement area office (at a municipality level), together with a short-list of project that showed the order of priority. The list included the following: (1) profiles of barangays, municipalities, and settlement areas; (2) the short-list for subprojects; (3) written approval of the state and central project management offices; and (4) written approval for the settlement area development plan. In July 2004, the plan, which included revised planned values, was submitted to JICA after approval by the Project Coordination Committee.

after the beginning of this project (Table 6). The main reasons for the revision of the plan are the following: (1) if the operation and effect indicators set at the time of the appraisal are used, it was difficult to measure the achievement of each component; (2) the estimates prepared by DAR before the appraisal were rough; (3) the residents' and the LGUs' needs and the order of priority for the subprojects were changed; and (4) no technical feasibility study was carried out at the time of the appraisal. However, the unit and indicator of the quantity of subprojects were corrected without any change in the target barangays. Although there was no great change in main project components and scope, a multipurpose pavement was added (which was also used as post-harvest facilities).

Given that this project aims for the residents' poverty reduction based on the participatory approach, it was appropriate to formulate a detailed plan and change and realize the plan through another consultation with residents and DAR in the target areas after the beginning of this project. Moreover, it can be said that the changes in quantities and indicators to grasp the achievement concretely were necessary for managing this project appropriately.

Table 6: Project Output (Plan and Actual)

Sub-Project	Unit	Plan at the Appraisal in 2001	Plan at the in-depth survey in 2004	Actual	Achievement (Before revision) (%)	Achievement (After revision) (%)
(1) Infrastructure Development						
1) Farm to Market Road and Bridge						
Road: No of sub-project	No of site	94	119	113	120	95
Road: km	km	NA	313	354	NA	113
Bridges: No of subproject	No of site	6	34	55	917	162
Bridges: lm	lm	NA	1,587	1,749	NA	110
2) Water Supply System (Level 1&2)						
No of sub-project	No of site	61	41	39	64	95
3) Irrigation Facilities						
Communal Irrigation: No of sub-project	No of site	6	16	27	450	169
Communal Irrigation: Areas	ha	NA	1,717	2,732	NA	159
4) Baranagay Health Station						
No of sub-project	No of site	52	89	96	185	108
5) Multipurpose Building	No of site	12	16	20	167	125
6) Postharvest Facilities: No of subproject	No of site	77	74	111	144	150
7) School (Classroom)						
No of sub-project	No of site	142	142	218	154	154
No of classroom	No of classroom	NA	405	632	NA	156
8) Multipurpose Pavement and Postharvest Facilities	No of site	NA	91	91	NA	100
Total		450	622	770	NA	NA
(2) Institutional Development						
1) Capacity Building for POs and Farmers	No of Pos	NA				
No of POs trained (gross)	Person	NA	587	1,792	NA	305
No of Farmer Para-technicians trained (gross)	Person	NA	246	290	NA	118
Nof Farmers trained (gross)			44,251	72,193	NA	163
2) Capacity Building for Project Implementers (DAR, related agencies, LGUs, others)						
Project Management Units trained	Unit	NA	26	26	NA	100
Individuals trained	Person	NA	1,662	4,599	NA	277
(3) Agricultural and Environmental Development						
1) Reforestation: No of subproject	No of site	26	26	10	38	38
2) Agro-forestry: No of subproject	No of site	NA	65	10	NA	15
3) Fruits-tree plantation: No of subproject	No of site	NA	64	27	NA	42
4) Demonstration Farm: No of subproject	No of site	NA	66	100	NA	152
5) Community Nursery: No of subproject	No of site	NA	8	10	NA	125
6) Livestock Development: No of subproject	No of site	8	62	59	738	95
(4) Procurement of Equipment						
1) Office Equipment of PMU	No of site	8	11	11	138	100
2) Office Equipment of the Settlement Management Unit	No of site	NA	16	16	NA	100
3) Equipment of the Settlement Management Unit	No of site	NA	16	16	NA	100
4) School Armchair	Unit	NA	18,225	24,750	NA	136
5) Medical Equipment	No of site	NA	89	94	NA	106
6) O&M Equipment of LGU	No of site	NA	16	16	NA	100
(5) Consulting Service (Man/Month: M/M)						
1) Foreign Consultant	M/M	200	184	152.8	76	83
2) Local Consultant	M/M	480	468	540.57	113	116

Source: DAR

(2) The responsible agency of each component

When the project was carried out, DAR served as the "executing agency," while the Department of Public Works and Highway (DPWH), the National Irrigation Administration (NIA), and local government unit (LGU) took change of infrastructure development as collaborating agencies.[30] The NIA constructed and repaired small irrigation and drainage facilities and organizationally developed and strengthened post-harvest facilities and IA. The DPWH constructed and repaired farm to market road and bridge and classrooms. The LGUs that have jurisdiction over the target areas took charge of

[30] In addition, the following agencies were to participate in this project: the Department of Education, Culture and Sport; the Department of Agriculture; the Department of Health; the Department of Environment and Natural Resources; and the Department of Interior and Local Government.

the construction of water supply systems and multipurpose buildings. Training for the organizational development and strengthening of cooperatives and water user's associations, both of which are POs, were held by local NGOs under commission from the DAR. Agricultural and environmental development was planned and carried out jointly by NGOs and LGUs. When this project was carried out, each DAR project management office[31] tried to improve the efficiency of the operations carried out in cooperation with various relevant organizations.

(3) Output of each component

1) Infrastructure development

Table 6 shows the outputs and results of the infrastructure development components based on the detailed plan at the time of the appraisal and after revision. They can be outlined as follows: For concrete effects (results), see the section on effectiveness.

- Construction of farm to market road and bridge: Compared with the revised plan, the roads show an achievement of 95% in terms of the number of subprojects and an achievement of 113% in terms of distance. The bridges show an achievement of 162% in terms of the number of subprojects and an achievement of 110% in terms of distance. The number of road sites decreased because of the following: (1) the necessary documents were not fully submitted by the executing agencies of subprojects; (2) the selection criteria were not fulfilled based on the results of the feasibility study of this project; (3) the cost exceeded the fixed maximum; and (4) the amount of cost shared by LGUs was not provided. On the other hand, the total distance increased in response to beneficiaries' demands, and the resultant increments were covered by a cost reduction through a decrease in the number of sites unless this influenced other projects. The number of subprojects for bridges and the total distance increased because beneficiaries' needs were high, feasibility was secured, and the criteria for selecting subprojects, such as LGUs' sharing of costs, were fulfilled.
- Water supply systems: Compared with the revised plan, an achievement of 95% was confirmed. This is because, as a result of a geo resistivity test at the time of detailed design, the water source was found to be insufficient at two sites, with the result that the implementation of the subprojects was discontinued.
- Irrigation facilities: Compared with the revised plan, achievement rate reached 169% in terms of the number of subprojects and 159% in terms of irrigation area. The reason is as follows: when NIA made the detailed design, shallow tube well irrigation was changed to inexpensive surface irrigation in view of technical feasibility and efficiency, resulting in cost reduction and distribution among a greater number of sites.
- School (classroom): Compared with the revised plan, an achievement of 154% was confirmed. At the time of planning, Agusan del Sur was not covered by this project because it was a target area of another JICA education related project. In 2006, however, because the province was excluded from

[31] To carry out this project, the Central Project Management Office was established in the head office of the Department of Agrarian Reform, while the Regional Project management Offices, the Provincial Project Management Office, and the Settlement Management Unit were established at each administrative level.

the target areas of the other project, the provincial government requested the DAR for support. Because effect was expected to emerge, the Central Project Management Office added the province to the target areas of this project.

- Multipurpose pavement (used also as post-harvest facilities): Although their construction was not included in the original plan, because the beneficiaries' additional request for the construction was great, the Project Coordination Committee approved the construction.
- Barangay health stations, multipurpose buildings, post-harvest facilities: Compared with the revised plan, the achievement rate was 108% for barangay health stations and 125% for multipurpose buildings. They were constructed because residents' needs were higher than at the time of planning, and effect could be expected to emerge.

2) Organization and capacity building

For organization and capacity building in this project, the following were planned and carried out: (1) organizing and strengthening of POs (IA, water user's associations, cooperatives); (2) capacity building of farmer-paratechnicians; (3) capacity building of farmers; (4) capacity building of project management offices; and (5) preparations for a sustainability plan and construction of a monitoring system (Table 6 shows the plan and results of organization development based on the detailed plans at the time of the appraisal and after revision).

(1) to (3) above were entrusted to NGOs,[32] except for IA. The agency in charge of IAs was the NIA, whose scope of work ranges from design of irrigation to organization development. The training periods were one to five days, depending on the contents of training. Main contents were as follows: (1) conduct of the baseline survey; (2) identification of the PO as the executing agency of each subproject; (3) identification of beneficiaries of agricultural and environmental development components; and (4) capacity building for operation management (organizational, technical, and financial) of both components of infrastructure development and agricultural and environmental development.[33]

The total numbers of the POs, farmers, and farmer-paratechnicians that received training by the end of this project were 1,792, 72,193, and 290, respectively. Compared with the revised plan, the achievement rates are 305%, 118%, and 163%, respectively. Although the initial plan was to use existing POs, the number of those that need training increased because there were few functional POs and therefore it was necessary to form organizations. An increase in the number of subprojects was also a factor for an increase in the number of those that needed training. With regard to training farmer-paratechnicians, although the initial plan was to train farmers as paratechnicians to supplement lack of LGUs' agricultural extension workers, agricultural extension workers were included in

[32] NGOs were selected for each settlement area by the bidding committee established in a Regional or Provincial Project Management Office under Republic Act No. 9148 of the Philippines (Procurement Guidelines Law). As a result, eight NGOs were placed in eight settlement areas. A two-year contract was concluded first, and the renewal of a contract was decided according to the Central and Provincial Project Management Offices' capability evaluation of NGOs and the status of achievements.

[33] Agricultural and environmental development was partially entrusted to universities and other government-related organizations.

participants at the request of the LGUs. Consequently, the numbers of POs and farmers became far greater than planned.

The interviews with the LGUs and the beneficiaries demonstrated that they were highly satisfied with NGOs' project support (social preparation of residents, POs, and preparation of necessary documents). However, some of the POs and farmers participating in the training had problems at the time of the ex-post evaluation, such as lack of the ability to manage water supply systems and the sustainability of application of agricultural technology. This seems to have been caused by lack of practical lectures and monitoring, because most of the training sessions lasted for only several days.

Next, training of Project Management Offices at each of the central, regional, provincial, and municipal levels was held by the Central Project Management Office and consultant staff. The contents of the training included the following: (1) orientation to this project; (2) management of this project (implementation system, procedure, financial management); (3) technical training (agricultural technology, water supply, organization development, and water quality inspection); and (4) formulation of a sustainability plan after the end of the project. The ratio against the revised plan for the training participants was 227%. This is because the number of staff of the Project Management Offices increased as a result of increases in the number of subprojects and the number of beneficiaries. The DAR's provincial office and the LGU's staff said that they became able to acquire knowledge and technical skill in the implementation and management of this project through the series of training sessions, resulting in the smooth implementation of this project and construction of a monitoring system after completion.

3) Agricultural and environmental development

The number of subprojects for agricultural and environmental development was 291 in the revised plan and 216 in reality, making the ratio against the plan 74%. Main reasons include the following: (1) subprojects that were highly needed initially were already carried out by other agencies because of a delay in the start; (2) the beneficiaries' interests changed because of the delay; (3) the farmland where development of demonstration farms was planned were used for cultivation of other farm products; (4) POs' cost sharing that was prescribed in the operation manual was not secured; and (5) LGUs' cost sharing and technical support were secured. In this way, it can be confirmed that the delay in starting the project influenced the production of outputs.

Farm forestry and reforestation in particular achieved lower results than the revised plan (ratio against plan: farm forestry, 15%; reforestation, 38%). According to the DAR, main reasons include the following: (1) settlement areas became private land, and public land where many trees could be planted was limited; (2) access to public land was geographically difficult and greatly increased the cost; and (3) the area of farm households' land was limited and farm households were not interested in reforestation or farm forestry that did not produce profits soon. To cope with these factors, seeds and saplings were distributed to applicants free of charge and the "Green Earth Project," whose purpose is to plant trees in vacant lots in schools, was carried out in cooperation with schools in settlement

areas.[34] This project was commended as a good example of sustainable development strategy by the National Economic and Development Authority, which is in charge of coordinating with donors for official development assistance. The beneficiary survey has also confirmed that this subproject had the effect of preventing soil flowage (89% of valid responses) and the effect on environmental conservation (96% of valid responses).

4) Procurement of equipment

Based on the needs of both the central and local offices of the DAR, vehicles, motorbikes, video equipment, and office furniture were provided to the Project Management Offices at the regional, provincial, and municipal levels according to plan to carry out and manage this project. The ratio against the revised plan is 100%. With regard to other equipment, the ratio is 106% for the provision of medical equipment to the barangay health stations in the target barangays and 134% for the provision of armchairs to schools. This is because of an increase in the number of subprojects.

Although provision of equipment for operation and maintenance (O&M) to the LGUs was not planned initially, it was decided to be provided so that the LGUs could continue to maintain the roads and the bridges after the end of this project. The ratio against the revised plan is 100%.

5) Consulting service

With regard to consulting service, the following were planned and carried out: (1) support for project management; (2) support for infrastructure development; (3) support for organization development; (4) support for agricultural and environmental development; (5) support for procurement of equipment; (6) support for environmental monitoring; and (7) provision of training to government officials. However, because of a delay in starting the project and an extension of the project period (for the reasons, see the next section), it became necessary to extend the service period accordingly. To minimize an increase in the cost caused by the extension of the project period, it was decided that, to provide necessary services, the amount of business of foreign consultants, whose unit cost is high, would be reduced, while that of local consultants would be increased (the ratio against the revised plan: foreign consultants, 83%; local consultants, 116%). According to the results of the questionnaires to the DAR, the consultants were highly evaluated and rated 4 or more on a 5-point scale in all support fields. This is because they flexibly dealt with the implementation and management in order to eliminate a delay at the beginning.

3.4.2 Project Inputs

3.4.2.1. Project Cost

The total project cost was 8,687 million yen (including a Japanese ODA loan of 6,515 million yen)

[34] With the cooperation of the principal, the pupils or students of each school planted six nursery trees distributed free of charge (four trees and two fruit trees). The cost was shared for the pupils or students' preparations for a forestation site, forestation, and daily maintenance. The pupils or students were expected to serve as guards. The Department of Education participated in the planning, preparation, and implementation of the program, and LGU selected forestation sites and produced and distributed seeds and saplings of trees.

at the time of the appraisal, while the actual cost was 6,872 million yen (including a Japanese ODA loan of 5,791 million yen). The ratio against the plan was 79%. A decrease in the cost was mainly because of exchange gains (appreciation of Japanese yen).[35] On the other hand, the total project cost increased slightly (2.06%) in terms of pesos. During the four years between 2003 and 2007 especially, because domestic currency occupied 95% of the total project cost, the project cost was influenced by a slightly higher price increase than expected, and it can be said that the project cost as a whole was almost appropriate.

Compared with the plan at the time of the appraisal, the portions of the project cost related to organizational development, equipment procurement, and consulting service was almost in accordance with the plan; and those related to infrastructure development and agricultural and environment development were lower than planned. This is because (1) the number of subprojects for infrastructure development decreased as a result of the feasibility study; (2) some subprojects were carried out by LGU at lower costs; and (3) the cost decreased as a result of decrease in the number of subprojects for agricultural and environmental development. The farm to market road and the classrooms in particular were planned to be carried out by the DPWH. In the Province of Bukidnon (36 barangays) and the Province of Agusan del Sur (27 barangays), because there were many target barangays and subprojects, and human resources in DPWH were insufficient because of *"Tulay ng Pangulo"* (a priority project led by the Office of the President), there was a delay in carrying out this project. To cope with this, the Project Management Offices assessed the LGUs' technical levels and concluded agreements with those LGUs judged to be able to carry out this project. The LGUs directly carried out construction work. Because the LGUs' construction expenses were lower than the DPWH's, they contributed to cost reduction.

3.4.2.2 Project Period

At the time of the appraisal, the project period was scheduled for 76 months between March 30, 2001 and June 30, 2007. Actually, it was 101 months between March 30, 2001 and September 25, 2009, and the ratio against the plan was 133%, far greater than the plan. This is caused by a delay in the procurement of consulting service. Concretely, because, when consulting service was procured, the amount proposed by the primarily selected consultant exceeded the expected maximum amount, it took time to examine whether the DAR was appropriate to serve as the contract partner under domestic laws in the Philippines. Ultimately, negotiations with the primarily selected consultant proceeded.

As a result, the start of this project was delayed for two years. With regard to infrastructure development, the project period was scheduled from June 2002 to December 2006 (43 months), but it actually became longer than planned, from December 2003 to August 2009 (69 months). Main reasons include the following: (1) in the Province of Agusan del Sur and the Province of Bukidnon, where the number of subprojects was high, DPWH staff members engaged in this project were insufficient; (2)

[35] The exchange rate was 2.8 yen per peso at the time of the appraisal, while the average rate during the project was 2.17 yen per peso.

technical appraisal of water supply systems took time; and (3) the Provincial Project Management Offices were short of infrastructure-related technical staff members.

3.4.3 Internal Rates of Return (IRR)

Although the internal rate of return was calculated at the time of the appraisal, the source of the data was unknown. At the time of the ex-post evaluation, actual data could not be obtained in the target sites because the type and cost of subproject differed among the target barangays. Thus no internal rate of return was calculated or analyzed.

Although the project cost was within the plan, the project period was exceeded, therefore efficiency of the project is fair.

3.5 Sustainability (Rating: ②)

3.5.1 Structural Aspects of Operation and Maintenance

At the time of the appraisal, it was agreed that, under the Local Government Code 1991, the operation and maintenance of the facilities constructed in this project were to be carried out by the following: (1) farm to market road and bridge by LGUs (municipality); (2) irrigation facilities by IAs; (3) post-harvest facilities by cooperatives; (4) water systems by water user's associations; (5) barangay health stations and multipurpose buildings by municipality LGUs; (6) school classrooms and incidental equipment by municipality LGUs; (7) nursery and demonstration farms by municipality LGUs; and (8) livestock revolving fund by cooperatives and POs. The DAR, the executing agency for this project, was to monitor maintenance. With regard to the duties related to the maintenance of the facilities developed in this project, agreements were concluded with the agencies and organization in charge before the completion of this project, and the duties were officially transferred to the above-mentioned agencies and organizations in charge of operation and maintenance. The facilities have been maintained according to the "sustainability plan" prepared by LGUs before the completion of this project. According to the results of a questionnaire survey on the beneficiaries and interviews with stakeholders, the operation and maintenance of the facilities constructed in this project have been basically carried out according to plan (Table 7).

Table 7: Current Condition of the Operation and Maintenance System
(At the Time of the Ex-Post Evaluation)

Facilities	Operation and maintenance agency/organization *	Role
Farm to market road/bridge	LGU (municipality)	Regular inspection of constructed roads, cleaning, repair
Irrigation facilities	Irrigation association (IA), members (pump-style)	Collection of water charges (NIA), cleaning, repair
Post-harvest facilities	IA, cooperative, PO, barangay/LGU	Collection of charges, repair, cleaning
Water supply systems	Water user's association, LGUs (there are also cases of joint management)	Collection of water charges, management of water supply systems, repair
Barangay health stations	LGUs and, if necessary, Dept. of Health	Dispatch of midwives and health volunteers, payment of electricity/water charges for facilities, repair, collection of expenses for childbirth (usage fees)
(Elementary/junior high) school classroom/ incidental equipment	School, LGU (municipality), Dept. of Education, Parent-Teachers Association (PTA), etc.	Regular inspection of classrooms, repair
Multipurpose building	LGU, DAR, IA	Collection of usage fees, repair
Nursery, demonstration firm	LGU (municipality)	Production of seeds and saplings, distribution of caretaker's personnel cost
Livestock extension service	Municipality/barangay LGUs, cooperative, PO	Management of revolving scheme (grasp of number of distributed livestock and health condition)

Source: Questionnaire survey on DAR; beneficiary survey (November, 2012); simplified beneficiary survey (December, 2012)

LGUs' maintenance systems and commitment in particular determine the condition of maintenance after transfer. In this project, from the stage of preparations, the settlement area development plan was formulated together with LGUs of representative residents. After the beginning of this project also, the detailed plan and the list of subprojects were formulated. During the project period, settlement area management offices were established at the municipality level and regular management of this project was carried out among the DAR, the related agencies, the heads of the LGUs, the responsible officers of relevant departments, and commissioned NGOs. When this project was completed and the maintenance of the facilities was transferred, the "sustainability plan" was attached to the written agreement to formulate the LGUs' maintenance liability. The four municipalities covered by the field survey at the time of the ex-post evaluation have maintained the commitment to the maintenance of the infrastructure facilities provided through this project and included road maintenance expenses in their annual investment plans. In Prosperidad in the Province of Agusan del Sur, the municipality LGU specified how to use roads[36] and enacted an ordinance that authorizes the Barangay Council (barangay level of LGU) to collect a penalty from a violating vehicle and allot it for maintenance. In the places

[36] Such as prohibition against running of vehicles with a volume that exceeds a certain standard after a flood.

covered by the field survey, it was confirmed that monitoring and budget allocation under the LGUs' maintenance systems has successfully maintained facilities and roads.

On the other hand, the results of the field survey revealed that there are technical and financial problems in some irrigation or water supply systems which have been managed by POs after transfer (for details, see the next section). Because the POs that are operating and maintaining these facilities participated in the training for strengthening the maintenance capacity during the project period, it was assumed that they acquired full capacity after the transfer. However, since practical techniques will be acquired through the operation of the facilities after completion, it is necessary to strengthen the monitoring and support systems, including the LGUs.

With regard to the barangays covered by the agricultural technology support and the livestock revolving fund scheme, agricultural extension workers belonging to each LGU (municipality) will give technical support and carry out monitoring, regularly visiting the barangays under their charge. However, some LGUs cannot provide full extension services to the residents because of lack of agricultural extension workers and transportation expenses. Agricultural extension was decentralized to LGUs, because personnel distribution (by area of expertise; number of staff members) and budget allocation to extension services differ according to the policy of the head of each LGU.

Although the duties of operation and maintenance have been transferred to the executing agencies and organizations, under the leadership of the DAR's Foreign Assisted Projects Office, the joint survey team that consists of DAR's regional and provincial offices, POs, the Commission on Audit, the National Economic and Development Authority, and LGUs carries out a "Sustainability Monitoring and Evaluation Study"[37] once a year to grasp the status of operation and maintenance of the infrastructure facilities developed by official development assistance. In this project, among the 770 subprojects (limited to those related to infrastructures), the survey covered six municipalities and 82 subprojects in 2011 and seven municipalities and 110 subprojects in 2012 (for the results of the survey, see "Status of Operation and Maintenance"). Therefore, no major problems have been observed in the operation and maintenance system.

3.5.2 Technical Aspects of Operation and Maintenance

According to interviews with DAR and relevant agencies and questionnaire surveys on POs, the LGUs and POs in charge of the operation and maintenance of the facilities developed by this project have basic skills in daily necessary maintenance. Table 8 below shows the current technical status of the operation and maintenance of each facility.

[37] The survey includes the following: (1) physical aspect (physical status of infrastructures); (2) functional aspect (frequency of use and function); (3) social aspect (water associations and other POs' operation and maintenance system, local governments' allocation of operation and maintenance expenses and support, rules and guidelines on operation and management). Weighting of rating is 30% for the physical aspect, 40% for the functional aspect, and 30% for the social aspect. The evaluation is quantitative and qualitative. For the strengthening of monitoring, see "Recommendations."

Table 8: Current Technical Status of Operation and Maintenance
(At the Time of the Ex-Post Evaluation)

Facilities	Current technical status
Farm to market road/bridge	The officials in charge who belong to the Municipality Engineering Office that has jurisdiction over the maintenance of agricultural roads are civil engineers with a national license. During their ordinary duties, they maintain roads and have skills necessary for the maintenance of the roads and bridges constructed by this project.
Irrigation facilities	There are few technical problems, because maintenance skills are simple, beneficiaries have studied maintenance through training, and manuals have been prepared. However, some beneficiaries of pump irrigation facilities use engines in the facilities for other purposes, resulting in shortening their usable period. It is desirable for the DAR to give technical support to problematic IAs based on the results of the NIA's survey on IA' maintenance.
Post-harvest facilities	Because the sites of facilities have been made level by the use of concrete, no special skill is needed for maintenance. It is possible to request technical support for maintenance from the Municipal Agricultural Office. Therefore, there is no serious problem.
Water supply systems	Because water user's associations actually repair broken water supply systems and use manuals, there are few problems relating to daily maintenance. However, because directors and engineers are sometimes reshuffled, it is necessary for LGUs (the Municipal Engineering Office) to monitor organizational management and technical management regularly and give necessary training. If a design change influences the status of water supply, it is necessary for an engineer from the Municipal Engineering Office to inspect the technical feasibility. The maintenance of water supply systems needs the LGU's technical support.
Classrooms/ barangay health stations, multipurpose buildings	Engineers with a national license have been stationed at the Municipal Engineering Office. Because they have skills necessary for maintenance of facilities, there is no special problem.
Nursery and demonstration farms	Each Municipal Agricultural Office has agricultural extension workers who have received necessary training at the Department of Agriculture (Agricultural Training Institute) or the Rice Research Institute. They have skills necessary for maintenance of these facilities.
Livestock extension service	Although, because of lack of agricultural extension workers, an attempt was made to train specific farmers in POs as farmer- paratechnicians and have them, in place of agricultural extension workers, teach other members about livestock breeding skill, such farmer-paratechnicians cannot deal with technical problems, such as livestock diseases. Because agricultural extension workers specialized in livestock skills are stationed at LGUs, it is possible to seek support from them.

Sources: questionnaire survey to DAR; beneficiary survey (November, 2012); simplified beneficiary survey (December, 2012)

Therefore, the POs in charge of the maintenance of some irrigation facilities and water supply systems are required to improve technical capacity. There is no serious technical problem concerning the other facilities.

3.5.3 Financial Aspects of Operation and Maintenance

The budget necessary for the operation and maintenance of the facilities is allocated from the agencies and organizations to which the operation and maintenance was transferred as shown in Table 7, according to the sustainability plan prepared before the completion of this project. Table 9 shows the financial conditions of the operation and management of the facilities developed by this project, as

derived from the results of interviews with the LGUs and POs in charge of the operation and maintenance of the facilities and questionnaire surveys to other POs.

Table 9: Current Financial Status of Operation and Maintenance
(At the Time of the Ex-Post Evaluation)

Facilities	Plan	Current status
Farm to market road/bridge	LGUs allocate expenses from the ordinary annual budget. In case of emergency, the special disaster fund is used.	LGUs (municipality) allocate maintenance expenses from the ordinary annual budget according to the sustainability plan. The amount differs according to distance and weather condition (200,000 to 7,000,000 pesos). Because it is about three years since completion of this project, no serious problem has occurred. In the future, it will be necessary to take measures if large-scale repair work is necessary because of age-related deterioration.
Irrigation facilities	Water charges are collected from irrigation association members.	In the case of communal irrigation, collected water charges are allocated to repayment of facilities construction expenses to the NIA, and maintenance. Maintenance of water channels is regularly carried out by joint work called *"Bayanihan"* (without compensation). On the other hand, if pump irrigation belongs to an individual, repayment has already been completed and the individual is in charge of the maintenance. In the case of pump irrigation in San Gabriela in the Province of Agsan del Sur, it was confirmed that because IA members could not manage to raise expenses for repair of engines, 16 of the 52 pumps have been suspended. Based on NIA's monitoring evaluation, it is necessary to enhance the ability needed for maintenance. The repayment rates of user fees were 100% in two barangays, Kuya and San Gabriela through field survey.
Post-harvest facilities	Usage fees are collected from POs (IAs, cooperatives, etc.).	The results of the simplified beneficiary survey show that about 60% of the target barangays (38 barangays) collect usage fees. Because maintenance expenses necessary for repair cannot be paid if no measures are taken, a problem will occur in long-term maintenance. It is necessary to collect usages fees thoroughly through POs' establishment of usage rules, including collection of fees.
Water supply systems	Usage fees are collected by water user's associations.	The results of the simplified beneficiary survey reveal that the water user's associations in 37 barangays collect usage fees. The amount of usage fee was determined through the residents' consensus, together with usage rules, based on the proper usage fee calculated, based on the situation of maintenance, by the NGO that enhanced the capacities of the water user's associations,. Although in the survey 34 associations answered that the amount of fee is appropriate, the recovery rate varies from 10% to 95%. Penalties for non-payment include suspension of service and imposition of interest, and 67% of the associations have imposed such penalties. It was found in the field survey that a proper fee necessary for maintenance was not fixed in Barangay Kinura. In the future, it is necessary for the associations to review the fixed fees properly and enhance the organizational and financial management ability, receiving support from LGUs.

Classrooms/armchair, barangay health stations, multipurpose buildings	LGUs and relevant government agencies allocate ordinary annual budget.	Expenses for maintenance of multipurpose facilities and facilities for barangay health stations (water supply, electricity expenses, etc.) are allocated by LGUs. Expenses for elementary schools' classrooms and incidental equipment are allocated by the Department of Education. In the field survey, it was confirmed that some LGUs did not allocate regular repair budget. Thus expenses for multipurpose facilities are made up with usage fees, expenses for barangay health stations are made up with childbirth fees, and expenses for elementary schools' classrooms and incidental equipment are made up with PTA donations. Because only about three years has passed since the completion of this project, no major repair is needed. However, it is necessary for LGUs to allocate necessary repair expenses according to plan.
Nursery and demonstration farms	LGUs allocate ordinary annual budget.	The results of the field survey confirmed that budgets were distributed to nursery (including distribution of seeds free of charge) and to demonstration farms under the control of LGUs according to the sustainability plan. Some LGUs have expanded the livestock revolving fund scheme.

Sources: questionnaire survey to DAR; beneficiary survey (November, 2012); simplified beneficiary survey (December, 2012)

Note: Because a revolving fund scheme is applied to livestock extension services, collection of fees is not included.

As a result of check of financial sustainability at the time of the ex-post evaluation, it has been found that there is no serious problem in the farm to market road and bridge, the school classrooms, the barangay health stations, the multipurpose buildings, and the nursery and demonstration farms, because many competent LGUs have allocated necessary expenses from ordinary annual budgets according to the sustainability plan. However, some farm to market roads and bridges have not been maintained because of insufficient allocation of expenses. In addition, there is room for improvement in the irrigation facilities, post-harvest facilities, water supply systems, and others that POs have operated and maintained. With regard to the financial system for operation and maintenance that was agreed among the relevant agencies and organizations at the time of delivery of the facilities,[38] it was agreed that usage fees would be collected from users of each association, and some of the collected fees would be used as operation and maintenance expenses, such as personnel expenses, repair expenses, and parts purchase expenses. However, some facilities have problems, such as failure to collect fees and a low recovery rate, and have not secured sufficient operation and maintenance expenses. In the future, it will be necessary for the POs to enhance their financial management ability through the support of the LGUs.

3.5.4 Current Status of Operation and Maintenance

To grasp the current status of the operation and maintenance of the varied subprojects more comprehensively, the current status of the operation and maintenance is evaluated comprehensively

[38] DAR, NIA, and IAs in the case of irrigation facilities; DAR, local governments, and POs (IAs, cooperatives, etc.) in the case of post-harvest facilities; DAR, local governments, and POs (water supply management associations) in the case of water supply facilities.

based on the following: (1) the results of the already-described "Sustainability Monitoring and Evaluation Survey" that DAR conducts every year; (2) the results of the simplified beneficiary survey and the beneficiary survey; and (3) the results of field interviews and the evaluator's observation.

Table 10 shows the results of the Sustainable Monitoring and Evaluation Survey conducted in 2011 and 2012. The current status of the operation and maintenance of the infrastructure facilities can be grasped as relative and objective data. Because the target areas differed between 2011 and 2012, the results of evaluation of each subproject also differed. Generally, however, the current status was evaluated at the second point, "Fair," on a four-point scale.

Table 10: Results of Sustainability Monitoring and Evaluation

Subproject	2011			2012		
	No of subproject	Index	Rating	No of subproject	Index	Rating
Farm to Market Road and Bridge	36	2.19	Fair	34	1.65	Fair
Irrigation Facilities	2	1.87	Fair	2	1.98	Fair
Water Supply Systems	6	2.14	Fair	6	1.75	Fair
Barangay Health Stations	12	1.52	Fair	21	1.49	Fair
School (Classroom)	20	1.00	Good	34	1.62	Fair
Multi-purpose Building	7	1.78	Fair	2	1.95	Fair
Postharvest Facilities	0	NA	NA	11	1.64	Fair
Total No of subproject/Average	**83**	**1.75**	**Fair**	**110**	**1.73**	**Fair**

*Rating: Good: 0-0.99, Fair: 1-2.49, Bad: 2.50-3.49, Seriously Bad: 3.5-4.0

Source: DAR (2012) Foreign-Assisted Projects: Sustainability Monitoring and Evaluation Report: Status of Completed Physical Infrastructures CY 2011 and CY 2012

Because the results of the survey in 2011 were obtained, they can be shown in detail here. While classrooms were highly evaluated, farm to market road and water supply systems were somewhat unfavorably evaluated. This is because of the following: (1) caves-in on the surface of pavement; (2) growth of plants on road shoulders; and (3) accumulation of sand and fragments on excretory passages. Because roads differ according to weather conditions and deterioration, it is necessary to allocate appropriate budget according to the current status of roads. With regard to the water supply systems, the following problems have arisen: (1) a decrease in the volume of water; (2) non-collection of fees; and (3) breakdown. Because water supply systems require civil engineering ability and management ability, the training given during this project is insufficient. Therefore, LGUs' monitoring and technical guidance and other support will become necessary in the future.

The results of a survey on beneficiaries' awareness conducted as a part of the simplified beneficiary survey are almost the same as the results of the above-described survey by the DAR (Table 11). The degree of beneficiaries' satisfaction with the current status of maintenance of farm to market road tends to be relatively low. The answers concerning the degree of satisfaction with the maintenance of farm to market road are divided into "Satisfactory" and "Unsatisfactory." The reasons for the latter include the following: (1) construction was problematic; (2) broken by landslide; and (3) inappropriate maintenance of roads because of insufficient allocation of expenses by LGUs.

Table 11: Level of Satisfaction for O&M Status

Subproject	Valid Response	Level of Satisfaction for O&M Status
Farm to Market Road and Bridge	76	50%
Irrigation Facilities	14	79%
Postharvest Facilities	58	91%
Water Supply System	42	81%
Barangay Health Station	70	93%
School (Classroom)	87	92%
Multi-purpose Building	12	75%
Average	**51**	**80%**

Source: DAR (Simplified beneficiary survey at ex-post evaluation)

The degree of satisfaction with the current status of maintenance of water supply systems and irrigation facilities is relatively low. With regard to water supply systems, 81% answered "Highly satisfactory" or "Satisfactory" with the current status of maintenance. The reasons for answering "Unsatisfactory" include the following: (1) organizations' lack of management ability; (2) shortage of water because of changes in water pressure and volume as a result of some users' change from Level 2 (joint faucet) to Level 3 (individual faucet); (3) dysfunction of filtration equipment; and (4) insufficient chlorination. The beneficiaries who answered "Satisfactory" with the current status of maintenance of irrigation facilities account for 79% of the total. The reasons for "Unsatisfactory" include the following: (1) damage to hoses of pump irrigation equipment; (2) cracks in side ditches; and (3) damage to irrigation canals because of earthquakes. Since these problems have a long-term effect on the operation and maintenance of facilities, it is necessary to strengthen the POs' maintenance systems further through technical support for the LGUs' organizational and financial management.

Some problems have been observed in terms of the technical and financial conditions of the maintenance and the current status of the operation and maintenance of the farm to market road therefore sustainability of the project effect is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

DAR carried out this project in 123 barangays in eight settlement areas, special ARC on Mindanao Island to increase farmers' income from agriculture and improve access to infrastructures, such as roads and bridges, barangay health station, and school buildings. The objective of this project is to promote poverty reduction in the special ARCs in Mindanao where priority on development is lower than in other areas and the poverty incidence is higher. This objective is consistent with the Philippine Government's development policy and needs and the Japanese Government's aid policy to the Philippines. Therefore, the relevance of the project is high. The effectiveness and impact also are high, for the project generated the following effects: reduction in the cost and time of delivery of farm products as a result of the construction of rural roads and bridges, improvement in market access, an increase in farmers' income from agriculture as a result of an increase in farmers' motivation for

production of farm products, improvement in the access to social infrastructures for public health and education, improvement in total income and living environment, and revitalization of the local economy. Although the project cost was far lower than estimated because of a change in the exchange rate, the efficiency was fair because the project period was longer than planned as a result of a delay in starting the project. Sustainability in the future is judged to be fair because of minor problems in technology and finance for management and maintenance. In light of the above, the Project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) Strengthening of the monitoring system for the whole project

In this project, the "sustainability plan" was prepared to specify the transferee/responsible agency, period, budget allocation, and activities of each subproject, was attached to the facilities and project completion report at the time of the completion, and was agreed upon and signed by the DAR and the LGUs. The attempt to secure the sustainability of the facilities and the project transferred to the LGUs based on lessons learned from past similar projects in the Philippines is worthy of evaluation.

On the other hand, the maintenance of the subprojects has been carried out by LGUs or POs according to the "sustainability plan," but some of the subprojects have technical and financial problems. Although the DAR has regularly carried out sampling-like sustainability monitoring and evaluation study on infrastructure facilities only, the number and frequency of surveys are small and resultant information has not been fully shared among the persons concerned. Therefore, the DAR and the responsible agencies such as LGUs and POs should strengthen the monitoring system by the following measures: (1) carrying out regular monitoring according to the "sustainability plan," including agricultural and environmental development; (2) arranging problems and issues based on the results of the monitoring and sharing information with relevant agencies (NIA and DPWH) and LGUs; and (3) encouraging relevant agencies and LGUs to take necessary measures for maintenance.

(2) Strengthening of the operation and maintenance system for water supply systems

In the Philippines, it has been stipulated that water user's associations are responsible for maintaining barangay water supply. In reality, however, this survey also found that water user's associations have constraints in their technical and financial capabilities. Practical training was not included in the operation training held by an NGO during the project period. Therefore, the DAR should survey the current status of maintenance of the water supply systems developed by this project, specify the role of LGUs in the facilities with which municipality LGUs are not concerned at all, have the Municipal Engineering Office monitor facilities and associations regularly, and establish a system for giving technical advice.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

(1) Formulation of a strategic plan that produces synergetic effect among subprojects

This project has the following characteristics: the purpose is poverty reduction; the project deals with development issue in rural society and local diversity; it applies "comprehensive approach" and "site-specific approach"; and subprojects in various sectors are selected and carried out based on the needs of beneficiaries and relevant agencies, such as LGUs and government agencies in each sector. In this project, however, the project approach did not fully produce synergetic effect in some target barangays. For example, when technical training was held concerning farm products other than main ones, the introduced agricultural technology was not firmly established, for farm products were not selected from the viewpoint of marketing, the training period lasted for only one cropping period, and extension services and market support were insufficient.

To bring about synergetic effect among the subprojects, it is necessary to formulate a more strategic plan, including not only the beneficiaries' needs but also the composition of the subprojects, the implementation process, and the selection of target beneficiaries. For example, even if farm to market road is constructed and agricultural technology training is provided concerning farm products other than main ones, in the absence of any market viewpoint or support, this will not lead to an increase in production volume, sales of farm products outside the area, and an increase in income from main farm products and others. If individual farmers produce a small quantity of commercial crops, because they do not have buyers and negotiation capacity/skill that lead to an increase in income, it is desirable to formulate a strategic plan that provides subprojects that connect production with market, including the following: the identification of commercial crops based on technical feasibility, such as marketing, weather, and soil[39]; the strengthening of organization for joint trade; the development of joint markets.

(2) Development of LGUs' commitment to ensuring of sustainability

In similar projects in the Philippines, LGUs' commitment is the determining factor for ensuring the sustainability of the project effect. In the Philippines, facilities are maintained by LGUs and POs according to the Local Government Code. In this project, a development plan was formulated with the participation of LGUs and representative residents, and subprojects were identified. During the project period, the implementation of this project was regularly managed among the executing and other relevant agencies, including municipality LGUs. Moreover, when the maintenance of the facilities was transferred, the "sustainability plan" was attached to the written agreement with the LGUs to specify roles and responsibilities in operation and maintenance of LGUs. Thus it was confirmed that, in the four municipalities covered by the field survey for the ex-post evaluation, road maintenance expenses were included in municipality and LGUs' annual investment plans, and the status of maintenance of facilities and roads was kept well. However, because the POs in charge of the operation and maintenance had constraints in their technical and financial capacities, the operation and maintenance

[39] In addition, technical inspection based on the local characteristics (weather, soil, etc.) is needed.

of facilities were insufficient. Consequently, even when the POs maintain facilities, the LGUs' technical guidance and monitoring are important for ensuring the sustainability.

In this way, in order to increase the LGUs' commitment, it is desirable for the LGUs to actively participate in the planning, implementation, and monitoring evaluation of the project from the beginning and, after the completion, integrate the sustainability plan prepared in this plan into the LGUs' development plans and annual investment plans.

(3) Project design that considers i the assistance absorptive capacity of the POs in the target areas

In a poverty reduction and rural development project that consists of many small-scale subprojects, it is necessary to select subprojects by taking into consideration the absorptive capacity of the POs in the target areas. This project deals with various matters, ranging from the improvement of infrastructures, such as roads, irrigation, and water supply, to agricultural support, such as agricultural technology, livestock revolving fund scheme, and agro-forestry. In some cases, a PO carried out more than 10 subprojects during the course of two to three years. At the time of planning, it was planned that the POs would receive a capacity assessment by NGO according to the Implementation Manual and could become executing agencies if they satisfied the standards. However, because the number of POs that satisfied the standards was small in the target areas, it was necessary to form or strengthen POs newly. Although training on the strengthening of organizations was held in this project, the occurrence of project effect and impact had negative influence because of time constraints and lack of capacities of organizations, such as IAs and cooperatives. Moreover, in the case of cooperatives, because it was not clear what function was given to them, necessary capacity development could not be held, and group activities were not carried out concerning agricultural development, such as joint trade. Therefore, when subprojects are selected, it is necessary to include in the selection standards not only needs of the residents and technical and financial feasibility but also the evaluation of the existing capacities of the POs, to construct a support system, and to continuously enhance their capacities if needed.

(4) Securing of the quality of input materials for earlier emergence of effect

With regard to the quality of input materials for agricultural production (such as livestock), to determine the time of emergence of project effect and the beneficiaries' motivation for production, the executing agency should procure and distribute such kinds (age, genealogy, etc., in the case of livestock) of materials that would allow project effect to emerge earlier according to the beneficiaries' needs. At the time of planning, because the target areas of this project had low agricultural productivity, the introduction of a livestock revolving fund scheme was determined to secure farmers' additional income. However, procured or distributed livestock had many problems. For example, it would take a few years to reach the breeding season, or the breeding season had already passed. As a result, the estimated effect of increasing income was limited. According to the DAR, although the main reasons include a rise in market prices, earlier emergence and actual feeling of effect will lead to not only the beneficiaries' motivation for production but also the POs' continuation of their activities. Therefore,

the executing agency is required to carry out flexible project management, including adjustment of quantity after full understanding of effect, and request for an additional fund from the project management office.

(5) Setting up of the operation effect indicator (income) in the poverty reduction project, and the measuring method

If income is used as an operation and effect indicator, it is desirable to design and carry out a baseline survey based also on the budgetary and technical feasibility of the impact survey. Because this project meets the needs of the residents in the target areas, the beneficiaries' degree of satisfaction is high. On the other hand, because subprojects differ among the target areas, it is difficult to set up operation effect indicators common to the target areas. In addition, because there are many indicators on an output basis for each subproject, monitoring on an outcome basis is difficult. Income is one of the central indicators for measuring the effect of this project whose purpose is poverty reduction, and data analysis of income requires a household survey that has statistical significance. Accordingly, at the time of planning, it is necessary to take the following measures to create survey designs that enable direct use of baseline survey data for succeeding surveys: (1) applying the same sampling method to both the baseline survey and succeeding surveys; (2) securing samples, which would provide statistical significance to the extent possible; and (3) carrying out longitudinal study of the persons covered by the baseline survey. Succeeding surveys should be carried out even after the completion of this project.[40]

[40] Although the baseline survey and the impact survey were carried out in this project, they differed in survey method, such as the number of samples. Because the impact survey was carried out during this project in 2007, it is not considered the real "impact survey," which is carried out when no input is made after the project.

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Output		
＜Infrastructure Development＞		
Farm to Market Road	313 km	354 km
Farm to Market Bridge	1,587 lm	1,749 lm
Water Supply System	41 sites	39 sites
Irrigation Facilities	1,717 ha	2,732 ha
Barangay Health Station	89 sites	96 sites
Multi-purpose Building	16 sites	20 sites
Postharvest Facility	74 sites	111 sites
School（Classroom）	405 rooms	632 rooms
Multi-purpose Pavement	91 sites	91 sites
＜Institutional Development＞		
No of Organization	587 organizations	1,792 organizations
Farmer Para-Technician Trained	246 persons	290 persons
Farmers Trained	44,251 persons	72,193 persons
Training for PMU	26 sites	26 sites
Training for PMU officers	1,662 persons	4,599 persons
＜Agricultural and Environmental Development＞		
Reforestation	26 sites	10 sites
Agro-forestry	65 sites	10 sites
Fruits-tree	64 sites	27 sites
Demo Farm	66 sites	100 sites
Nursery	8 sites	10 sites
Livestock Development	62 sites	59 siets
＜Procurement of Equipment＞		
Equipment of PMU	11 sites	11 sites
Equipment of Settlement Management Unit	16 sites	16 sites
School Armchair	18,225 units	24,750 units
Medical Equipment	89 sites	94 sites
O&M Equipment of LGU	16 sites	16 sites
＜Consulting Service＞	Foreign experts: 184M/M Local expert: 468M/M	Foreign experts: 153M/M Local expert: 541M/M
2. Project period	March, 2001～June, 2007 (76 months)	March, 2001～September, 2009 (101months)
3. Project Cost		
Amount paid in Foreign currency	2,928 million yen	1,638 million yen
Amount paid in Local currency	5,759 million yen	5,225 million yen
Total	8,687 million yen	6,872 million yen
(Japanese ODA loan portion)	6,515 million yen	5,791 million yen
Exchange Rate	1 Philippine peso= 2.8 yen (January, 2000)	1 Philippine peso = 2.17 yen (2003-2008 average)

Republic of the Philippines

Ex-Post Evaluation of Japanese Technical Cooperation Project

Project for the Improvement of Packaging Technology for Philippine Food Products in the Regions

External Evaluator: Hisamitsu Shimoyama, IC Net Limited

0. Summary

The Project for the Improvement of Packaging Technology for Local Food Products was implemented by the Package Technology Division (PTD)[1] of the Department of Science and Technology (DOST) for the purpose of improving food packaging technology in the Philippines. The ex-post evaluation study (hereinafter referred to the study) found that relevance, effectiveness, impact and sustainability of the project are high. In terms of relevance, the evaluation study confirmed that the project is highly consistent with all the relevant areas, i.e., the development policy and the development needs of the Philippines and the relevant sector, as well as Japan's ODA policy. The study reconfirmed that the Project Purpose and all Outputs had been achieved by the conclusion of the project. In addition, given that the Overall Goal, realization of which had been anticipated by the time of the study in 2012, had also been achieved, the effectiveness and impact of the project were also found to be high. As for sustainability, it was also confirmed that the policy and institutional, organizational, technical and financial aspects of the project effects would likely be sustained. On the other hand, given the delay in the dispatch of experts at the start of the project, and given that the inputs from Japan exceeded the budget, the efficiency of the project was found to be fair. One of the contributing factors in producing these effects is that the executing agency had steadily carried out necessary measures during the planning, implementation and post-project stages. In light of the above, this project is evaluated to be highly satisfactory.

Project Location

Food Packaging Produced by the Executing Agency

[1] Package Technology Division (PTD): From the planning stage until the conclusion of this project, the executing agency was a project-based organization called the Packaging Research and Development Center (PRDC). Following the conclusion of the project, the PRDC was incorporated in August 2009 into DOST as a result of a reorganization, and it was renamed the Package Technology Division (PTD). In this report, the External Evaluator has used the name PRDC as it appears in any original text only when quoting the PDM.

1. Project Description

1.1 Background

In the Philippines, small and medium enterprises (SMEs) in the food industry constitute one of the sectors that contribute most to the national economy. According to data from the Philippine National Statistics Office, around the year 2000 when the request for the project was made, food SMEs accounted for more than 40% of gross regional domestic product (GRDP); in provincial areas in particular, they were a significant source of employment. However, the growth and development of food SMEs were being hampered by such factors as poor packaging and short storage periods. With the exception of some large enterprises in urban areas, most food SMEs in provincial areas found it difficult to acquire information, technology and materials for packaging. This consequently presented various other issues, such as being unable to meet the packaging standards required by major supermarkets in the Philippines as well as by export-destination countries. In 1999, the DOST established the Packaging Research and Development Center (PRDC) for the purpose of improving the packaging technology used by food SMEs. At the time of the request for the project, technical support services provided by the PRDC had reached a certain level, such as providing guidance on packaging technology suited to the individual products of food SMEs, and working on designing food labels. However, in order to satisfy the further packaging needs of its food SME clients, the executing agency needed to urgently strengthen its human capacity and facility functions. Specifically, since the packaging technology to be applied differs from food product to food product, it was necessary to develop technology that accommodates individual food products. Furthermore, the abilities of designers had to be strengthened, and better quality labels needed to be produced.

Under such circumstances, the Government of the Philippines made a request to the Government of Japan for technical cooperation aimed at capacity-building designed to improve packaging technology for food SMEs in provincial areas. In response to the request, the Japan International Cooperation Agency (JICA) conducted a study to design a project. Then JICA consulted with Philippine officials and decided to implement a JICA technical cooperation project called the "Project for the Improvement of Packaging Technology for Philippine Food Products in the Regions," with the PRDC as the executing agency.

1.2 Project Outline

Overall Goal		Increase marketability of SME food products in local and export markets.
Project Purpose		Enhance the capacity/capability of PRDC to improve and upgrade the packaging technologies services to SMEs in the regions.
Output	Output 1	PRDC management and staff's capability in planning, monitoring and managing information for project management are enhanced.
	Output 2	PRDC technical staff's skills and knowledge for appropriate food packaging technologies are strengthened.
	Output 3	PRDC graphic design staff's skills and knowledge for appropriate food packaging/label designs are improved.

	Output 4	Strengthened PRDC staff's capability to provide packaging consultations and field activities for client/potential client SMEs in the region.
Inputs		[Japanese side] Experts: 15 (all short-term experts) Trainees received: 11 (training of counterparts in Japan) None for third-country training programs Equipment: 200 million yen [Philippine side] Counterparts allocated: 27 Equipment (quantity ratio and cost ratio are unknown) Land and facilities: Project office, utilities Costs of local operation, salaries of counterparts, budget for training
Total Cost		Approximately 410 million yen
Period of Cooperation		June 2005–June 2009
Partner Country's Related Organization		Package Technology Division (PTD), Department of Science and Technology (DOST)
Partner Country's Supporting Organization		None in particular
Related Cooperation		Project for Enhancing the Competitiveness of Fresh and Semi-Processed Agricultural Products through the Application of Appropriate and Sustainable Packaging Technology (February 27, 2013 - March 31, 2017)

1.3 Outline of the Terminal Evaluation

1.3.1Prospects for Achievement of Overall Goal at the Time of Terminal Evaluation

At the time of the terminal evaluation, it was unknown whether the Overall Goal was likely to be achieved. Another impact of the project was that the executing agency was able to transfer retort,[2] high-barrier[3] and other packaging technology to clients. Furthermore, seminars on packaging were able to be conducted jointly, in cooperation with the packaging coordinators assigned to the DOST Regional Offices.

1.3.2 Prospects for Achievement of Project Purpose at the Time of Terminal Evaluation

At the time of the terminal evaluation, which was conducted in June 2009, because two of the relevant indicators[4] had been achieved, it was determined that the Project Purpose had been achieved.

1.3.3 Recommendations at the Time of Terminal Evaluation

The recommendations made to the executing agency and to the DOST at the time of the terminal evaluation are as follows.

[2] The technology of making foods shelf stable using a flexible laminated packaging that can withstand high pressure and temperature conditions inside a retort chamber, and hermetically sealed.

[3] The technology of using film with significantly low oxygen and water vapor permeability in packaging.

[4] The indicators for the Project Purpose were as follows:

Indicator 1: The range of PRDC services has expanded by 25% satisfying the needs of SMEs clients in the region by the end of the Project.

Indicator 2: Satisfaction rate of PRDC's client SMEs are marked more than 80% of items on the "List of services on transferred technologies by the Project" by the end of the Project.

Recommendations at the time of the terminal evaluation	
Recommendations to the executing agency	
1	The PRDC should research new packaging technologies, and should maintain and improve its technical capacity through research and training in cooperation with related agencies.
2	To secure the impact and sustainability of the project, the PRDC should further strengthen cooperation with such organizations as the regional offices of each government agency, local government units, and toll packaging centers.
3	The PRDC should provide market-oriented and competitive services, such as high market growth, high-impact research and development, strengthening of the capabilities for packaging design, and improvement of facilities at the toll packaging centers.
4	The PRDC should continue to enhance the integrated database so that it can be used as a management information system.
5	To increase the visibility of PRDC services and the degree of achievement of the Overall Goal (expansion of markets for products of food SMEs), the PRDC should enable laboratory facilities to gain third-party international certification so that they can prove their international competitiveness objectively.
Recommendations to the DOST, the organization above the executing agency	
6	The DOST should take continuous budgetary measures for managing the PRDC and maintaining equipment.
7	The DOST should approve the PRDC's shift from a temporary agency to an official department in order to secure its institutional and organizational sustainability.

Source: The Terminal Evaluation Report

2. Outline of the Evaluation Study

2.1 External Evaluator

Hisamitsu Shimoyama, IC Net Limited

2.2 Duration of Evaluation Study

In conducting the study, the External Evaluator performed an evaluation study as follows:

Duration of the Study: June 2012–June 2013

Duration of the Field Study: January 28–February 9, 2013 and March 19–23, 2013

3. Results of the Evaluation (Overall Rating: A[5])

3.1 Relevance (Rating: ③[6])

3.1.1 Relevance with the Development Plan of the Philippines

According to the Medium-Term Philippine Development Plan 2004–2010, which was published at the time this project was being planned in 2004, development support for SMEs was regarded as one of the priorities to be tackled by the Philippine Government. The plan indicated that approximately 70% of the nation's workforce was employed by SMEs, and that approximately 50% of those were employed in the food industry. Furthermore, the DOST had been implementing support measures through the government-funded Small Enterprise Technology Upgrading Program (SET-UP). SET-UP

[5] A: Highly satisfactory; B: Satisfactory; C: Partially satisfactory; D: Unsatisfactory

[6] ③: High; ②: Fair; ①: Low

is a nationwide strategy to encourage and assist SMEs to adopt technological innovations to improve their operations and thus boost their productivity and competitiveness. Moreover, the SME Development Plan 2004–2010, which had been formulated by the Department of Trade and Industry (DTI), considered the improvement of packaging technology as an essential element for the growth of SMEs. All of these policies had been carried out consistently from the start of the project in June 2005 until its conclusion in June 2009. Since the aim of this project is support for food SMEs, it has been consistent with Philippine development policies throughout the project period.

3.1.2 Relevance with the Development Needs of the Philippines

Below is a comparison of the number of food SMEs in the Philippines between 2005 and 2010.

Table 1: Comparison of the Number of Food SMEs in the Philippines

	2005	2010
Number of SMEs	51,863	49,518

Sources: Number of food SMEs in 2005 obtained from detailed planning survey; 2010 figures obtained from Micro, Small, and Medium Enterprise Development Plan for 2011 to 2015, DTI.

During this project from 2005 to 2009, 40–50% of the SME workforce was engaged in the food industry. In actual figures, there were about 50,000 food SMEs throughout the project period. Up until around 2005, large commercial facilities, such as shopping malls and supermarkets, had assumed greater prominence, and producers for packaging are required to meet nutritional labeling and other legal standards. Consequently, improvements in packaging technology became crucial. These SMEs produced small volumes of goods and had no need for large amounts of packaging materials, but private-sector packaging vendors requested them to purchase at least 100,000 pieces. Most food SMEs, however, found it difficult to place orders of 100,000 pieces of packaging material due to lack of funds. Consequently, there was a need for a service to develop packaging standards which suited the size and purpose of the products sold by these SMEs, and to sell packaging materials in quantities that these SMEs could deal with. Certain foods also require bagging equipment, but due to the weak financial footing of these SMEs, they also found it difficult to purchase this equipment themselves.

Some local government units established toll packaging centers to support these SMEs in provincial areas. These were designed to provide the fee-charged basic packaging technology required by most SMEs in provincial areas, such as packing food into bags. The executing agency provided technical support to those local governments that were operating the toll packaging centers. The support ranged from establishment to management. Since the executing agency primarily targets clients on the outskirts of Manila and those enterprises that needed packaging for food products which could not be accommodated using existing technology, it has a complementary relationship with the

centers established by local government units. Furthermore, only three[7] major toll packaging centers were established during the project period, and so even if the executing agency is also included, they did not satisfy the needs for the provision of technology and for the trading of packaging materials, which were required by all or the majority of the roughly 50,000 food SMEs. The needs were consistently high.

Furthermore, the DOST, the organization responsible for the PRDC, had 17 Regional Offices nationwide, and at the start of the project, packaging coordinators had been assigned to these DOST Regional Offices. However, at the time, the Regional Offices did not have sufficient capacity to provide technical services to local clients, and the executing agency ended up assuming the role of providing services directly to clients in provincial areas.

In light of the above, the project was completely consistent with the development needs.

3.1.3 Relevance with Japan's ODA Policy

According to the FY2004 country assistance program that was current at the time of planning, a priority of Japanese ODA to the Philippines was "strengthening the economic structure of the Philippines to provide for sustained growth." Furthermore, poverty reduction was listed in Japan's assistance policies for the Philippines. Thus the approach adopted by this project of using improvements in packaging technology to develop SMEs in provincial areas, which, in turn, would promote employment and improve the incomes of employees and thereby reduce production, was consistent with Japan's policy.

In light of the above, this project has been fully consistent with the Philippines' development policy, its development needs, and Japan's ODA policy. Therefore its relevance is high.

3.2 Effectiveness and Impact[8] (Rating: ③)

3.2.1 Effectiveness

3.2.1.1 Project Outputs

(1) Output 1 was "PRDC management and staff's capability in planning, monitoring and managing information for project management are enhanced." Output 1 was achieved because all the set indicators were met. The achievement of each indicator is as follows.

Indicator 1-1 was "Regular monitoring activities for each technical group are implemented by the Project team by February 2008." Before the end of the project, the team began holding weekly staff meetings for the purpose of monitoring of technology including the project progress. Reports on the progress of activities were also shared among officials at the quarterly meetings of the Joint Coordinating Committee (JCC).

[7] By the time of this study, in addition to the three paid packaging centers mentioned above, it seems that several small-scale paid packaging centers had been established. However, as there was no request for assistance or explanation on the management situation from the local governments to DOST or to the executing agency, the actual conditions have not been ascertained.

[8] This rating has been assessed by taking impact into account when determining the effectiveness.

Indicator 1-2 was "In PRDC, integrated database of provided services in use for Management Information Systems by the end of December 2008." Despite the hint of delays in updating the data, questionnaire responses provided by the executing agency confirmed that, before the conclusion of the project, the database was being used as a management information system. For example, by ascertaining the technology required by clients through counseling, and by accumulating this information in a database, it was then utilized for the purpose of specifying the new technologies for research and development.

Indicator 1-3 was "More than 80% of planned activity is implemented as the plan by the end of the Project." By the time of the terminal evaluation, the only activities that remained were development of software for operating the integrated database and training on packaging contaminants in food. All the activities were completed during the project period.

(2) Output 2 was "PRDC technical staff's skills and knowledge for appropriate food packaging technologies are strengthened." It was achieved because all the indicators were met. The achievement of each indicator is as follows.

Indicator 2-1 was "An implementation plan for technology transfer is developed by the Project team annually." By the time of the terminal evaluation, the implementation plan was being updated every year.

Indicator 2-2 was "Three (3) technical staffs are able to apply to Philippine food products (details are listed in the "final output" of PRDC staffs") on High Barrier or Dry/Semi-dry foods technology by June 2009." Three technical staff members acquired skills for applying high-barrier technology to cashew nuts, brownies, bread and other dried and semi-dried foods.

Indicator 2-3 was "Three (3) technical staffs are able to apply to fresh cut vegetables (details are listed in the "Final output" of PRDC staffs capacity) on MAP technology[9] by June 2009." Three technical staff members acquired skills in MAP, and although still at the testing level, had applied the technology to the packaging of lettuces and pineapples.

Indicator 2-4 was "Three (3) technical staffs are able to apply on developing retort foods using different type of packaging (details are listed in the "Final output" of PRDC staffs capability) on Retort technology by July 2008." Three technical staff members acquired retort skills, enabling the processing of foods such as sweet corn, cassava cake, and grilled chicken.

[9] Modified atmosphere packaging (MAP) technology involves the enclosure of a food in a package in which the atmosphere inside the package is modified or altered to keep the freshness and extend product shelf life.

Indicator 2-5 was "Five (5) technical staffs are able to design corrugated box with appropriate cushion for fresh fruit transport packaging (details are listed in the "Final output" of PRDC staffs capability) on Transport Packaging technology by June 2009." Five technical staff members acquired transport packaging skills, and designed and market-tested packaging materials for the transport of strawberries. These skills were also used for mango and banana packaging.

Even after the conclusion of the project, research on these transferred technologies is continuing, funded by the DOST, and the range of items to which each technology can be applied is expanding. For example, high-barrier technology has become applied to dried fish and to *pastillas*, a unique Philippine dairy product. MAP technology has been turned to use on fresh mushrooms and other types of mushroom products, and research is also underway for technology that uses MAP to extend the shelf life of various items. As for retort technology, efforts are underway in the development of ready-to-eat foods, and they are planning to approach the private sector with proposals of putting the ready-to-eat foods in the market. Progress has also been made in the application of transport packaging technology in non-food sectors such as furniture, and research has commenced for applications of the technology to fresh flowers, fruits and vegetables.

(3) Output 3 was "PRDC graphic design staff's skills and knowledge for appropriate food packaging/label designs are improved." It was achieved because all the indicators were met. The achievement of each indicator is as follows.

Indicator 3-1 was "An implementation plan for technology transfer is developed by the Project team annually." During the implementation period, the project team, including the executing agency, formulated implementation plans. Since the conclusion of the project, the executing agency has formulated a similar plan every year.

Indicator 3-2 was "Four (4) PRDC designers will create two (2) high quality packaging designs by June 2009." Technology was transferred to four[10] designers, and during the implementation period, of the designs developed at the executing agency, nine received awards for design excellence at international food fairs[11] and similar events. Thus it is fair to say that they have developed high-quality packaging designs.

Moreover, even after the conclusion of the project, the designers have endeavored to improve their skills, receiving informal advice at every possible opportunity from the expert who was dispatched from JICA during the project. At DOST Regional Offices, in order to meet the demand for food packaging design, progress has also been made in transferring technology to contracted designers, thereby demonstrating the self-sustainability of technology.

[10] Following the conclusion of the project, one designer resigned. As of 2012, three designers remained in service, and it was expected that one new designer would be employed in April 2013.
[11] International Food Exhibition (IFEX) 2005, 2007, 2008. 2009 and 2011.

Since the conclusion of the project, as shown in Table 2, the number of opportunities has declined for the executing agency to provide designs directly to clients.

Table 2: Number of Clients to Whom the Executing Agency Has Provided Designs

Year	Number of clients	Number of designs
2004	168	No information
2005	152	
2006	98	
2007	68	
2008	72	
2009	66	105
2010	40	95
2011	46	82
2012	46	78

Sources: 2004–2008 figures obtained from the Terminal Evaluation Report;
2009‐2012 figures obtained from questionnaire survey at the time of the study.

The decrease outlined above in the number of clients served by the executing agency is due to two reasons. First, the opportunities for the executing agency to directly respond to the requests of clients in provincial areas became decreased. This is as a result of systems being put in place in provincial areas whereby design work can be quickly carried out by local designers trained by the executing agency in response to the requests of local clients.[12] Second, in addition to providing services to the private sector, the executing agency has participated in market development projects in collaboration with the DTI, promoting sales of local Philippine specialties. As part of this undertaking, it has also been entrusted with government business, such as developing packaging designs befitting the Philippines. Thus, in some respects, the nature of the executing agency's business is changing.

(4) Output 4 was "Strengthened PRDC staff's capability to provide packaging consultation and field activities for client/potential client SMEs in the region." It was achieved because all the indicators were met. The achievement of each indicator is as follows.

Indicator 4-1 was "PRDC staffs are able to provide appropriate consultation on food packaging technologies at PRDC and in the regions by June 2009." Staff members at the executing agency have since been able to provide consultation on food packaging technology in relation to retort packaging, MAP, high-barrier/active packaging,[13] transport packaging, graphic design and product branding.

[12] At the time of the study, efforts were made to study the number of clients receiving design services at Regional Offices. Although some regions did not provide information, most of the DOST regional offices sent their information and the data.
[13] Active packaging interacts with the product by actively regulating conditions of the packed food product, thereby extending product shelf life and improving product safety and quality.

Indicator 4-2 was “PRDC staffs are able to provide appropriate lectures on food packaging technologies in the seminars organized in regions by June 2009.” The lectures provided prior to the start of the project were limited to the basics of packaging and appropriate labeling. Since the implementation of the project, the PRDC staff members have been able to give lectures on attractive packaging designs, brand development, new packaging technology and transport packaging.

Indicator 4-3 was “80% of the participants of seminars in the regions evaluated improvement of the lectures / workshop / consultation on packaging technologies compare with its in 2005 by June 2009” Although a comparison was not possible because the 2005 data is not available, according to questionnaires taken at the time of seminars held in June 2009, the overall rating given by 82 participants was 4.55 points out of a possible 5 points. Satisfaction with the quality of speakers in particular was very high. According to data obtained through the study, the executing agency held 54 seminars between January 2009 and December 2012, and the average satisfaction indicated by participants in these seminars came to 4.36 points out of a possible 5 points, suggesting that a high level of satisfaction is being maintained.

From July 2009 and December 2012, a total of 2,269 participants attended 47 seminars organized by the executing agency for the purpose of introducing basic packaging technology and disseminating specific technologies. The followings are the number of seminars held between 2004 and 2012 as well as the number of participants at these seminars. Those numbers pertain to the seminars whose data was available.

Table 3: Numbers of Seminars and Participants Organized by the Executing Agency

Year	Number of seminars	Number of participants
2004	15	350
2005	72	1,722
2006	32	1,392
2007	5	153
2008	25	10,200
2009	15	1,067
2010	16	996
2011	9	457
2012	14	485

Source: Prepared by the evaluator using data provided by the executing agency.

Through this project, technology had been transferred to staff to provide effective presentations at seminars. As a result, the number of staff members at the executing agency who were able to run seminars was nine in 2009. Even after the end of the project, the executing agency proceeded to transfer technology within the agency. By 2012, this number had increased by eight to 17.

The number of staff members able to provide consulting services had been eight prior to the implementation of the project. It reached 14 by the end of the project, and had increased to 20 by

the time of the study. Consultations were provided to participants at the end of seminars through telephone conversations, email exchanges and face-to-face interviews on a day-to-day basis whenever client inquiries are received by the executing agency or by DOST Regional Offices. In cases where inquiries are dealt with by the packaging coordinator at a Regional Office, the consultation is limited to basic information. According to an interview held in Region VI, which was visited as part of the study, common client inquiries include questions on the following: (1) proper labeling; (2) proper extension of shelf-life; (3) introduction of the venders selling small amounts of packaging materials;[14] and (4) the nutritional assessment of food products. With regard to (1) and (2) above, guidance is provided by utilizing past experience. With regard to (3), clients are informed of their nearest source of supply. With regard to (4), at Regional Offices equipped with the necessary facilities, food samples are accepted and analyzed. However, at those offices unequipped with assessment facilities, guidance is provided on ways of getting food samples sent to the nearest office or to the executing agency for assessment.

In 2011 and 2012, seminars introducing basic packaging technology were held at DOST Regional Offices on 33 and 35 occasions, respectively.

During the project period, Regional Offices had been unable to provide seminars. However, both the capacity of the executing agency to provide guidance and that of DOST Regional Offices to hold seminars improved as a result of the executing agency having encouraged the Regional Offices and having provided training, during the project and then on an ongoing basis even after the end of the project.

3.2.1.2 Extent of Achievement of Project Purpose

The Project Purpose was "Enhance the capacity/ capability of PRDC to improve and upgrade the packaging technologies services to SMEs in the regions." It was achieved because the indicators were met during the project period. Since the end of the project, the executing agency has pursued studies in packaging technology, and has continued to build its capacity. The achievement of each indicator is as follows.

Indicator 1 was "The range of PRDC services has expanded by 25% satisfying the needs of SMEs clients in the region by the end of the Project." Prior to the end of the project, in accordance with client needs, the executing agency had doubled the number of technical services it could provide up to 32 from 16 at the beginning of the project. Therefore Indicator 1 was met. The types of technology are as follows.

[14] As described earlier, in the Philippines, private-sector packaging vendors seldom sell small amounts of packaging materials, and are often unable to trade in the order of several hundred pieces required by SMEs.

Table 4: Comparison of the Range of Services Provided by the Executing Agency

Issues faced by food SMEs in provincial areas	Services provided before the project	Services added during the project
Poor packaging and insufficient information	• Development of packaging technology • Nutritional assessment • Technical support for retort packaging • Paid packaging services • Seminars on packaging and brands • Provision of non-brand packaging materials and containers	• MAP packaging • Retort packaging services • High-barrier packaging • Transport packaging • Testing for packaging contaminants • Additional paid packaging services • Training and seminars on packaging technology
Short storage period	• Shelf-life testing • Drop testing • Vibration testing • Hermetic testing • Moisture permeation testing • Friction testing • Elution testing • Packaging and labeling	• Compression testing • Oxygen permeation testing • Moisture permeation testing • Tensile testing • Film identification using DSC/FTIR
Unattractive appearance	• Label design • Evaluation of compulsory labeling	• Packaging design • Training in graphic design • Development of Philippine-style designs
Difficulty in procuring packaging materials		• Quick-turnaround printing using digital printers
Total number of technologies	16	16

Source: The Terminal Evaluation Report

Indicator 2 was "Satisfaction rate of PRDC's client SMEs are marked more than 80% of items on the "List of services on transferred technologies by the Project" by the end of the Project." The results of an assessment of client satisfaction conducted on 22 companies at the time of the terminal evaluation are as follows.

Table 5: Client Satisfaction at the Time of Terminal Evaluation and the Ex-Post Evaluation

	At time of terminal evaluation (sample size: 22)	At time of ex-post evaluation (sample size: 99)
5 (excellent)	17	43
4 (very satisfied)	5	54
3 (satisfied)	0	1
2 (average)	0	0
1 (poor)	0	1
Average (%)	95%*	88%**

Sources: Figures at the time of the terminal evaluation obtained from the JICA Terminal Evaluation Report; figures at time of the study obtained from the results of a beneficiary survey.[15]

Notes:

* Calculated as a percentage of the overall total score. The sample size was 22, thus 5 points (maximum possible score) × 22 = 110 points. Supposing all responses were 5 (excellent), the total score would be 5 points × 22 = 110 points (numerator), and the maximum possible score would be 110 points (denominator). Therefore, total score / maximum possible score = 110 points / 110 points = 1, and satisfaction would be 100%. Calculating the result at the time of the terminal evaluation gives {(5 points × 17) + (4 points × 5)} / 110 = 0.95 (95%).

** Calculated as above. The sample size was 99, thus the maximum possible score was 495 points. {(5 points × 43) + (4 points × 54) + (3 points × 1) + (1 point × 1)}/495 = 0.88 (88%).

With reference to the indicator of the Project Purpose, namely satisfaction of 80%, client satisfaction at the time of the terminal evaluation was 95%; therefore, the indicator has been met. By way of reference, client satisfaction was also checked at the time of the study at 88%, thereby confirming that a high level of satisfaction had also been maintained even after the end of the project.

As described above, the Project Purpose was achieved because each of the indicators was met.

3.2.2 Impact

3.2.2.1 Extent of Achievement of Overall Goal

The Overall Goal was "Increase marketability of PRDC's client SMEs' food products in local and export markets." It was achieved because all the indicators were met. The achievement of each indicator is as follows.

Indicator 1 was "By 2012, 120 new PRDC's client SMEs from the Food sector received PRDC's services after the Project implementation." According to data provided by the executing agency, the number of new clients[16] to whom services had been provided since July 2009 was 181.[17] Therefore Indicator 1 was met.

[15] In the beneficiary survey, based on a complete list of clients at the executing agency (some had already been transferred to DOST Regional Offices), requests for cooperation were sent to at least 200 clients who were contactable at the time of the study. A questionnaire was then used to survey 100 clients who had given their consent. Through the survey, the evaluator confirmed such matters as the degree of satisfaction at the time of receiving the service as well as subsequent changes in sales.

[16] The definition of "new customer" refers to a customer who received services of the executing agency for the first time during or after July 2009 after the end of the project.

[17] The gross number of clients at DOST Regional Offices was 365 in 2011, and 413 in 2012. Client numbers have been increasing, both at the executing agency and at DOST Regional Offices.

Indicator 2 was "By 2012, 90 of existing PRDC's client SMEs out of 258 for year 2009, which received PRDC's services after the Project implementation have expanded their market within the region, from regional to national, and from national to international." The results of the beneficiary survey conducted at the time of the study confirmed that 61 clients from a sample size of 100 had expanded their market (equivalent to 61% of the sample). In terms of the definition of market expansion or contraction, in conducting the study, categories were set with reference to the indicator of the Overall Goal as shown in Table 6, and it was decided to confirm improvements in market size of Level 1 or greater.

Table 6: Definition of Market Size during the Ex-Post Evaluation

Size	Level	Description of market
Small market	1	Barangay (smallest unit of local government units)
↓	2	Municipality (collection of barangays)
	3	Region (collection of municipalities)
	4	Whole of the Philippines
Large market	5	Export to markets overseas

By taking the percentage obtained from the sample of 100 clients and applying it to the 258 SMEs as at the conclusion of the project, 61% equates to 157 SMEs. This exceeds the indicator of 90 SMEs. Therefore, Indicator 2 was achieved.

As described above, each of the indicators for the Overall Goal was achieved.

3.2.2.2 Other Impacts

The following are the changes in the volume of products sold by clients of the executing agency.

Table 7: Comparison of Sales Volumes Before and After the Introduction of Packaging Interventions (Number of Valid Responses: 70)

Change in volume of sales	Number of responses	Proportion of total (%)
0% or decrease	3	4
1–200% increase	41	59
201–400% increase	12	17
401%+ increase	15	21

Source: Beneficiary survey at the time of the study

As shown in Table 7, only 4% of all clients experienced either no change or a decrease in sales volume. On the other hand, 59% of clients responded that sales volume had grown 1 to 200%. Even clients whose sales volume increased at least 201% reached 38% of the total sample. As for reasons given by the clients for their sales growth, the results of the beneficiary survey show that 57% of respondents cited only the services of the executing agency, 41% cited the effects of publicity and advertising, 19% cited product improvements (especially in flavor), and 3% cited price cuts. The above clearly shows that, although improvements in packaging technology can be seen, the fact that clients put effort into publicity and advertising was also a considerable factor in increased sales.

As for cooperation with affiliated institutions, both during and after the project, staff at the executing agency conducted training on such matters as the basics of packaging technology, retort technology, food packaging testing, and brand development for the purpose of building the capacity of packaging coordinators assigned to DOST Regional Offices. As a consequence, the range of technologies that coordinators were capable of providing expanded and the client base of Regional Offices grew. In addition, packaging coordinators can now conduct some of the seminars that had been conducted by sending out staff from the executing agency. Table 8 below shows the number of clients and frequency of seminars at Regional Offices.

Table 8: Number of Clients and Frequency of Seminars at DOST Regional Offices

Region	Number of clients		Seminars at Regional Offices	
	2011	2012	2011	2012
I	22	21	1	1
II		34		
III	35	30	12	4
IV-A	39	41	1	1
IV-B	2	2		
V	22	16		
VI	104	75	6	11
VII	48	67	1	2
VIII	6	28		6
IX	9	5	1	2
X	5	4	3	3
XI	13	12	4	2
XII				
CAR	13	19	1	1
CARAGA	18	29		
NCR	20	30	3	2
ARMM				
Total	356	413	33	35

Source: During the ex-post evaluation survey, the executing agency interviewed each of the DOST Regional Offices and compiled the results of those interviews.
Note: The diagonal lines indicate places from which answers were not received in response to the inquiries of the executing agency.

Furthermore, as mentioned above, local government units set up toll packaging centers. As these environments become more developed, the executing agency is transferring the servicing of provincial clients to packaging coordinators and toll packaging centers. Meanwhile, the executive agency becomes able to focus more effort on the research and development of new packaging technology.

In addition, the executing agency is in charge of the development of product packaging for the SMEs recommended by the DTI, and launched the designs at a trade fair. The executing agency also provided technical support when the Central Philippine University in Iloilo City founded the Packaging Engineering Department in 2007. Furthermore, in cooperation with local government units, it also provided technical support for the establishment and operation of three toll packaging centers started up by the local governments.

It has been confirmed that, having satisfied both indicators, this project achieved the Project Purpose of "Enhance the capacity/ capability of PRDC to improve and upgrade the packaging technologies services to SMEs in the regions." Moreover, with respect to the Overall Goal, the project led to clients expanding the size of their markets. Therefore, given that the project has produced effects as planned, its effectiveness and impact are high.

3.3 Efficiency (Rating: ②)

3.3.1 Project Inputs

Table 9: List of Inputs

Input	**Planned**	**Actual** (at completion)
1. Japanese side		
(1) Experts	• Long-term: 1 • Short-term: 3	• Long-term: 0 • Short-term: 15
(2) Trainees received	Main fields of research • Management • Retort pouches, aseptic packaging, MAP • Transport packaging • Packaging testing • Graphics software	Main fields of research • Project management planning • Retort pouches, sterilization, MAP • Transport packaging • Graphic design • Dried/semi-dried packaging
(3) Provision of equipment	Main equipment inputs • High-barrier development equipment • Retort pouches • Equipment needed for MAP • Digital printer	Main equipment inputs • Same as the left column
Total cost	Approximately 379 million yen	Approximately 410 million yen
2. Philippine side		
Counterparts allocated	25	27
Offices for experts	1 room	1 room
Allocation of counterpart budget	• Salaries of the counterpart • Monitoring and operation cost	According to interviews with the executing agency and experts, budgets were allocated in the proper amount and without delay.
3. Implementation period		
	June 2005 - June 2009 (49 months, or 4 years and 1 month)	Same as the left column

3.3.1.1 Input Elements

(1) Inputs from Japan

At the start of the project, one expert had been assigned as a long-term expert. However, because of the delays in activities in the first year of the project, the term of the said expert was shortened, and

the number of short-term experts was increased. From the second year onward, as the initial delays were caught up, the project proceeded as originally planned. Regarding the increase in the number of short-term experts from an original projection of three to an actual 15, according to the explanation given by a dispatched expert (Chief Advisor from the second year onward), specialist fields were fractionalized more than initially anticipated, as shown below. Single areas of expertise were divided among multiple experts, and the field of transport packaging was added. Eventually, the number of dispatched experts increased to 15.

Table 10: Comparison of Projected and Actual Fields of Expertise

Projection at planning	Actual result
General supervision (long-term)	Management
High-barrier and MAP	1) CAP*/MAP 2) Packaging testing
Retort pouches and post-packaging sterilization	1) Retort pouches 2) Aseptic packaging
Design and design software	Graphics software
-	Transport packaging**

* Controlled Atmosphere Packaging

**The field of packaging structural design was added to PDM Ver.2, which was revised in July 2006. In the end, this was renamed "transport packaging."

Equipment was provided as planned. The utilization of equipment at the time of the study was generally good, but the digital printer had malfunctioned in 2012 and remained unrepaired. The agent who had originally signed the maintenance contract had gone bankrupt and maintenance had been transferred to a different agent. However, the repairs were behind schedule because the latter agent was unable to procure the necessary parts to repair the printer. The agent explained that repairs would be completed before the end of 2013 although the executing agency made efforts to having the digital repaired.

3.3.1.2 Total Cost

The total cost on the Japanese side at the time of planning was expected to be approximately 379 million yen. In contrast, the actual figure amounted to approximately 410 million yen, slightly exceeding the plan by 8%.

3.3.1.3 Period of Cooperation

The planned period of cooperation was 49 months, from June 2005 to June 2009. The actual result was 100% as planned. Accordingly, the evaluator found the period of cooperation to be as planned.

According to interviews with the executing agency and with experts, there are four factors to make up the first-year's delay in the second and successive years: (1) With regard to the procurement of equipment, which had fallen behind schedule as a consequence of delays in the first-year project activities, from the second year onward, JICA dispatched an expert in equipment procurement in order to speed up the process; (2) The team of JICA experts, which was dispatched from the second year

onward, grappled earnestly with the project; (3) The staff of the executing agency maintained a strong commitment; and (4) Experts maintained communication with their counterparts via email when they are out of the Philippines.

In light of the above, although the period of cooperation was within plan, the total cost of the Japanese side exceeded the plan. Thus the efficiency of the project is fair.

3.4 Sustainability (Rating: ③)

3.4.1 Policy and Institutional Aspects

At the time of the study, the Philippine Development Plan 2011–2016, which had been formulated by the Government of the Philippines, stipulated that the promotion of SMEs was crucial for the economic development of the Philippines, and that it required the active involvement of the government. The Micro, Small, and Medium Enterprise Development Plan for 2011 to 2015, which had been formulated by the DTI, more specifically stated that improving the poor packaging technology could contribute to the growth of food SMEs. Based on the above, the evaluator found that the policies of the Philippine Government have continued to support SMEs, including the food sector, since the planning of the project.

3.4.2 Organizational Aspects of the Executing Agency

Since the planning of this project, the DOST had suggested moving the executing agency from a project-based organization, which could only be maintained as long as the budget continued, to one incorporated as a division under the DOST. Although there was no such incorporation during the project, in August 2009 after the conclusion of the project, the organization was incorporated into the DOST as the Package Technology Division (PTD). Following this, the number of permanent staff members increased from five to 17. Eight counterpart personnel from the project have stayed on and are employed as contract staff. At the time of the study, permanent staff accounted for 68% of all workers.

Packaging coordinators at DOST Regional Offices are the key to regional expansion. From the start of the project until the time of the study, technology was successively transferred to them, from the basics of packaging technology to the new technologies developed at the executing agency. Thus, their capacity building has progressed. On the other hand, at some DOST Regional Offices, the packaging coordinator is changed frequently, either because of staff retirement or resignation or the discretion of the Regional Office. As a result, another evident issue is that the fruits of training are spread across different personnel. Toll packaging centers are established, operated and funded by local government units as places for providing technology in provincial areas. By the time of the terminal evaluation, three of them had been established. Operating a toll packaging center entails many issues. An example is the center in Bulacan Province on the outskirts of the capital Manila. The center was initially managed by the regional chamber of commerce and industry (CCI). The CCI was unable to use the service charges collected from clients due to government policy on utilizing the income generated by services. For a while, the center ceased operating as the CCI abandoned management of

the center. Nevertheless, in its capacity as a technical advisor, the executing agency continued to provide support to the center, such as with the transfer of packaging technology, methods of customer acquisition and the appropriate management of facilities. Thus, the management of the three centers was put back on track and the centers were successfully developed into model centers. The plan for the future is to provide support for the establishment of three new toll packaging centers by 2013 and a further five new centers by 2015.

In light of the above, the executing agency has arguably become an organization capable of continuing to provide technical guidance to clients, utilizing the technologies transferred through this project.

3.4.3 Technical Aspects of the Executing Agency

Details of the technologies transferred through this project, such as MAP and high-barrier technology, together with techniques and points to keep in mind when applying the technologies have been compiled into a report and put into database form. In each of the technical departments, several staff members have received the transfers of technology; thus even if one staff member resigns, his or her coworkers or new employees can receive technical guidance from the remaining members, or can study by themselves using the above report. Therefore, a structure has been established whereby the transfer of technology keeps flowing within the organization. With regard to databases as a management tool, as mentioned earlier, data entry had been behind schedule for a while. However, contract staff in charge of inputting data has now been assigned, and it is anticipated that information will be properly updated. Furthermore, even after the conclusion of the project, the executing agency has continued to develop technology as it receives financial assistance from the DOST. For example, in 2012, in addition to conducting research for the purpose of expanding the eligible items of expenditure for high-barrier and retort technology, 15 projects were implemented. Thus, the executing agency is developing technology in a self-sustaining manner. From April 2013, the second phase of this project will commence with an aim of designing and adopting appropriate transport packaging for eight agricultural products, and building a system for reducing loss during transport after harvest and for designing transport packaging. New technology, such as applications of transport packaging technology, will be transferred.

In light of the above, the technologies realized through this project are being developed in a self-sustaining manner.

3.4.4 Financial Aspects of the Executing Agency

The budget of the executing agency is divided between GAA (General Appropriation Act) and GIA (grants-in-aid). GAA is the basic budget, such as for personnel expenses, facilities maintenance expenses and fixed activity expenses. GIA is the budget given for specific projects. The executing agency is a division under the DOST. It makes GIA applications for development expenses for such items as new packaging technology which could not otherwise be carried out under the ordinary budget; if an application is approved by the DOST, GIA is implemented as a special budget. From

September 1999 when it was established, until August 2009 when it was incorporated into the DOST, the entire budget of the executing agency was GIA because it was treated as a program.

GAA budgets were not released publicly. The budgeted and actual GIA between 2004 and 2013 are listed below.

Table 11: Budgeted and Actual GIA (2004–2013)

(Unit: Philippines Peso)

Year	Budgeted	Actual
2004	No data	14,180,316
2005	25,481,000	14,120,319
2006	20,500,000	14,471,795
2007	23,000,000	11,147,821
2008	6,400,000	19,279,842
2009	No data	20,777,856
2010	26,191,407	13,731,169
2011	28,810,547	14,229,033
2012	31,691,601	34,722,741
2013	33,276,181	31,491,000

Source: Prepared by the evaluator using data provided by the executing agency.

As shown in Table 11, there is a gap between budgeted figures and actual results. According to an interview with the executing agency, there are several reasons for this. First, with regard to expenses for equipment provided by JICA, an equal amount was deleted from the executing agency's budget. When the executing agency was incorporated into the DOST in August 2009, 12 new people became permanent staff, and their salaries were moved from GIA to GAA. Since the table only shows GIA figures, the actual portion moved across to GAA has not been reflected. Furthermore, depending on the project period, a GIA may stretch over multiple fiscal years. The budget figures shown in the table may not necessarily list the budgets that are solely for that fiscal year.

Despite these obvious divergences, based on interviews with the executing agency and with experts, the evaluator confirmed that no delays or insufficiencies in budget implementation were observed which could have influenced the implementation of the project. Furthermore, during implementation of this project, the executing agency proposed a packaging technology project that was consistent with the policies of both the Philippine Government and the DOST, and it secured a considerable GIA budget mentioned above. GIA budget had enabled the executing agency to continue developing technologies even after the project. Going forward, given the track record of securing budgets as described above, and the fact that a counterpart budget to be borne by the executing agency for the ensuing JICA technical cooperation project has already been secured as well, the evaluator found that the financial aspect would likely be sustained.

In light of the above, no problems have been observed in terms of the policy and institutional aspects or in the organizational, technical or financial aspects of the executing agency. Therefore, sustainability of the project effect is high.

4. Conclusion, Lessons Learned, and Recommendations

4.1 Conclusion

The Project for the Improvement of Packaging Technology for Philippine Food Products was implemented by PTD of DOST for the purpose of improving food packaging technology in the Philippines. The study found that relevance, effectiveness, impact and sustainability of the project are high. In terms of relevance, the evaluation study confirmed that the project is highly consistent with all the relevant areas, i.e., the development policy and the development needs of the Philippines and the relevant sector, as well as Japan's ODA policy. The study reconfirmed that the Project Purpose and all Outputs had been achieved by the conclusion of the project. In addition, given that the Overall Goal, realization of which had been anticipated by the time of the study in 2012, had also been achieved, the effectiveness and impact of the project were also found to be high. As for sustainability, it was also confirmed that the policy and institutional, organizational, technical and financial aspects of the project effects would likely be sustained. On the other hand, given the delay in the dispatch of experts at the start of the project, and given that the inputs from Japan exceeded the budget, the efficiency of the project was found to be fair. One of the contributing factors in producing these effects is that the executing agency had steadily carried out necessary measures during the planning, implementation and post-project stages. In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) Dissemination of technology in each region

Prior to the end of the project, it had been anticipated that packaging technology would be disseminated to regional areas by strengthening that of the executing agency and then the executing agency providing technical guidance to food SME clients. However, as also noted in the recommendations of the terminal evaluation, since the end of the project, there has been a shift in the transfer of basic packaging technology to a service in which packaging coordinators at DOST Regional Offices run seminars in their local areas and respond to client requests for advice. The variety of services that packaging coordinators can provide is increasing and they are becoming more and more equipped to respond quickly to the needs of food SMEs in provincial areas.

However, one issue with the dissemination of technology in provincial areas is that, at some Regional Offices, packaging coordinators are not building up knowledge and skills on packaging, either because they retire or resign, or because they are replaced every few years by the Regional Office. In some cases, the executing agency receives a request for training from certain DOST Regional Offices every time the coordinator is changed; however, because of the limitations of the

training instructors, it cannot always accommodate these requests. At these Regional Offices, consideration should be given to enabling the accumulation of technology by averting the frequent replacement of coordinators. As for the retirement or resignation of staff, since it is impracticable to create an environment completely free of coordinator rotations, the executing agency should also consider the systematic establishment of training periods for coordinators.

(2) Establishment of toll packaging centers

As mentioned earlier, DOST Regional Offices are gradually playing more of a central role in the transfer of packaging technology in provincial areas. Toll packaging centers exist as regional establishments to provide clients with packaging facilities necessary for putting the transferred technologies into practice. Regarding the establishment of toll packaging centers, many local government units and DOST Regional Offices for technical support made approaches to the executive agency, but there are concerns about the recurrent issues on the operational and management capacity of the centers. A particularly serious issue is that there are few local government units capable of making good-quality project plans. A model for management is being formed through the support of the previously-assisted three toll packaging centers. Therefore, while formulating an appropriate project plan together with a local government unit wanting to establish a new center, relationships should also be built so that technical advice can be given when issues arise to do with the management of the center after its establishment.

4.2.2 Recommendations to JICA

None in particular.

4.3 Lessons Learned

(1) Long-term strategy and positioning of projects

At the start of this project, the executing agency was a project-based organization which could only be sustained as long as the budget continued. It appears that the DOST had recognized that improving packaging technology would promote food SMEs. The DOST also recognized the vital role of the executing agency to these SMEs and this has led to incorporating the executing agency to the DOST as its formal division. At the same time, because of the time required to make improvements in packaging technology for the SMEs, the executing agency also continued to appeal to the DOST about the need for organizing itself into a structure capable of sustaining activities. These approaches led to the reorganization of the agency as a division of the DOST in 2009.

Since the implementation of the project, the executing agency has not only established goals and medium- and long-term strategies in such areas as capacity building, research and development, packaging testing and human resources development; it has also prepared detailed action plans, and clearly plotted specific courses for achieving those goals. These medium- and long-term plans have not only enabled the executing agency to continue improving the level of its packaging technology, but they have also clarified the positioning of various programs, including this project, and helped sustain

the effects produced in this project. For example, during the implementation period of this project, the budgets were large and allocated particularly to the introduction of technology requiring new equipment. It was unlikely that, following the end of the project, the executing agency would be able to secure enough of a budget from internal and external sources to purchase much equipment. Accordingly, by conducting many research projects on applying existing technology to other items, the executing agency was able to broaden the technology's range of application. From April 2013, a new JICA technical cooperation project will commence. It aims to further improve already introduced technologies, such as transport packaging technology, and it is expected that new technologies and new equipment will also be introduced. These activities have been incorporated into the previously mentioned long-term strategies. Since these series of activities are related, they will do much toward the sustainability of the effects produced in this project.

In light of the above, if an executing agency in the partner country has not established medium- and long-term goals, it would be useful to introduce activities that assist the establishment of medium- and long-term goals. In projects that span multiple years, by updating medium- and long-term goal settings appropriately to suit changes in internal and external environments, the goals will gradually be made clearer.

(2) Consistency of projects with policies

The executing agency has kept a constant check on the policies of both the DOST and the Philippine Government. It prepares applications for projects that match those policies, and it obtains large budgets. For example, by the time of the study, a policy had been implemented to market local products as Philippine specialties. The executing agency was helping in the branding of products by developing packaging for craftworks and other products made in provincial areas. Through the accumulation of such experiences, the executing agency in 2012 secured supplementary project-based budgets from the DOST for as many as 15 projects. There are not many executing agencies that can secure budgets while verifying the consistency of their activities with the nation's priority policies. As a means of sustaining the effects produced in projects, it would be useful for an executing agency to learn about ways of verifying the consistency of its activities with the priority policies of the nation and to introduce technical transfer into the preparation of budget applications.

Republic of the Philippines

Ex-Post Evaluation of Japanese Technical Cooperation Project

Project for Enhancement of the Community-Based Forest Management Program (CBFMP)

External Evaluator: Miyoko Taniguchi, IC Net Limited

0. Summary

The project purpose of the Enhancement of the Community-Based Forest Management Program (E-CBFMP) was that conservation, rehabilitation, and sustainable utilization of forest and land resources within CBFM areas are done by the capacitated people's organizations (POs) on their own initiatives with support from the capacitated Department of Environment and Natural Resources (DENR), local government units (LGUs) and other relevant institutions. The Project is aimed at promoting a national strategy for forest management in the Philippines; thus its consistency with the national policy, the needs of the relevant sector in the Philippines and with Japan's ODA policy is high. However, despite the high consistency of the Project Purpose, there were issues with the appropriateness of the initial project design. For example, the linkage among Outputs was low, and the Outputs did not logically link with the Project Purpose. This had an adverse effect on management of the project and achievement of Outputs. Therefore, relevance of the project is regarded as fair. The Outputs and the Project Purpose, which were revised during the project, have been achieved mostly as planned, and some parts of the overall goal are expected to be achieved through utilization of technologies developed by the Project. However, some issues remain with continuity of the project effects. Therefore, effectiveness and impact of the project are also regarded as fair. The project stayed within the initially planned bounds for both the implementation period and the project cost. Therefore, the efficiency of the project is regarded as high. A few slight problems have been observed in the institutional and structural aspects of the implementing agency. Therefore, sustainability of the project is regarded as fair.

In light of the above, this project is evaluated to be partially satisfactory although having produced certain effects.

1. Project Description

Project Location

Area Targeted for Agroforestry in Bataan Province

1.1 Background[1]

In the Philippines, it was estimated that, in 1990, about 8.7 million people, or roughly 13 percent of its population, lived in public forestland covering 14.63 million hectares, or 50 percent of its total land area (1990). In these mountain villages, the number of poor families was increasing because of low farm productivity and poor accessibility to market. Moreover, over-logging, forest fires and the inappropriate conversion of forestland for use as farmland had contributed to the denudation of forests in the Philippines, resulting in contributed to the frequent occurrence of natural disasters and hampering social and economic development.

In response, in 1995, the Philippine Government, via Executive Order No. 263, set forth the Community-Based Forest Management (CBFM)[2] Program as a national strategy for conserving afforested areas and existing forests and for improving the livelihoods of upland communities, in a way that consolidated the previous participatory management programs for statutory forestland. In 1997, the Strategic Action Plan for CBFM (DENR Department Memorandum: No. 97-13) was promulgated, setting a target of placing nine million hectares under CBFM agreements by 2008. However, administrative bodies, such as the DENR and LGUs, failed to provide communities with adequate guidance on CBFM because of a lack of funding and technical capability, and carefully planned forest management and livelihood improvement activities had not been undertaken in most areas under CBFM agreements because of a lack of funds and capacity on the part of local communities. Under such circumstances, the Philippine Government made a request to the Japanese Government for technical cooperation for promoting the CBFM Program.

[1] JICA official document (Preliminary Survey Report, Mid-term and Terminal Evaluation Report,

[2] The basic principles of CBFM are: (1) Sustainable management of forest resources, (2) Social justice and improved social and economic conditions for local communities, and (3) Strong partnership between the DENR and local communities. Under the program, POs conclude a CBFM Agreement with the DENR to manage public forestland for 25 years, enabling them to manage and use forests, and to use the land such as for agriculture, based on a Community Resources Management Framework (CRMF) and a Five-Year Work Plan prepared by each PO. Source: DENR website (http://forestry.denr.gov.ph/primer.htm)

1.2 Project Outline

The overview of the evaluated project is as follows.

Overall Goal		Conservation, rehabilitation and sustainable utilization of forest and land resources within Community-Based Forest Management (CBFM) areas are promoted to contribute to the overall sustainable forest management of the Government of the Philippines.
Project Purpose		Conservation, rehabilitation and sustainable utilization of forest and land resources within CBFM areas are done by capacitated POs on their own initiatives with support from capacitated Department of Environment and Natural Resources (DENR), local government units (LGUs) and other relevant institutions.
Outputs	Output 1	<Policy component> Policy recommendations for the improvement of CBFM program are submitted to the proper authorities.
	Output 2	<Field operations component> (Pilot Site Unit) CBFM planning and implementation in the pilot sites in Region 3[3] are developed/improved through the enhancement of the implementation scheme and collaboration model.
	Output 3	(Training unit) The knowledge, skills and attitude of people's organizations (POs), DENR employees, LGUs and other relevant institutions involved in CBFM implementation in Region 3 are improved through training.
	Output 4	(Information unit) Existing practical information on CBFM reached and appropriated by the POs in Region 3.
Inputs		[Japanese Side] Dispatch of experts: 8 for long-term, 4 for short-term Acceptance of trainees: 32 (counterpart training in Japan) Equipment: 42 million yen Cost of the operation in the Philippines borne by the Japanese side: 92 million yen [Philippine Side] Counterparts: 55 in total Land and facilities: Project office, utilities Cost of the operation in the Philippines borne by the Philippine side: Counterpart salaries of approximately 62 million yen
Total Cost		571 million yen
Period of Cooperation		June 2004 - June 2009
Partner Country's Related Organization		Department of Environment and Natural Resources (DENR)
Supporting Organization in Japan		Forestry Agency
Related Cooperation		Japanese ODA loan: Forestry Sector Program (LA: 1988) Japanese ODA loan: Forestry Sector Project (LA 1993) Japanese ODA loan: Forestland Management Project (LA 2012)

[3] The Philippines are divided into three administrative levels: Regions, Provinces and Municipalities. DENR local offices are comprised of Regional Offices (RENRO: Regional Environment and Natural Resource Office), Provincial Offices (PENRO: Provincial Environment and Natural Resource office) and Community Offices (CENRO: Community Environment and Natural Resource office). Region 3 is comprised of the five provinces of Bulacan, Nueva Ecija, Pampanga, Tarlac and Zambales.

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

At the time of the terminal evaluation, it was assessed that the project had not attained a significant impact. Some positive impacts were observed in policy and institutional aspects in the areas targeted by the pilot activities, specifically as follows. During the project, recommendations were submitted to the project's Joint Coordinating Committee (JCC) for: (1) lifting of the ban on logging; (2) dispute resolution for land-use rights; and (3) improvement of the CBFM Implementation Framework. With respect to (1), a memorandum was issued in the name of the Secretary on June 12, 2007 for a moratorium on the ban on logging and transportation in afforested areas with land-use rights attached. With respect to (2), this led to issuance of Joint Administrative Order No. 2008-01 between the DENR and the National Commission on Indigenous Peoples (NCIP) (*Guidelines and Procedures for the Recognition, Documentation, Registration and Confirmation of all Sustainable Traditional and Indigenous Forest Resources Management Systems and Practices (STIFRMSP) of Indigenous Cultural Communities or Indigenous Peoples in Ancestral Domain/Land*). With respect to (3), this was being prepared as at the time of the terminal evaluation. Following the terminal evaluation, it had not resulted in institutional improvements to the CBFM Implementation Framework by the time of the ex-post evaluation.

1.3.2 Achievement of Project Purpose

At the time of the terminal evaluation, it was determined that the Project Purpose had been achieved because the two indicators based on the final project design matrix (PDM) had been attained (see table below). The achievement of the Project Purpose is as follows.

Indicators	At terminal evaluation
By June, 2009, all the E-CBFM (the Enhancement of Community Based Forest Management) pilot sites and at least 30% of other POs in Region 3 have adopted and implemented appropriate technologies leading to the conservation, rehabilitation and sustainable utilization of forest and land resources.	The results of an impact survey commissioned by the project to an external consultancy to be conducted during the implementation period are as follows. There are 128 POs within the jurisdiction of the Region 3 Office. There are 123 POs outside the pilot sites, and of these, 42 POs (or 34%) had adopted and put into practice appropriate technology acquired through the project.
By June 2009, at least 50% of members of each PO, staff of DENR, LGUs and other relevant institutions involved in the CBFM program in Region 3 have improved their awareness and capacities to plan and implement the CBFM strategy.	The results of the above impact survey are as follows. • Of the 60 POs that participated in this project, 82% (49 POs) raised their awareness for the CBFM Program, and 72% (42 POs) recognized an improvement in the participation of their members. The results of the survey conducted after the training are as follows. • Of the 11 LGUs that participated in this project, a change for the better in awareness and attitude was observed for staff in nine LGUs. • Of the 28 DENR Provincial/Municipal Office staff, a change in approach to CBFM operations and an improvement in awareness and knowledge about CBFM were observed for 92% (26).

Source: Terminal Evaluation Report

1.3.3 Recommendations

The following six recommendations were made at the time of the terminal evaluation. The responses for each recommendation at the time of the ex-post evaluation are also described.

Recommendations at the time of the terminal evaluation	Response (at the time of the ex-post evaluation)
It is important to verify the effectiveness of the various techniques introduced through the project, and to incorporate them into the CBFM Implementation Framework.	With respect to the effectiveness of techniques introduced through the project, the effectiveness of the alternative plan to the Community Resources Management Framework (CRMF) has been verified at a CBFM site, but the effectiveness of practical "agroforestry" learning and training techniques for farmers, the document on information collection and dissemination strategies, and techniques for building private enterprise partnerships with CBFM has not been verified. The effectiveness of the Training Guide had been confirmed during the implementation period. The various techniques introduced through the project have not been incorporated into the CBFM Implementation Framework.
The DENR should build collaborative partnerships with research institutions, universities and other similar organizations.	The DENR has built collaborative relationships aimed at improving CBFM policies.
For the purpose of ensuring sustainability, the project should create various Outputs by the completion of this project, and hold briefing sessions for officials involved in policy making.	At the time of completion, the project had created various Outputs,[4] and had distributed some of them to policy decision-makers. However, the DENR has not held briefing sessions after a project presentation of project outputs was conducted in a Forestry Sector Meeting attended by the Regional Technical Directors for Forestry just before completing the project.
The DENR Regional Office needs to document past activities of the pilot sites so that DENR can utilize the experiences and lessons learned in other sites the future.	The project documented the experiences of the pilot sites in the "Case Study Report" and used as reference materials.
During the course of policies for streamlining the government and administrative bodies, the number of CBFM coordinators should be maintained or increased.	The DENR has not agreed on a policy for organizational rationalization. Therefore, it has not started restructuring, including personnel, and there has been no change in the number of CBFM coordinators.[5] However, in addition to their usual business operations, CBFM coordinators are also performing many duties as a consequence of special government programs, and there is a shortage of personnel, especially in local offices, though CBFM coordinators are supported by contractual employees assigned under special projects.
Information and materials collected and accumulated through the project should be made public.	The DENR has not published this information and materials.

[4] (1) Training Guide; (2) Field Guide of Discovery-based Exercises on FFS for Agroforestry; (3) Project document on information collection and dissemination strategies; (4) Alternative plan to the CRMF; and (5) Private enterprise partnerships (PEPs) with CBFM.

[5] The Philippine Government has issued directives since the mid-2000s for all government agencies to formulate a plan for organizational rationalization. Since the DENR has not yet reached agreement with the Department of Budget and Management for a rationalization plan, there has been no recruitment or promotion of staff since the mid-2000s. The workforce has grown older, with the average age of regular staff rising to 55. Agreement on a rationalization proposal is expected in fiscal 2013, but the details of such a proposal have not yet been revealed (interview with DENR officials).

2. Outline of the Evaluation Study

2.1 External Evaluator

Miyoko Taniguchi (IC Net Limited)

2.2 Duration of Evaluation Study

In conducting this ex-post evaluation, the External Evaluator performed an evaluation study as follows:

Duration of the study: June 2012 - June 2013

Duration of the field study: January 19 - February 1, 2013 and April 3–11, 2013

2.3 Constraints during the Evaluation Study

The areas targeted directly in the project are the five pilot sites and 12 follow-up training sites located in five provinces of Region 3. However, because of time constraints, it was not possible to visit all the project sites. Therefore, considering the high standard of public safety and the ease of mobility, it was decided to limit the sites visited to three pilot sites and four follow-up training sites in Tarlac Province, Zambales Province and Bataan Province. Given the limitation of the evaluation schedule, the visited sites were selected in discussion with the DENR in a way that the most diverse activities could be covered. At each site visited, the evaluator conducted interviews with officials, group discussions and beneficiary surveys.[6] With respect to the sites that could not be visited, information was collected by means of document studies, questionnaires sent to each Provincial Office and interviews with officials in Region 3. Questionnaires were also sent to all counterparts. In view of the fact that the project involves a diverse range of stakeholders, efforts were made to ascertain the project effects from multiple information sources wherever possible, thereby raising the accuracy of the study.

3. Results of the Evaluation (Overall Rating: C[7])

3.1 Relevance (Rating:②[8])

3.1.1 Relevance with the Development Plan and Policy of the Philippines

The sustainable management of natural resources was positioned as a priority area for development in the "Medium-Term Philippine Development Plan (MTPDP) 1999–2004," which was the Philippine Government's development policy current at the start of the project, and in the subsequent "MTPDP 2004–2010." In the "Master Plan for Forestry Development 2003–2013," which was revised in 2003, CBFM is regarded as a cross-cutting strategy for the entire forestry sector for

[6] A total of 143 beneficiaries were surveyed. The number of people surveyed at each site was as follows: (Pilot sites) Maniniog Barangay in Tarlac Province: 30, Poonbato Barangay in Zambales Province: 31, Bangkal Barangay in Bataan Province: 10; (Follow-up training sites) Nambalan Barangay in Tarlac Province: 20, Papaac Barangay in Tarlac Province: 20, Libaba Barangay in Zambales Province: 20, and Duale Barangay in Bataan Province: 12. Activities at pilot sites form one of the Outputs; since they require a large number of inputs and have a long implementation period of five years, the sample distribution for pilot sites was greater than for follow-up training sites. However, because of time constraints, the sample size at some sites was smaller than planned. The surveyed beneficiaries were randomly sampled from a list of PO members.

[7] A: Highly satisfactory; B: Satisfactory; C: Partially satisfactory; D: Unsatisfactory

[8] ③: High; ②: Fair; ①: Low

forest protection and conservation and for forest development activities. “Conservation, protection and rehabilitation of the environment and natural resources” has also been positioned as a priority area for development in the “Philippine Development Plan 2011–2016,”[9] which was current at the time of the ex-post evaluation. The plan specifies increasing the participation of people in the community-based management of forests and other resources as a cross-cutting strategy, as an effective environmental management strategy. In this way, the objectives and activities of this project to facilitate the community-based conservation, rehabilitation and sustainable utilization of forest and land resources were consistent with the development policy of the Philippines.

The measures for the CBFM Program are as follows. From 2005 to 2006, a change in the CBFM policy was observed, attributable to the then Secretary of the DENR. In August 2005, the Secretary issued a directive to suspend the receipt of applications for all forest management agreements in order to review the forest tenure system including CBFM agreement on a nationwide scale[10]. Next, a number of Department Orders were issued, including cancellation of 233 CBFM agreements nationwide which had received a low evaluation for CBFM implementation/ non-compliance to certain CBFM agreement. This was done because some people’s organizations (POs) were felling forests in breach of their CBFM agreements, and the quality of CBFM agreements needed to be improved. However, in March 2006, a new Secretary was appointed, confirming that CBFM was national policy, and most CBFM agreements were reconsidered. Despite the confusion surrounding the CBFM policy direction during the implementation period for this project, around the time of the ex-post evaluation, expansion of areas under CBFM agreements had become a policy goal (discussed in detail below), and the various programs[11] centered around government-led reforestation work were also consistent with CBFM.

3.1.2 Relevance with the Development Needs of the Philippines

The results of the three preparatory studies—the project formulation study (June 2002), the first ex-ante evaluation study (August 2003) and the second ex-ante evaluation study (January 2004)—showed that, without carefully planned forest management and livelihood improvement activities being undertaken, a point of sustainable land use had not yet been reached in areas under CBFM agreements. Furthermore, administrative bodies such as the DENR and LGUs were faced with insufficient financial resources and technical capacity to support residents. Therefore, this project aimed at improving the capacity of the DENR, LGUs and POs, is consistent with development needs.

3.1.3 Relevance with Japan’s ODA Policy

Two priority issues under Japan’s country assistance program for the Philippines at the start of the project were alleviation of poverty and conservation of the environment. Furthermore, one of the key development issues in the country assistance program revised in 2008 was “empowerment of the poor

[9] Development plan by the current administration, equivalent to the MTPDP
[10] Report on the mid-term evaluation of E-CBFM
[11] Upland Development Program, National Greening Program

and improvement of the living conditions of the poor," and as part of this, support for appropriate forest management, including reforestation, was cited for "protecting lives from natural disasters." In light of the above, it is fair to say that the project is consistent with Japan's ODA policy.

3.1.4 Appropriateness of the Project Design

The project was designed after completing the preparatory studies mentioned above. Initially, consideration was given to a project targeting Region 2 and developing a model CBFM *barangay* (village) into a base for extension to the entire region. However, because of an emphasis on policy impact, it was decided to target Region 3 for the pilot activities as it was close to Manila and would enable DENR personnel to conduct monitoring activities, and to gear the training and policy components to the whole country.

However, given that the target area of the project is the whole of the Philippines, and that the ultimate purpose was for POs in all CBFM target areas (there were 1,781 organizations nationwide as of 2005) to put into practice the conservation, rehabilitation and sustainable utilization of forest and land resources, as far as five-year technical cooperation projects go, this project covered a wide area and its feasibility was low. Consequently, the appropriateness of the plan was not high. The indicators for the Project Purpose were also not measurable indicators like in the final Project Design Matrix (PDM). Furthermore, up until the final PDM, the connection between the project's Outputs as well as between Outputs and purpose was low, and the implementation scenario was not well defined. There was no component for taking the forest management experiences and technology gained at the pilot sites and extending them to other regions, and there was a structural failure in that, even if the Outputs were achieved, the Project Purpose could not be fully achieved. In this way, because the plan lacked specificity, the project implementers both at the DENR and JICA needed much time to make adjustments, and for the three years and eight months from the outset until February 2008 when the final PDM was formulated, the implementers were unable to share a common understanding of the project design and policy.[12]

The changes leading up to the final PDM are as follows. From the beginning of the project in 2004, the JICA headquarters was concerned that specific Outputs had not been expressed, and in June 2005, dispatched a project consultation team. The team narrowed down activities to DENR Region 3, pointed out the importance of ties between each of the Outputs, and proposed that the base for experts in the fields of training and information be moved to Region 3. However, agreement with the DENR could not be reached. The reason for this was that the DENR had had expectations for the project to lead to the national expansion of the CBFM Program, and it was strongly opposed to limiting the target area for all activities to only Region 3 (interview with former JICA expert). Even at the time of the mid-term evaluation study (October 2006), the Evaluation Team dispatched by JICA had proposed that the activities base for training-related Outputs be transferred from the headquarters to DENR Region 3, but again, agreement with DENR could not be reached.

[12] During this period, the PDM was revised three times on the following dates: June 23, 2005; January 9, 2007; and February 28, 2008.

The following is an account of what brought about a change to this situation. First, the mid-term evaluation study conducted in 2006, presented a very harsh assessment regarding the progress on Outputs, and gave a view that achieving the Project Purpose would be tough. Consequently, a sense of impending crisis emerged between the DENR and JICA experts (interview with the DENR). Next was the advice and proposal by a consultant from the Food and Agriculture Organization of the United Nations (FAO) at the invitation of the project. After much discussion with the project stakeholders, the consultant sorted out the points at issue with the PDM, and set achievable and measurable indicators from February 2008 to June 2009 (materials provided by JICA, interviews with the DENR and JICA). The proposal put forward by the consultant was ultimately accepted by the project implementers, and led to a fundamental review of the PDM.[13]

In this way, a lack of feasibility and capacity to manage the project resulted in the project stakeholders spending much time and effort on revising the plan. Consequently, during the first half of the project, Outputs could not be sufficiently produced and activities stagnated. Thus the inappropriateness of the project design had a serious impact on operations.

In light of the above, the project was consistent with the development policy and development needs of the Philippines and with Japan's ODA policy, but it was determined that there were problems with the appropriateness of the project design. Therefore its relevance is fair.

3.2 Effectiveness and Impact[14] (Rating:②)

3.2.1 Effectiveness

3.2.1.1 Project Outputs

The achievement of Outputs at the time of project completion based on the final PDM, and the continuation of activities at the time of the ex-post evaluation are as follows.[15]

(1) Output 1 was "Policy recommendations for the improvement of CBFMP are submitted to the proper authorities." Output 1 was achieved because all of the set indicators were met.

Indicator 1-1 was "Based on the experiences of the field component, at least one proposal is prepared and submitted for the following five items: (1) lifting of the ban on logging; (2) land tenure conflicts; (3) conflict resolution for natural resources; (4) renewal of Certificate of Stewardship; and (5) modification of the CBFM Implementation Framework based on experiences of the field component." The counterpart at the DENR Forest Management Bureau, collected and analyzed pilot site activity reports and related materials, and submitted a policy recommendation on

[13] The main changes were as follows: (1) Quantification of the indicators for the Project Purpose; (2) Addition of specific details to the indicators for Output 1 (policy recommendations); (3) Changes to the indicators for Output 2 (pilot sites: name changed from "model sites") (previously had been up to construction of the collaboration model, but now includes up to implementation of PO activities; the result of this would lead to recommendation for improvements to the CBFM Implementation Framework (Output: policy recommendations)); (4) Quantification of the indicators for Output 3 (training); (5) Change to dissemination activities in Region 3 for Output 4 (information).

[14] This rating has been assessed by taking impact into account when determining the effectiveness.

[15] Activities that are expected to continue after completion of the project are included in this section as well.

all the mentioned items to the project's Joint Coordinating Committee (JCC).

Indicator 1-2 was "One study paper including recommendations on CBFM policy feedback mechanisms linking the policy formulation offices and key stakeholders in the field is prepared and submitted." A report comprised of an analysis of the present situation and recommendations was submitted to the project's Joint Coordinating Committee (JCC).

(2) Output 2 was "CBFM planning and implementation in the pilot sites in Region 3 are developed/improved through the enhancement of the implementation scheme and collaboration model." Output 2 was achieved because all of the set indicators were met. The achievement of each indicator at the time of completion and the continuation of activities at the time of the ex-post evaluation are as follows.

Indicator 2-1 was "All POs of the pilot sites[16] with the support of Technical Working Groups (TWGs) prepare and/or update CRMF or CRMP as well as five year work plans through participatory planning processes."

At the time of the ex-post evaluation, no Community Resources Management Framework (CRMF) and the Five-Year Work Plan had been formulated anew or revised within the jurisdiction of DENR Region 3, and the counterparts had not had an opportunity to utilize their capacity for formulating the plans, which they had acquired through the project. Furthermore, the alternate process proposed by the project, which simplified the preparation of the CRMF for the purpose of promoting implementation of CBFM, had been put into practice on a trial basis at some sites after completion of the project, but this had not resulted in the process being institutionalized. Apparently, it had not been put into practice at the DENR Region 3 Office because there had not been any operational instruction from the DENR. On the other hand, at the central office level, CRMF was reviewed and refined from this project that has led to an important input in the current consultation process related to the policy formulation related to CBFM.

Indicator 2-2 was "Collaboration partnerships between DENR, LGUs and other relevant institutions at the five pilot sites are verified and lessons of making the partnerships are compiled in a case study." TWGs which coordinate the support and cooperation of POs were formed at all pilot sites. Members of the TWG varied from site to site, either DENR personnel (CBFM coordinators, Provincial/Municipal Office staff) or LGU personnel (Agriculture and Planning Bureau), and the different activities through the TWGs were summarized into a report of case studies.[17]

However, the results of the field study conducted at the time of the ex-post evaluation confirmed that new TWGs had not been established when conducting the CBFM Program, and adequate

[16] Of the eight sites that had been selected up to July 2006, it became clear that four of them faced land-related issues, such as duplication of land subject to other land registration systems. Therefore, the four sites were cancelled in April 2007, and one site was added in June 2007.

[17] The recommendations included that the role of TWGs should be clearly stated in the CBFM activities agreement between the DENR and LGUs, and that TWGs should be established at the municipal level rather than at the provincial level.

monitoring was not being performed in the target areas. According to interviews with LGUs, this was due to the low priority given to development for implementation of the CBFM Program and the inability to allocate personnel and budgets to the program.

Indicator 2-3 was "10% of the total land area of each pilot site is managed sustainably by capacity-strengthened PO members through agroforestry, conservation of existing natural forest, and protection/maintenance of the plantations, including biodiversity concerns based on their approved CRMF/CRMPs." In all the pilot sites, forest conservation activities, such as tree-planting and forest fire prevention, were conducted in excess of 10% of the areas under CBFM agreements.

The survival rate of trees planted in the three barangays targeted in the field study at the time of the ex-post evaluation was 10–80% (discussed in detail below).

Indicator 2-4 was "At least one prioritized activity stated in the five year work plans is carried out at each pilot site and a monitoring report is compiled at each site through process documentations." All of the POs in the five sites conducted activities for afforestation, which is a high-priority activity in the plan. These activities included the canals of water harvesting structure, paddy straw mushroom cultivation, watershed forest conservation, agro-pastoral farms and PO enhancement. These activities were monitored by the TWGs, and summarized by the TWG members into a process report.

According to the questionnaire survey to the DENR, at the time of the ex-post evaluation, all water harvestings structure[18] had maintenance problems and were not functioning well, and paddy straw mushroom cultivation had not continued operations because of problems on cultivation techniques and marketing (discussed in detail below).

Indicator 2-5 was "Four stages identified in the CBFM Implementation Framework are verified and a case study compiling lessons of field activities are prepared." The effectiveness of the CBFM Implementation Framework was confirmed through activities at the pilot sites, and in order to compile the lessons learned taking into account experiences of failure, case studies of the nine sites, including the four sites[19] cancelled because of land issues, were summarized into a report. In order to examine the draft improvements for the CBFM Implementation Framework, meetings were held on September 24 and October 30, 2008. The lessons learned from the case studies were put into order, and the reform measures were examined.

At the time of the ex-post evaluation, it was confirmed that these reform measures had not led to revision of the CBFM Implementation Framework.

(3) Output 3 was "The knowledge, skills and attitude of people's organizations (POs), DENR

[18] It includes the structures that do not function due to damage in pipe and that became dysfunctional after a few days from the day of formal turn-over.
[19] Four sites: Sapangbato, Sumandig 1 and 2, Alas-asin

employees, LGUs and other relevant institutions involved in CBFM implementation in Region 3 are improved through training." Output 3 was achieved because all of the set indicators were met. The achievement of each indicator at the time of completion and the continuation of activities at the time of the ex-post evaluation are as follows.

Indicator 3-1 was "At least 80% of all training participants from POs, DENR and other relevant institutions in Region 3 show a significant increase in knowledge in the Post Test." Of the 24 training workshops conducted by the DENR Region 3 Office during the project period, apart from rapid rural appraisal (RRA) and training needs assessment, an overall improvement in knowledge was confirmed for 98% of trainees in the 17 training workshops[20] for which testing was conducted before and after the training.[21]

At the time of the ex-post evaluation, although counterparts had not put into practice all of the techniques they had acquired during the training,[22] facilitation skills and the concept of participatory techniques, which had been acquired through activities conducted during the project implementation period, had been utilized within CBFM operations.

Indicator 3-2 was "At least 50% of training participants from POs, DENR and other relevant organizations in Region 3 carry out their individual Action Plans, which are prepared at the end of skills related training programs." According to the results of a survey commissioned by the project to an external organization conducted before the completion of the project (the "impact survey"),[23] each group had achieved higher than the target 50%: 93% for POs (399 people), 77% for the DENR (105 people) and 76% for LGUs (10 people).

Indicator 3-3 was "90% of the implementers of the Follow-Up Scheme Activities (FUSA)[24] implement their action plans." The project invited POs that had participated in training to submit action plans, and of the 12 POs that were provided assistance having been judged to have a strong capacity for implementing plans, all of them (100%) implemented action plans.[25] A record of these

[20] Including; orientation, training needs analysis, CBFM for instructors, participatory rapid appraisal techniques, para-legal, forest fire management, agroforestry, process documents, and practical goat raising.
[21] Training had been targeted at the whole of the Philippines during the first half of the project, but this was changed to Region 3 during the second half. 1,176 people participated in all training conducted during the project period. Of this, 462 participated in training on the national level, and 714 within the jurisdiction of the Region 3 Office. The total number of participants for each target group was: 486 from POs, 178 from LGUs, 73 from NGOs, 168 from DENR Provincial Offices, 146 from DENR Municipal Offices, and 125 from the Regional Office.
[22] During the first half of the project, training on simplified rural assessment through participatory development techniques, community mapping and forest management planning, etc. had also been provided at pilot sites within the CBFM Implementation Framework.
[23] Official name: Information Impact Survey and Trainee Follow-up Survey
[24] A feature of this support is that each participant draws up an action plan based on the content of the training, and then puts that plan into practice after the training (with necessary inputs being provided by the project based on the results of an appraisal).
[25] The activities included: agroforestry, forest fire prevention, construction of small-scale water supply and water storage systems and development of nurseries, coastal resources management through mangrove planting, forest management, stock farming, para-legal, and goat raising.

activities was summarized in a report.

According to the results of the questionnaire sent to the DENR, at the time of the ex-post evaluation, the relevant POs had maintained the activities supported by the project.[26]

Indicator 3-4 was "One draft training curriculum is prepared based on the experiences of field activities within the jurisdiction of the Region 3 Office." In collaboration with the Human Resource Development Service (HRDS) at the DENR, the Region 3 Office organized a committee comprised of DENR personnel and outside experts to prepare a *Training Guide*[27] for the nationwide extension of CBFM based on the experiences within the region. The final version was distributed to the DENR Regional Offices for adoption.

(4) Output 4 was "Existing practical information on CBFM reached and appropriated by the POs in Region 3." Output 4 was achieved because all of the set indicators were met. The achievement of each indicator at the time of completion and the continuation of activities at the time of the ex-post evaluation are as follows.

Indicator 4-1 was "Communications surveys have been conducted on at least 12 POs (10% of POs within the jurisdiction of the Region 3 Office), and the information needs of POs are identified." Members of 12 POs (pilot sites and follow-up training sites) were surveyed between 2005 and 2008, and their information needs were identified based on the responses of 395 people.

Indicator 4-2 was "At least 12 types of practical information materials (booklets, leaflets and comics) on CBFM are prepared." Twelve[28] different information materials were prepared based on the needs identified above, and were distributed to 38 high-priority POs[29] (6,560 copies distributed).

Indicator 4-3 was "At least 10% of the 38 high-priority POs in the jurisdiction of the Region 3 Office are to show an interest in practical information disseminated." The results of the impact survey showed that 421 members (74%) of the 38 POs where agroforestry activities were conducted received leaflets, and of this, 43% were actually interested in their content.

At the time of the ex-post evaluation, it was confirmed that the information materials prepared during project had not been reproduced and distributed after the completion of the project.

[26] The results of the field studies for four of the 12 relevant POs are discussed below.
[27] The curriculum contained in the *Training Guide* consists of: (1) CBFM Orientation, (2) Para-legal for CBFM, (3) Forestry Management within CBFM, and (4) Agroforestry.
[28] The information leaflets covered the following topics: grafting mangoes, cultivating and producing mushrooms, insect-repellant solution using smoke and ash, vermiculture and composting, bagging fruit, reinforcing riverbanks, making charcoal briquettes, making paper, agroforestry development, bamboo work, leafy plants, medicinal herbs and trees.
[29] Of the 128 POs within the jurisdiction of the Region 3 Office, those where project activities were conducted at least once.

Indicator 4-4 was "One strategy paper on information gathering and dissemination mechanisms which includes recommendations of the Forest Management Bureau is prepared." A communications survey was conducted, and printed matter on information dissemination and communication was prepared and distributed. A strategic document was prepared based on monitoring and a trial of the Farmers Information Resources Management Method (FIRM),[30] and a workshop was held at the DENR Region 3 Office where the document was shared with CBFM coordinators.

According to a counterpart at the DENR Region 3 Office, at the time of the ex-post evaluation, extension using FIRM had not been implemented after the completion of the project because of the absence of an implementation plan and budgetary allocation from the DENR.

3.2.1.2 Achievement of Project Purpose

The Project Purpose was "Conservation, rehabilitation and sustainable utilization of forest and land resources within CBFM areas are done by capacity-strengthened people's organizations (POs), with support from the capacity-strengthened Department of Environment and Natural Resources (DENR), LGUs and other relevant institutions." The Project Purpose was achieved because all of the set indicators were met. The achievement of each indicator is as follows.

(1) Indicator 1 was "By June 2009, all pilot sites in this project and at least 30% of other people's organizations (POs) in the Region 3 Office are to apply and put into practice appropriate technology for the conservation, rehabilitation and sustainable utilization of forest and land resources."

The results of the aforementioned impact survey confirmed that, excluding those POs located in pilot sites, 42[31] of the 123 POs (34%) located within the jurisdiction of the DENR Region 3 Office had adopted and put into practice appropriate technology provided through the project. Therefore, Indicator 1 was achieved.

(2) Indicator 2 was "By June 2009, at least 50% of members of each PO, the DENR, LGUs and other related organizations inf the Region 3 Office, which participate in the CBFM Program, are to raise their awareness of CBFM and are to improve their capacity for planning and implementation."[32] The achievement of each indicator is as follows.

[30] FIRM is a hands-on training workshop lasting half a day or one day. Features of FIRM include: (1) neighboring residents serve as instructors and use regional resources; (2) it is a community-led workshop for which preparation, etc. is basically performed by POs; (3) it has a low budget because everything can be self-produced and training for instructors is not required; and (4) it allows for large numbers of people to participate because it can be held often. Although it was not included in the PDM, since the project did not have a dissemination component, a decision was made at the sixth meeting of the Joint Coordinating Committee (JCC) (February 2008) to adopt it. The FIRM technique was developed together with short-term experts in order to improve the dissemination effect.

[31] POs currently engaged in follow-up training support, and residents engaged in agroforestry activities on DENR public land.

[32] Reasons given for this included: strengthening the organization through the project, holding regular meetings, and increasing opportunities to learn new techniques from other members.

Table 1: Achievement of Project Purpose

Survey target (number surveyed)	Results of survey
People's organizations (POs) (60)	82% (49) raised their awareness of the CBFM Program. 72% (42) recognized an improvement in the participation of their members.
LGUs (11)	82% (9) of LGUs observed a change in awareness and attitude and an improvement in performance following the training.
Staff at DENR Provincial/Municipal Offices (28)	92% (26) confirmed a change in approach to CBFM operations after the training and improved their awareness and knowledge about CBFM.

Source: DENR-JICA E-CBFMP (2009) Information Impact Survey and Trainee Follow-up Survey

As described above, all the indicators for the Project Purpose were achieved.

All of the activities based on the final PDM which was designed in the project were carried out, and as shown in section 3.2.1.1, the four Outputs were also achieved as planned. However, since there was no extension component for CBFM in the final PDM, a number of activities were added, including: (1) development and application of the "Agroforestry Farmer Field School (FFS)"[33] extension approach; (2) implementation of private-sector partnerships for the poor, and preparation of a *Facilitator Manual*; and (3) development and application of the "FIRM" extension approach. Achievement of the Project Purpose was brought about by accomplishing these four Outputs and through the additional activities.

Figure 1: Outputs Produced in the Project

Figure 2: Mangrove Reforestation in Zambales Province

[33] Farmer Field Schools (FFS) are an agricultural extension approach developed by the Food and Agriculture Organization of the United Nations (FAO). They are a hands-on training technique, whereby training is conducted in an exhibition field over a long period of time (about four months). In the project, this approach was developed for uplands in cooperation with the LGUs responsible for agricultural extension. In conjunction with the Department of Agriculture, the empirical experiences in areas under CBFM agreements were compiled into the "FFS Field Guide," and this was distributed to the DENR and the Department of Agriculture.

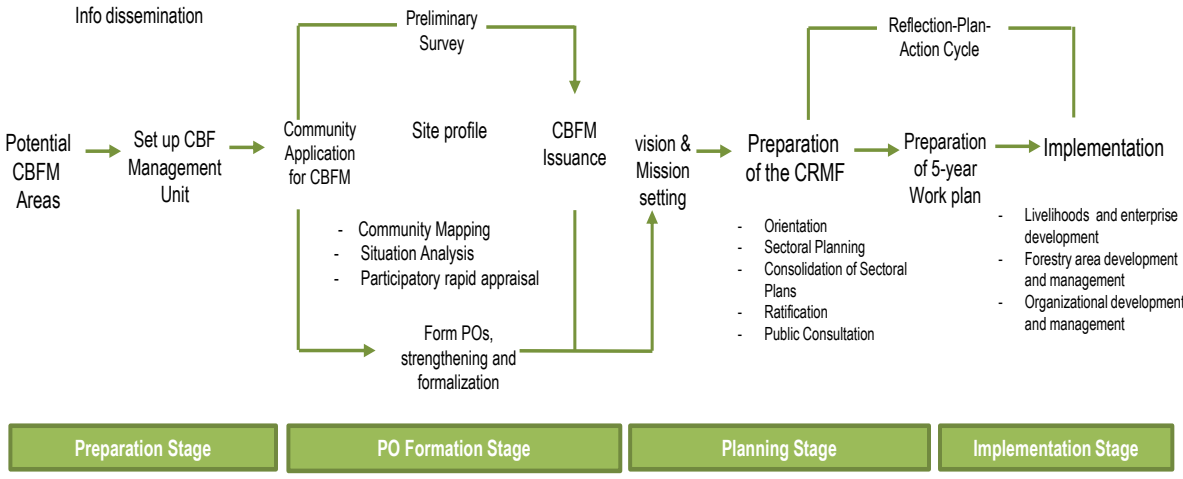
3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

Based on the final PDM, the Overall Goal to be achieved five years after the completion of the project was "Conservation, rehabilitation and sustainable utilization of forest and land resources within Community-Based Forest Management (CBFM) areas are promoted to contribute to the overall sustainable forest management of the Government of Philippine."

The indicator established for judging whether the Overall Goal had been achieved was "By 5 years after project completion, the project experiences and technologies leading to the conservation, rehabilitation and sustainable utilization of forest and land resources are fully sustained and observed in the E-CBFM pilot sites and eventually shared and utilized by at least 20% of CBFM projects in the Philippines." However, by all accounts of the stakeholders, by the completion of this project, there had been no discussion or agreement among the people involved in the project, including JICA and the DENR, regarding the method of achieving (implementing) the Overall Goal and the method for measuring[34] the Overall Goal once the Project Purpose had been achieved.

Therefore, in this evaluation, it was decided to confirm the degree of achievement at the implementation stage of the four stages of the CBFM Implementation Framework (Figure 3), by dividing achievement between the national level and the Region 3 level. At the time of evaluation, there were 1,790 CBFM sites, and so achievement is estimated on the assumption that the "number of CBFM projects" in the indicator is 1,790.



Source: DENR

Figure 3: CBFM Implementation Framework

Following completion of the project, the manuals and guidelines that were prepared during the project have been used as reference through a number of special government programs, such as the

[34] According to the DENR, the plan is to engage a consultant to decide on the survey and measurement techniques.

Upland Development Program, the National Greening Program[35] and the Comprehensive Agrarian Reform Program (CARP), and nationally, training is being conducted and practices maintained in such areas as: (1) agroforestry, (2) para-legal, and (3) forest fire management. On the other hand, the application of Agroforestry FFS, FIRM and PEP developed through this project is extremely limited.

The materials provided by the DENR only show the number of participants in the abovementioned training workshops. The agroforestry project conducted under CARP between 2007 and 2012 appears to have targeted a total of 590 POs (actual number unknown), and the number of CBFM projects that used the training manuals and guidelines and the number of targeted POs cannot be confirmed. On the other hand, there are 128 POs within the jurisdiction of the DENR Region 3 Office, and the project Outputs (*Training Guide* and training techniques) have been directly applied to at least 51 (41%) of them by utilizing funds from other programs. Accordingly, it would appear that the Overall Goal is likely to be somewhat achieved.

3.2.2.2 Continuity of the project effects at both pilot sites and follow-up training sites

This section examines the sustainability of project effects at the PO level at the time of the ex-post evaluation, based on interviews with POs during field surveys at both pilot sites and follow-up training sites, as well as on questionnaire-based beneficiary surveys.

As shown in Table 2, of the three pilot sites where field surveys were conducted, the only site where POs were active was in Barangay Bangkal in Bataan Province. Most of the members in the PO in this barangay are faculty members at the local university, and the steering committee is composed of experts in CBFM, forestry and management. Members of the steering committee view CBFM activities as part of their social responsibility. Utilizing the university's public network, they secure funds from other government and non-government organizations for supporting the livelihood improvement of other members. This PO is not a typical example of CBFM. According to the CBFM coordinators, who are in charge of the DENR target area, most POs tend to step up activities when they have funding support from the DENR, but as soon as the support ends, the activities become stagnant. The DENR has also continued to provide support to POs that are under CBFM agreements, such as allocating funds for special government programs. In this sense, the real situation is different from the original objective of having POs with improved capacity to conduct forest management in a self-reliant manner.

[35] Although the DENR is the implementing agency for the National Greening Program, it has been implemented in coordination with other relevant government agencies, including the Department of Agriculture, the Department of Agrarian Reform, the Department of Education, the Department of Social Welfare and Development, the Commission on Higher Education, and the Department of Budget and Management. The objectives of the program include: (1) poverty reduction; (2) sustainable management of natural resources; (3) provision of food goods and services, such as timber, fiber, non-timber products and water regulation; (4) improvement of social and environmental awareness for forests and watersheds; (5) improvement of awareness among the youth and other stakeholders for their shared responsibility in the sustainable management of tree plantations and forest resources; (6) harmonization of the greening efforts of the government, civil society and the private sector. Source: DENR Memorandum Circular No.2011-01 "Guidelines and Procedures in the Implementation of the National Greening Program"

Table 2: Continuity of Project Effects at Pilot Sites

Activity description	Continuity of project effects
Maniniog Barangay, Tarlac Province	
PO meeting rooms	Even now, the Cacupangan Tree Farmers Association holds monthly meetings. The implementing agency has continued to provide support after the completion of the project, by utilizing the funds of other special government programs. According to the local CBFM coordinator in charge, it is difficult to invigorate the activities of the PO without the sustained support from the DENR. In 2012, 1.3 million pesos were allocated from the Comprehensive Agrarian Reform Program (CARP) for the purpose of implementing agroforestry and other projects.
Water harvesting structure	Water harvesting structure no longer function fully because of holes in hoses. Since the authority for maintaining the canals was transferred to the PO, usage fees have not been collected. When constructing similar small-scale water harvesting structures needed for releasing water into forests, the implementing agency has not designed the system in a way that secures funding from the collection of usage fees for the PO's required maintenance costs. Therefore, in cases like now when the facilities malfunction, the PO can no longer carry out repairs straight away. For this reason, the PO plans to collect a repair levy from members.
Pastoral farming	On the advice of experts from the Tarlac College of Agriculture, one of the objectives of pastoral farming activities was to strengthen the PO by communally managing goats. However, after the completion of the project, the person in charge of managing the farm abandoned his duties, and being unable to recruit a replacement, it was decided to distribute the goats to individual members. The revolving fund[36] approach was supposed to be applied to those goats, but now the PO is not managing that. Consequently, the situation is now that no one knows how many goats there are.
Poonbato Barangay, Zambales Province	
Water harvesting structure	The Loob Bunga Settlers Association started out as a federation of seven neighboring POs, but now, only four POs are members. The association is currently defunct, in the sense that it does not hold regular meetings or conduct joint activities. "Pinatubo Support for Impoverished Aeta Tribes" is the only PO that is conducting group activities. The area is primarily used for resettling victims of Mount Pinatubo. It is dry, the land is covered in rocks and rock formations, and the soil is oxidized. (It is the so-called "Cogon Grasslands.") For this reason, securing water is necessary when planting trees. However, after the facilities were completed (after they were handed over, immediately before completion of the project), the hoses ruptured within a few days, and the canals could no longer be used.[37] As a result, the survival rate of the forests planted in this area was no more than 10% (water could only be secured for areas close to the water source). Even now, forest fires are an annual occurrence.

[36] A "revolving fund" is a series of mechanisms whereby: (1) Goats are distributed to beneficiaries based on the needs of residents; (2) The beneficiaries breed the goats they have received; (3) If a goat has offspring, those kids are given to the next beneficiaries.

[37] The water harvesting structures were proposed by the PO, and designed by engineers at the local municipal government (as part of the collaboration with the LGU). Construction was funded by the PO (wages), and supervised by the local DENR office (CENRO: Community Environment and Natural Resources Office). The PO did make a request for support to the DENR and the LGU, but it was only supplied a partial hose from the LGU, and has not yet reached a fundamental solution. The problem is the obscurity as to where responsibility lies. There are no engineers at the DENR, and it cannot perform a technical validation of the design. The LGU claims that there are no problems with the design, and that the problem was in the construction process. In particular, because maintenance following completion of the facility was transferred to the PO, the DENR and the LGU claim to not bear primary responsibility. If the original construction had been outsourced, then there would have been a guarantee period after the completion of the facility, and the contractor would have been responsible for any problems, but in this case, each of the organizations will not, or cannot, assume responsibility.

Activity description	Continuity of project effects
Bangkal Barangay, Bataan Province	
Mushroom cultivation	The Bangkal Upland Farmers Association conducted mushroom cultivation in a three-way agreement with the Bataan Peninsula State University and the Abucay municipal government in the target area. Under the agreement, the PO planned to utilize the facilities of the university, and also planned to receive guidance on cultivation techniques. However, the project was discontinued because: (1) The PO was unable to access the banana peels needed for cultivating mushrooms; (2) The mushroom spawn became infected with various bacteria; and (3) The temperature was too low. Mushroom cultivation was also conducted in the Ayala area, which was targeted by the pilot activities but not subject to the field study on this occasion, but activities were similarly suspended because of technical issues.

Source: Beneficiary surveys

There have also been issues on the condition of facilities and equipment provided by the project. In particular, there have been problems in the design (Zambales Province only) and maintenance of water harvesting structure, which are essential for maintaining forests. Thus their efficacy has not been sustained. Based on interviews with all DENR personnel who manage the sites targeted by this project, there have also been similar problems at all the other sites not covered by these field surveys. The problems can be attributed to a system of maintenance not being in place when the facilities were hande d over to the POs. Pursuant to the provisions of the Local Government Code 1991, the obligation for maintenance of a facility is transferred to the PO after completion of the facility. However, at the time of transfer, methods of operation and maintenance, such as the collection of fees necessary for maintenance, had not been decided. For this reason, especially at the arid site in Zambales Province, the survival rate of planted trees was extremely low (10%) because of a lack of water. Again, the case of mushroom cultivation being introduced without a technical validation and marketing survey being performed has brought about a suspension of activities.

Activities at pilot sites have played a central role in the project, having a bearing on all Outputs, such as policy recommendations and the development of various training and extension techniques. In particular, the participatory PO formation, situation analysis and planning in the run-up to implementation takes about four years. On the other hand, continuity of the efficacy of the pilot activities themselves after the completion of the project has not been secured because of inadequate system design for operations and maintenance and to a lack of feasibility studies prior to the activity. From the perspective of the project, even pilot activities represent an enormous opportunity cost for residents participating in the activity. The residents have high hopes, and the success or failure of the activity is also linked to the motivation for residents to participate in forest management. Given this, constructing facilities requires system design that gives consideration to the continuity of effects after the conclusion of the project, and the introduction of livelihood activities necessitates verification of feasibility which also takes a marketing perspective into consideration.

On the other hand, continuity of efficacy in follow-up training sites is higher than in pilot sites. The reason for this lies in the capacity of the PO and the support selection process. In these activities,

the representative of the PO conducted issue-specific training, and based on the results of that training, participants formulated actions plans. From those action plans, the people involved in the project decided on the support, bearing in mind the relevance of the plan and the feasibility of the project. In other words, the project effects have continued because support was provided to a PO that possesses a strong capacity for drawing up and implementing plans. Given this, it can be confirmed that improving the organizational capacity of residents is also important for producing and sustaining the effects of external support.

Table 3: Continuity of Project Effects at Follow-up Training Sites

Activity description	Continuity of project effects
Nambalan Barangay, Tarlac Province	
Extension of CBFM areas, stock farming	The Nambalan Farmers Association currently holds regular meetings once every quarter. The head of the association is an agricultural extension worker at the LGU. Therefore, other members are able to receive technical support from him. By using a revolving fund, the support is extending to all members who want it. As a consequence, the initial 22 head of goats provided by the project have increased to 50, acting as supplementary revenue. With regard to forest management, given many residents in this target area earn a living by making furniture, the forests are in good condition.
Papaac Barangay, Tarlac Province	
Forest fire management	The Papaac Upland Farmers Association holds regular meetings once every quarter. Steering committee meetings are held as required. Only steering committee members received training from the project, and necessary equipment was provided. Some of the equipment provided from the project has malfunctioned, but has not been repaired. In response to this, the head of the PO states that the main roles of the organization are to: (1) establish fire control lines (clear tracts in forests at regular intervals to prevent fires spreading); (2) monitor inside the CBFM area; (3) deploy mainly indigenous people living in the forest (Aeta) as security guards; and (4) collect fines for illegal acts. As a result of daily monitoring activities, the frequency of forest fires has decreased. (These used to occur every year, but now it is once every few years.) Between 1970 and 1980, approximately 80% of the forested area was destroyed by fire.
Libaba Barangay, Zambales Province	
Project for the autonomous management of coastal resources through mangrove planting	The Mangingisda Multipurpose Farmers Association holds monthly meetings. Using the surplus funds from the production of seedlings commissioned by DENR-CARP, the PO has purchased fishing vessels, and lends them out to its members. The monitoring of mangroves is performed by members that fish in the area. However, with dynamite fishing continuing unabated in coastal waters, fish catches are on a downward trend. The merits of mangrove planting include: (1) harvesting of shellfish, etc.; (2) protection of dwellings from wind and waves; and (3) the sale of mangrove seedlings.
Duale Barangay, Bataan Province	
Prevention of forest fires	The Limay Bataan Farmers Association was formed by LGUs in 2002 (also includes indigenous Aeta). It holds regular monthly meetings, and it has also secured external financing from the DENR and the Department of Agriculture. All of the equipment provided by the project for the prevention of forest fires has been properly managed under the supervision of an administrator, and monitoring has been conducted for the prevention of forest fires. There have been no fires since 1997. The effects from combining support for tree-planting, etc. from the DENR and others include: (1) land use and development from planting trees; (2) increase in forest density; (3) no forest fires; and (4) vegetable gardens.

Source: Beneficiary surveys

Based on the above, while issues have been observed in the continuity of some activities, it is expected that the Project Purpose was achieved, and the Overall Goal will also be somewhat achieved,

such as application of agroforestry and other technologies developed through the project. Therefore, the effectiveness and impact of the project are fair.

3.3 Efficiency (Rating:③)

3.3.1 Inputs

Table 4 shows the planned inputs and the actual inputs at the completion of the project.

Table 4: List of Inputs

Inputs	**Planned**	**Actual** (at completion)
1. Japanese Side		
(1) Dispatch of experts	• 5 for Long-term • 2-3 per year for Short-term:	• 5 for Long-term (total of 10) • 4 for Short-term
(2) Acceptance of trainees	2-3 per year (forest management)	36 (forest management)
(3) Equipment	Necessary equipment for preparing seedling plots, processing information, training, etc.	Equipment used on site, such as vehicles, communications gear, mowers, etc., and office equipment
(4) Local operation costs	Approximately 270 million yen	92 million yen
Total cost	Approximately 720 million yen	571 million yen
2. Philippine Side		
Counterparts	Not mentioned	55
Offices for experts	1 room	1 room
Budget allocation	Approximately 50 million yen	Approximately 62 million yen (31.53 million pesos)
3. Implementation Period		
	5 years	June 15, 2004 - June 14, 2009 (5 years)

3.3.1.1 Elements of Inputs

Inputs from the Japanese side were provided as planned, except for some inputs as described below. Funds for operational costs and personnel allocations from the Philippine side were provided as planned. However, during the first three years and eight months of the project, the PDM was revised three times, and changes were made to the target areas and scope. Consequently, some of the inputs in the first half of the project did not lead to achievement of any Outputs or the Project Purpose. These are described in detail below.

- With respect to the training and information component, the activities base was transferred from the central office to Region 3 in January 2007, two years and seven months after the start of the project. Since the counterpart and scope were changed, experts ended up providing technical guidance to a new counterpart based on the new Output indicators. As a consequence, technical guidance provided to that time was not used directly for any Outputs or the Project Purpose. However, since the Overall Goal was for the transfer of technology through the DENR to other regions, this component contributed to achievement of the goal.

- Training during the first half of the project had been conducted on a national level. Under the final PDM, the training component was narrowed down to Region 3, and its contribution to achievement of the Outputs and Project Purpose became limited. Specifically, of the total 1,176 training participants, 462 received national training, and 714 received Region 3 training. Thus, 39% of all training has not directly contributed to achievement of the Outputs and Project Purpose under the final PDM. However, as described above, the training did contribute somewhat to achievement of the Overall Goal (application of agroforestry and other technologies developed through the project).
- Activities and inputs for the information component during the first half of the project included the following: (1) production of a project newsletter; (2) production of a booklet introducing the project; (3) production of a website for the project; (4) development of a database for the CBFM Program; (5) sharing of information with CBFM-related NGOs, academic societies and other organizations both in the Philippines and abroad; and (6) preparation of information, education and communication (ICE) teaching materials.[38]
- Apart from item (6), none of the inputs during this period are relevant to achievement of the Outputs and Project Purpose for the information component under the final PDM. However, relative to the overall total value of inputs, they account for a small amount.
- Because of delays in the CBFM preparatory stage and PO formation stage activities at the pilot sites, agroforestry experts, which were originally required for the implementation stage, were not well utilized during the first half of the project. The plan had been for agroforestry experts to be dispatched for a period of five years, but because of JICA's policy at the time of the mid-term evaluation study, it was decided to address these activities using short-term experts rather than long-term ones. However, after that study, no short-term experts in this field were dispatched, and no experts in this field were dispatched during the second half of the project when they were most needed at the pilot sites. Thus, there were issues on the timing of dispatch. Under such circumstances, the team of experts in training, information and extension in rural areas provided guidance on agroforestry activities.

As mentioned above, the failure to connect some of the inputs during the first half of the project with the Outputs and Project Purpose can be traced back to the inappropriateness of the plan. However, during the first half of the project, because training had been conducted on a national level, part of these inputs have contributed—not to the Project Purpose (within the jurisdiction of the Region 3)—but to the Overall Goal (whole parts of the Philippines)[39]. In this sense, it can be said that the inputs of the first half of the project were used effectively.

As for the equipment provided from the Japanese side, which included vehicles, materials and office equipment needed for carrying out the pilot activities in Region 3, the questionnaire survey to

[38] Materials provided by JICA

[39] The extension (of agroforestry in particular) to other regions was initiated through government programs during this project's implementation period.

the DENR at the time of the ex-post evaluation and the visual inspection conducted during the field study showed that the operational status of the provided equipment was generally good. This is because necessary equipment was provided for activities based on the needs of the DENR central office, local DENR offices and local residents.

3.3.1.2 Total Cost

In contrast to the planned total cost of approximately 720 million yen, the actual total cost was 21% below schedule at 571 million yen. In terms of the value of inputs, the dispatch of experts, provision of equipment and acceptance of trainees were mostly as planned. As for local operation costs, whereas the planned amount was approximately 270 million yen, actual costs were considerably less at 92 million yen. This is due to the target area being shifted from the whole of the Philippines to Region 3.

3.3.1.3 Period of Cooperation

The planned period of cooperation was 60 months, and the actual period was 100% as planned.

In light of the above, the project had a number of issues due to changes in inputs and Outputs during the implementation period. For instance, as described above, some of the inputs during this period could not be utilized for achieving the Outputs and Project Purpose. However, they have contributed to achieving the Overall Goal, and they make up only a small percentage of the total project cost. Both project cost and period of cooperation were within the plan. Therefore, efficiency of the project is high.

3.4 Sustainability (Rating:②)

3.4.1 Related Policy towards the Project

Policy sustainability is guaranteed, but there are a number of issues with institutional sustainability as discussed below.

Under the "Philippine Development Plan 2011–2016" and the "Revised Master Plan for Forestry Development (MPFD) 2003–2018," community-based forest resources management is positioned as a cross-cutting strategy for the entire forestry sector. According to the DENR, as stipulated in the CBFM Strategic Plan, even at the time of the ex-post evaluation, the DENR aims to expand the areas under CBFM agreements to nine million hectares. Furthermore, under the current Aquino Administration (2010–2016), based on Executive Order No. 26, implementation of the National Greening Program (2011–2016) in coordination with various agencies for the reduction of poverty, protection and conservation of resources, enhancement of productivity and measures to mitigate climate change has been positioned as a national priority program. The objective of this program is to plant 2.5 billion seedlings in 1.5 million hectares of lands of the public domain, including existing areas under CBFM agreements. Thus, policy sustainability is guaranteed.

From the completion of the project until the time of the ex-post evaluation, a budget for special government programs relating to CBFM had been contributed for the following: (1) Upland

Development Program (2009–2010: 1.5 billion pesos); (2) CBFM-Comprehensive Agrarian Reform Program (CARP) (2009–2012: 570 million pesos); and (3) National Greening Program (2011–2016).[40] This budget has been mostly allocated to reforestation programs (with agroforestry component) and livelihood improvement (primarily for the establishment of nursery for seedling production). Special government programs are top-priority programs that the newly appointed President comes out with following a change in administration. Although the details of their content and the size of their budget differ under each administration, they are meant to be implemented for each sector. Their budget is incorporated into the regular budget; thus, even though they are called special government programs, they are in fact budgeted for as usual. Since the current Aquino Administration has placed an emphasis on environmental problems, the size of the funding for the National Greening Program underway at the time of the ex-post evaluation was far larger than that for the Upland Development Program implemented under the previous administration.

Meanwhile, there are some issues on the institutional aspects of the sustainability of the CBFM Program, as described below. According to an interview with the DENR, although the DENR's policy is to continue expanding areas under CBFM agreements, it is faced with the following limitations of CBFM agreement expansion. First, as shown in the section on "relevance," for a while in 2005–2006, there was a policy of reviewing the CBFM agreements. Given this, residents in potential CBFM areas have concerns about agreements being reviewed in the future, and cannot be motivated to participate in the program. Next is the point that potential CBFM implementers who own individual certificates of land use will not show interest in jointly owned forests, since they feel that individual rights of ownership cannot be specified. Furthermore, for these reasons, it takes the DENR time, money and personnel to explain and mobilize residents to the point of concluding a CBFM agreement, and there are limits to the current implementation structure of local offices.[41] Finally, pursuant to the Local Government Code, the management has come under the jurisdiction of LGUs, while monitoring and evaluation and also issuance of land tenure instrument remain as functions of DENR. Thus, the cooperation of LGUs is essential. However, it is actually hard to obtain their cooperation in connection with the scope of that authority.

In response to such circumstances, the DENR is internally reviewing how the CBFM Strategy is implemented, such as the possibility of establishing forest management units at the barangay level (the smallest administrative unit) and making CBFM agreements with districts comprised of a number of barangays covering different ecosystems.

3.4.2 Institutional and Operational Aspects of the Implementing Agency

A number of elements lacking sustainability can be observed in the structure of the DENR.

In this project, based on the experiences in Region 3, CBFM-related technologies and techniques have been organized systematically, and many manuals and guidelines have been prepared for extending the technologies and techniques to other regions. DENR Region 3 is organized around a

[40] The implementing agency was allotted about 1.33 billion pesos in 2011 and about 2.68 billion pesos in 2012.
[41] In particular, labor, time and budgets have been apportioned to reforestation work under the National Greening Program.

number of central counterparts whose capabilities were strengthened during the implementation period. Despite the retirement of a few of these counterparts, even after the completion of the project, there were no significant changes to the personnel structure, and systems were in place to sustain the project effects. However, under the National Greening Program (special government program), currently, in addition to their normal duties, CBFM coordinators at the field level have been assigned the significant duty of achieving imposed target figures for reforestation. Furthermore, as mentioned previously, there are issues regarding the continuity of project effects at pilot sites, and it would appear that the DENR as a whole has not establish implementing system and also monitoring and evaluation mechanism for the CBFM Program.

On the other hand, by implementing national government programs centered in reforestation work, such as the National Greening Program, it is consequently possible to sustain a certain degree of the project's effects at the implementation stage of the CBFM Implementation Framework. In implementing this program, DENR Regional Offices nationwide have utilized each of the training modules contained in the *Training Guide*, particularly the agroforestry module, as reference material for reforestation work.[42] However, the more practical and effective Agroforestry FFS, which was developed by the project in collaboration with the Department of Agriculture, has thus far only been put into practice within the jurisdiction of the Region 3 Office, not at the national level.

The problem here is that, during the project implementation period, there was no discussion among the project stakeholders, including both DENR and JICA officials, as to the specific plan, implementation structure and division of roles for achieving the Overall Goal.[43] To expand the project experiences and technologies to other regions, a systematic implementing structure is needed, with the central DENR office at its core. However, the office does not have a division to coordinate and manage all of these outputs such as manuals, study reports and information leaflets produced by the Project. Nor has a database that keeps all outputs in soft-files been developed.[44] What happens now is that most outputs are owned personally and partially by the counterpart at the time. Thus, a structure will need to be built so that outputs can be shared and utilized easily among the people involved in implementing CBFM, both inside and outside the DENR.

3.4.3 Technical Aspects of the Implementing Agency

Counterpart technologies have been maintained to a certain level after completion of the project by putting them into practice in the counterpart's normal duties or in special government programs.

The DENR plans to utilize the manuals and other items developed during the project in the Forestland Management Project, the abovementioned Japanese ODA loan project. Skills in such areas as agroforestry, para-legal, and fire management, which were systematically organized during this

[42] The *Training Guide* has been distributed to all Regional Offices, where it is utilized when conducting training for POs.
[43] Based on interviews with the officials, it seems that, during the second half of the project, they focused on catching up on the first-half progress of the project, and had no spare time to formulate a concrete implementation plan for the question of how to sustain the project effects after project completion.
[44] Both soft and hard copies are stored at the division in charge of CBFM at the DENR Region 3 Office.

project,[45] are being acquired and put into practice by counterparts, through distributing the manual and conducting training targeted at the whole of the Philippines and Region 3. In contrast, application of new forest management techniques,[46] such as Agroforestry FFS, FIRM and PEP, which were developed during this project, is limited. The reason is that a manual developing and systematically organizing these techniques has not been distributed nationwide, and after completion of the project, the manager at the central DENR office has not conducted training or orientation for local CBFM coordinators. With respect to the Region 3 Office, the Agroforestry FFS has been implemented utilizing the funds of other special government programs, but apparently FIRM and PEP cannot be put into practice because of a lack of budget allocation from the DENR.[47]

Through discussion with this Evaluation Team, it is planned that during the Japanese ODA loan project mentioned above, the DENR will launch its own initiatives for sustaining the project effects, such as using the counterpart at the DENR Region 3 Office as the training instructor and provide training to CBFM coordinators in the areas targeted by the project, and providing opportunities for local residents in the target areas to visit the activity sites in Region 3 and exchange ideas and opinions.

3.4.4 Financial Aspects of the Implementing Agency

The counterpart has used national government programs to secure the funds necessary for administering the implementation stage of the CBFM Implementation Framework.

The DENR's overall budgetary allocation from the completion of the project until the time of the ex-post evaluation is as shown in Table 5. Reforestation work, including the National Greening Program, is contained in budget item "2. Forest development". Item "4. CBFM" includes the following: (1) preparatory work for CBFM agreements (preparation to shift from other land-use certificates to CBFM agreements, PO formation/strengthening and registration, land surveys and mapping); (2) documentation of successful cases; and (3) monitoring and evaluation.

[45] Training on these technologies had been conducted prior to the project being implemented, but during this project, improvements were made to the content of the training and modules were created.

[46] According to questionnaire surveys and interviews of counterparts at the Region 3 Office, the applicability and effectiveness of these techniques in the field is extremely high.

[47] According to interviews with DENR officials, all activities at local offices are prescribed along with budgets in accordance with an annual action plan that is prepared at the beginning of each financial year, and unless there are specific instructions from the central office, local offices cannot independently implement new activities.

Table 5: DENR Budget (2009–2012)

(Unit: thousand pesos)

	2009				2010			
	Personal Service	Maintenance & Other Operating Expenditures	Capital Outlay	Total	Personal Service	Maintenance & Other Operating Expenditures	Capital Outlay	Total
1. Forest Management Service	768,998	39,132	794	808,924	758,318	56,548	0	814,866
2. Forest Development	95,254	215,723	1,293,347	1,604,324	92,459	50,911	1,115,441	1,258,811
3. Forest Protection	448,599	80,117	8,000	536,716	439,848	278,602	0	718,450
4. CBFM	50,357	48,241	2,379	100,977	50,739	140,874	0	191,613
5. Soil Conservation and Water Management	10,953	322,343	85,083	418,379	10,953	85,782	11,000	107,735
6. Forest Boundary Delineation & Land Use Allocation	118,590	317,805	0	436,395	117,919	291,676	0	409,595
Grand Total	1,492,751	1,023,361	1,389,603	3,905,715	1,470,236	904,393	1,126,441	3,501,070
	2011				2012			
	Personal Service	Maintenance & Other Operating Expenditures	Capital Outlay	Total	Personal Service	Maintenance & Other Operating Expenditures	Capital Outlay	Total
1. Forest Management Service	821,509	46,188	0	867,697	841,350	71,796	0	913,146
2. Forest Development	98,445	157,961	1,173,182	1,429,588	99,876	1,002,456	1,108,371	2,210,703
3. Forest Protection	466,109	208,679	16,570	691,358	464,048	406,511	67,037	937,596
4. CBFM	53,800	46,203	0	100,003	55,456	48,472	2,379	106,307
5. Soil Conservation and Water Management	10,953	102,769	261,000	374,722	10,953	105,936	261,000	377,889
6. Forest Boundary Delineation & Land Use Allocation	128,249	281,355	0	409,604	134,300	236,341	0	370,641
Grand Total	1,579,065	843,155	1,450,752	3,872,972	1,605,983	1,871,512	1,438,787	4,916,282

Source: DENR

At the time of the ex-post evaluation, as a result of implementing the National Greening Program, financial sustainability of the implementation stage of the CBFM Implementation Framework (see Figure 3) has been secured until 2016. In particular, 56% of the overall 2012 DENR budget has been allocated to reforestation work in the CBFM implementation stage. In contrast, the preparatory stage, PO formation stage and forest management planning stage of the CBFM Implementation Framework account for 6% of the overall budget for 2012. Although limited, a stable budget has been allocated, and a certain degree of financial sustainability is expected to be secured.[48] According to the DENR, the budgets of national government programs can also be allocated to activities in the preparatory stage, PO formation stage, forest management planning stage, and implementation stage particularly for plantation establishment, agroforestry development and seedling production (see Figure 3).

In light of the above, some minor problems have been observed in the institutional and structural aspects of the implementing agency. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project purpose of the Enhancement of the Community-Based Forest Management Program (E-CBFMP) was that conservation, rehabilitation, and sustainable utilization of forest and land resources within CBFM areas are done by the capacitated people's organizations (POs) on their own

[48] Although there have been no new CBFM agreements since completion of the project, at the time of the ex-post evaluation, 63 POs nationwide were at the preparatory stage, and budgets had also been allocated for these activities.

initiatives with support from the capacitated Department of Environment and Natural Resources (DENR), local government units (LGUs) and other relevant institutions. The Project is aimed at promoting a national strategy for forest management in the Philippines; thus its consistency with the national policy, the needs of the relevant sector in the Philippines and with Japan's ODA policy is high. However, despite the high consistency of the Project Purpose, there were issues with the appropriateness of the initial project design. For example, the linkage among Outputs was low, and the Outputs did not logically link with the Project Purpose. This had an adverse effect on management of the project and achievement of Outputs. Therefore, relevance of the project is regarded as fair. The Outputs and the Project Purpose, which were revised during the project, have been achieved mostly as planned, and some parts of the overall goal are expected to be achieved through utilization of technologies developed by the Project. However, some issues remain with continuity of the project effects. Therefore, effectiveness and impact of the project are also regarded as fair. The project stayed within the initially planned bounds for both the implementation period and the project cost. Therefore, the efficiency of the project is regarded as high. A few slight problems have been observed in the institutional and structural aspects of the implementing agency. Therefore, sustainability of the project is regarded as fair.

In light of the above, this project is evaluated to be partially satisfactory although having produced certain effects.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

(1) Creation of a database on the Outputs produced in the project, and establishment of methods for managing information

In this project, tools were developed for CBFM-related training and information dissemination, and these were compiled into manuals and guidebooks. Through pilot activities and follow-up training support, other reports were also produced, such as case studies and collections of policy recommendations. However, there are no divisions or managers at the central DENR office to coordinate and manage these outputs produced by the Project. For this reason, the experiences and technologies utilized in the project are not systematically shared because of counterparts being transferred. Therefore, the CBFM Division in the DENR's Forest Management Bureau should obtain the project materials and outputs currently stored at the DENR Region 3 Office, make soft copies and put them onto a database, designate an information manager, and establish a system whereby this information can be shared with the Human Resource Development Service, which is in charge of training nationwide, and with other Regional Offices.

(2) Establishment of an extension system utilizing the Outputs at each stage of the CBFM Implementation Framework

An extension system is needed in order to maximize the project effects. For example, with regard

to the *Training Guide*, which is a practical summary of the content of CBFM training, below are a few options for extension. In collaboration with the Human Resource Development Service and the Forest Management Bureau (CBFM Division) of the central DENR office, the following approaches may be taken: (1) Modules could be revised as needed based on experiences in the field; (2) Training modules could be added according to the needs in the field; and (3) Instruction on the details of the changes could be cascaded to CBFM coordinators, DENR → Regional Offices → Provincial Offices→ Community Offices.

During the project implementation period, it was verified that new techniques developed in the project, such as the Agroforestry Farmer Field School (FFS), the Farmers Information Resources Dissemination Model (FIRM), and the Private Enterprise Partnership (PEP), are effective in promoting CBFM. The implementing agency has also recognized that they are effective and highly applicable. In order to translate directly into capacity building for POs, hand-on training which also includes site visits needs to be steadily implemented, targeted at CBFM coordinators nationwide, and using the counterpart at DENR Region 3, who has experience in implementation, as the training instructor.

(3) Formulation of concrete implementation plan and budgetary measures for extending project outputs

A specific action plan and budgetary measures will be needed to enable the above recommendations. Under the current administration, the DENR has been allocated a larger budget than the past few years through special government programs. However, these programs are for reforestation work undertaken by existing POs, and are different to the CBFM Implementation Framework approach which includes the development of self-reliant POs using participatory techniques. In order to address more sustainable forest management, the capacity building of residents using participatory techniques is essential. Accordingly, consideration should be given to reviewing the allocation of ordinary budgets to activities using a new approach, and to utilizing funds from special government programs and from the Forestland Management Project, which is currently underway being financed through a Japanese ODA loan. Moreover, a concrete implementation plan should be formulated and included in the DENR's annual business plan and investment plan.

4.2.2 Recommendations to JICA

At the time of the ex-post evaluation, the DENR was currently implementing the Forestland Management Project (loan agreement (LA) signed in 2012) which is financed through a Japanese ODA loan. Going forward, JICA should give consideration to the recommendations outlined above. Monitoring should be continued so that the lessons learned, recommendations and outputs from this technical cooperation project are used in the Japanese ODA loan project mentioned above, and support should be provided to the DENR's initiatives as the occasion demands.

4.3 Lessons Learned

(1) Highly feasible project design, and timely design changes as needed

This project was commenced without first fully verifying the feasibility of the project design and the implementation scenario. As a consequence, much effort, time and money ended up being spent on making revisions, and this had a serious impact on the progress of the project. Thus, when planning, it is essential that: (1) a feasible scope be set, based on the scale of the implementation period, project cost and inputs; (2) there be relevance among the Outputs and with the Project Purpose; (3) a feasible implementation scenario (an extension plan which also includes setting specific methods and the scale for extending the project from pilot activities to the whole country) and schedule be prepared; (4) the position of Japanese experts in the Outputs and the scope of their work be clarified; (5) measurable quantitative and qualitative indicators be set; (6) items (1) through (5) be confirmed and ownership shared with the implementing agency. To this end, when formulating a project, it would seem that experts in participatory forest management and project management should also be commissioned to undertake detailed preparatory studies, verify feasibility and improve the accuracy of the project design. On the other hand, even if the accuracy of the project design is improved during the study, some situations will still arise that could not be known until the project is actually implemented. In such cases, design changes should be carried out as soon as possible.

(2) Formulation of a post-project continuity plan, and clarification of the implementation structure

During a project, effort tends to be focused on achieving the Project Purpose. However, in order to sustain and expand the project effects, it would be useful to flesh out a post-project continuity plan together with the implementing agency from the planning stage, and to confirm the plan with the implementing agency at the completion of the project. A continuity plan would contain, for example: (1) the Overall Goal and measurable indicators, (2) the implementation period and an implementation schedule, (3) specific activities, (4) connection with policies of the pertinent sector (in the case of this project: the extent to which it contributes to achieving the DENR's CBFM targets), (5) the people in charge of implementation, monitoring and evaluation, and their roles, (6) the implementation (extension) structure, (7) methods and techniques for monitoring/evaluation, and (8) the required budget and budgetary measures. Of greater importance for realizing the plan is for the partner country to formalize the plan by instituting such legal instruments as ministerial ordinances. It is required for JICA to continuously act upon DENR for formalization during project implementation

(3) Introduction of support for people's organizations (POs) based on securing post-project sustainability

In cases where support is provided to POs, it is necessary to plan out the support in view of sustainability after completion of the project. For example, in this project, following provision of water harvesting structures, their operation and maintenance were transferred to POs, but no

implementation structure had been established covering the financial and technical aspects of the facilities. At present, most of the water harvesting structures provided through the project have lost function because of inadequate maintenance, and this is hindering continuity of the project effects. Therefore, before facilities are handed over to POs, systems should be established so that POs can maintain the facilities in a self-reliant manner, and technical support should be provided as necessary. Furthermore, in cases where new livelihood improvement activities are introduced, it is important to consider feasibility from multiple perspectives, based on the technical, distribution and market aspects of the activities, not just the production aspects. The success or otherwise of this kind of external support is also linked to the motivation for residents to participate in forest management. Therefore, consideration needs to be given to the pros and cons of introducing such activities after taking into account their post-project sustainability, and support needs to be provided for capacity building which is necessary for ensuring that sustainability.