

Ex-Post Project Evaluation 2017
Package III-6 (Peru, Bolivia)

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Republic of Peru

FY2017 Ex-Post Evaluation of Japanese ODA Loan Project

“Irrigation Sub-Sector Project”

External Evaluator: Ayako Nomoto, International Development Center of Japan Inc.

0. Summary

The Irrigation Sub-Sector Project was implemented in the Pacific coastal area of Peru known as the Costa region. The purpose of this project was to improve water use efficiency and expand agricultural production, thereby contributing to increasing agricultural profits, through the rehabilitation and improvement of irrigation facilities, the development of on-farm irrigation facilities, and the strengthening of water users' organizations. The relevance of this project is rated as high; it has been consistent with the development plan of Peru for irrigation, the development needs for efficient use of irrigation, as well as Japan's ODA policy. The project has produced the following effects: more efficient use of water, increased agricultural production, and improved maintenance of irrigation facilities. It has also produced impacts such as improved agricultural income, creating job opportunities, and revitalizing regional economies. As such, effectiveness and impact of the project are also rated as high. Regarding efficiency, the project cost was within the plan; project period significantly exceeded the plan due to delays in the sub-project approval process by the Peruvian government and the executing agency, as well as delays in the formation of beneficiary groups for the introduction of advanced technical irrigation. Therefore, efficiency of the project is rated as fair. There is room for improvement in terms of sustainability, including training for beneficiaries and more frequent cleaning of the facilities developed in this project; however, there are no problems in the institutional and financial aspects of facility operation and maintenance. Therefore, sustainability of the project effects is rated as fair.

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

1. Project Description



Project locations



A rehabilitated canal (Lambayeque Region)

1.1 Background

In 2005, the agricultural industry in Peru accounted for 8% of GDP, 8% of total exports, and 28% of the working population, and played an important role in the Peruvian economy.¹ The Pacific coastal area of Peru (Costa) is an arid region with low precipitation throughout the year; thus, irrigation techniques utilize rivers and groundwater flowing from the Andean Mountains to the Pacific Ocean. Due to the fertility of the soil, the development of irrigation facilities has been vigorously implemented since the 1960s; as a result, 80% of the water use was accounted for by agriculture. As of 1994, out of the total area of irrigated farmland in Peru, 48% was situated within the Costa region; thus, it was an important agricultural production area. Despite its significance in the agricultural sector, only 75% of the irrigated agricultural land in Costa was being utilized, and water resources were not being used effectively. This is mainly due to the aging irrigation facilities, the flood damage caused by the heavy rains of the El Niño phenomenon that struck Peru from 1997 to 1998; as well as the inadequate maintenance of the irrigation facilities caused by a lack of funding and capacity in water users' organizations.² Furthermore, the majority of the Peruvian population (more than one-half) inhabits the Costa region, and urban water demand has increased each year. Improvement of the utilization efficiency had become an urgent issue in order to secure agricultural water.

1.2 Project Outline

The objective of this project is to improve the efficiency of water use and increase agricultural production in the Costa region by improving irrigation facilities, developing on-farm irrigation facilities,³ and strengthening water users' organizations, thereby contributing to the increasing agricultural income.

Loan Approved Amount/ Disbursed Amount	5,972 million yen / 5,793 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	November 2006 / December 2006
Terms and Conditions	Interest Rate 1.5 % Repayment Period 25 years (Grace Period 7 years)

¹ Source: Data provided by JICA.

² The operation and maintenance of irrigation facilities is primarily undertaken by water users' organizations composed of beneficiary farmers and irrigation associations below water users' organizations. One Water Users' Organization (Junta de Usuario) is established in per valley (in some cases, more than one organization in a valley) and several Irrigation Associations (Comision de Regantes) exist below the Water Users' Organization.

³ Introduction of advanced technical irrigation.

	Conditions for Procurement	General untied
Borrower / Executing Agency(ies)	Republic of Peru / Irrigation Subsector Program:(Programa Subsectorial de Irrigaciones: PSI)	
Project Completion	May 2016	
Main Contractor(s) (Over 1 billion yen)	-	
Main Consultant(s) (Over 100 million yen)	Tahal Consulting Engineers Ltd. (Israel)/ S&Z Consultores Asociados S.A. (Peru) (J/V), Nippon Koei Co., Ltd. (Japan)	
Related Studies (Feasibility Studies, etc.)	F/S by PSI (June 2007)	
Related Projects	“Irrigation Sub-Sector Project” (July 1996-June 2004) and additional lending (June 2005) (World Bank)	

2. Outline of the Evaluation Study

2.1 External Evaluator

Ayako Nomoto, International Development Center of Japan Inc.

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: October 2017–January 2019

Duration of the Field Study: January 21, 2018–February 8, 2018 and June 5, 2018–June 14, 2018

2.3 Constraints during the Evaluation Study

This project consists of a number of sub-projects in the Costa region (31 sub-projects related to head construction and canal development, 9 sub-projects related to measurement and control facilities, and 48 sub-projects related to on-farm irrigation facilities). In this ex-post evaluation, information and quantitative data on the project effects of all of the sub-projects were not available from the executing agency. Therefore, the effects of the project have been measured through information and cases obtained from sub-projects (Components A1: 11 and Component B: 6) in which interviews with water users’ organizations and irrigation associations and farmers were conducted.

3. Results of the Evaluation (Overall Rating: B⁴)

3.1 Relevance (Rating: ③⁵)

3.1.1 Consistency with the Development Plan of Peru

In both the appraisal and ex-post evaluation, increased efficiency through the development of irrigation facilities and increased profitability through the introduction of advanced technical irrigation have been positioned as priorities in the development plan; the objective of this project has been highly consistent with the development plan.

At the time of the appraisal, one of the three major objectives of *the Agricultural Sector Development Plan 2002* was to improve the profitability and competitiveness of the sector, and the rehabilitation of irrigation facilities and the development of on-farm irrigation facilities were positioned as priority projects. *The Irrigation Sector Development Plan and Strategies 2003* detailed the goals of the irrigation sector, which were to improve the profitability and competitiveness of irrigated agriculture through the efficient use of land and water. In response to this objective, specific goals such as the rehabilitation and improvement of irrigation facilities, appropriate maintenance, the development of on-farm irrigation facilities, and the technical and economic independence of water users' organization were established.

At the time of the ex-post evaluation, *the National Agricultural Policy (2016)* mentioned the expansion and modernization of the irrigation infrastructure, with particular emphasis on small and medium-sized farms. These policies aim to improve the efficiency of irrigation infrastructure, promote advanced-technical irrigation, and invest in irrigation infrastructure nationwide with a focus on small and medium-scale agriculture. In addition, *the 2021 Plan* (Plan Estratégico de Desarrollo Nacional al 2021, commonly known as PLAN BICENTENARIO), which was updated in 2015, also prioritize the diversity of agricultural production.

3.1.2 Consistency with the Development Needs of Peru

The project has been highly consistent with the development needs regarding efficient use of irrigated farmland and agricultural water during both appraisal and ex-post evaluation.

At the time of the appraisal, as described in “1.1 Background,” 80% of the water used in the Costa was for agricultural purposes due to the development of irrigation facilities since the 1960s. As of 1994, irrigated farmland area in Costa accounted for 48% of total irrigated area in Peru, making it an important agricultural production area. However, only 75% of irrigated agricultural land was used in Costa due to aging irrigation facilities and lack of maintenance, while urban water demand was increasing year by year, and improvement of utilization efficiency had become an urgent issue in order to secure agricultural water.

⁴ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁵ ③: High, ②: Fair, ①: Low

In the most recent years of this ex-post evaluation,⁶ the importance of irrigation development and use in Costa was recognized. Agricultural water currently accounts for 86% of water use in Costa. Additionally, the Costa area accounts for 57% of the total irrigated area of the country, and it continues to be an important agricultural production area in Peru. However, only 51% of the irrigated farmland in the Costa region is used, which is not an effective use of resources. Thus, there is a continuing need to improve the efficiency of land use and utilize irrigated farmland.

3.1.3 Consistency with Japan's ODA Policy

This project was consistent with the “support for modernization of agricultural production infrastructures and production methods” and “strengthening and improving the structure of agriculture, forestry and fisheries” as priority areas in *the Assistance Program Peru (2002)* at the time of appraisal. In addition, *Medium-Term Strategy for Overseas Economic Cooperation Operations (FY2005-FY2007)* regarded “infrastructure development for sustainable growth” as one of the priority areas. In light of the shortage of infrastructure development funds in Peru, support for economic infrastructure was to be continued, and this project was consistent with this policy. Therefore, the project is overall highly consistent with Japan's ODA policy.

Thus, this project has been highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

(1) Outline of Project Outputs

This project consists of the following items, both at the time of appraisal and ex-post evaluation.

(a) Rehabilitation and improvement of trunk irrigation system infrastructure (Component A)

- Component A1: Rehabilitation and improvement of water intakes, canals, incidental facilities, river revetment, etc.
- Component A2: Installation of measurement and control system in the beneficiary blocks of branch canals.

(b) Development of on-farm irrigation facilities (Component B): Procurement of irrigation equipment and implementation of small-scale civil engineering work in order to introduce advanced technical irrigation (the pressurized irrigation method and advanced gravity irrigation method) as pilot projects in on-farm irrigated agricultural land.

⁶ *National Statistical Information Bureau Agricultural Census (2012)* and *National Water Resource Policy and Strategy (2010)*

(c) Capacity building of water users' organizations (operation and maintenance capacity building of irrigation facilities, agricultural technical guidance) (Component C): Training and etc. for water users' organizations in Component A and water users' organizations to which farmers' groups who introduce advanced technical irrigation in Component B belong.

(d) Consulting Services: Overall supervision component, monitoring and evaluation component.

(2) Selection of Sub-Projects

Regarding the development of irrigation facilities mentioned in Component A above, the eligibility requirements of the water users' organization implementing the sub-project and the method of selecting the sub-project were determined as follows at the time of appraisal, and the actual method of selecting the sub-project is substantially the same as at the time of appraisal.

① Water users' organization participation requirements

- The recovery rate of water tariff shall be 75% or more.
- Must have a technical manager.
- The operational budget of the water users' organization is realistic in that it can be maintained and managed, and the unit price of the water tariff can achieve this.

② After selecting sub-projects only from water users' organizations with the above qualifications, the Peruvian authority examined and approved them through the National Public Investments System (SNIP: Sistema Nacional de Inversión Pública) in terms of following aspects.

- Business necessity, business content, and efficiency
- Hydraulic calculations, alternative considerations, and sustainability of irrigation facilities
- Economic evaluation

At the time of appraisal, 31 sub-projects were considered candidates; if they did not pass the SNIP's appraisal, other sub-projects were to be selected within the initial budgetary limits.

In implementing a sub-project, component A is borne by the water users' organization for 20% of cost of the sub-project, and ownership of the facilities is vested in the water users' organizations.

Component B selected a group of farmers who wanted to introduce advanced technical irrigation among water users' organization that carried out the sub-project in Component A1 after enlightening, disseminating, and supporting the on-farm irrigation technology under Component C. A total of US\$12,000 per household was borne by the government (this project) as an incentive for farmers, in connection with construction of common use facilities (water intake and joint infrastructure), and the remainder was borne by the farmers. Farm-level development was initially borne entirely by farmers under the Ministry of Agriculture and Irrigation's ordinance. However, since the formation of sub-projects did not progress, up to 50%

of the investment amount was changed to the burden of the government (this project) in 2013 in order to promote advanced technical irrigation projects, and the incentive for farmers has been improved.

(3) Comparison of planned and actual outputs

At the time of appraisal, 31 sub-projects were planned under Component A1. Although some initially planned sub-projects were replaced by others, the final number of sub-projects remains at 31, which is almost as planned. As mentioned above, at the time of appraisal, it was assumed that the sub-project candidates would change. Of the 31 candidate sub-projects present at the time of appraisal, 20 were implemented; the remaining 11 were not implemented, mainly because water users' organization's own contribution (20% of the sub-project cost) could not be expended. Some sub-projects were implemented under the related project supported by the World Bank. Eleven new sub-projects were then submitted to JICA for consent before implementation.

As for Component A2, of the 12 sub-projects agreed to by JICA, the final number of completed sub-projects is 9; this is 75% of the planned number for Component A2. Component A2 failed to adhere to the plan for the following reasons: (1) measurement and control facilities were a low priority for the water users' organizations, and each water users' organization did not pay their own contributions, that is 20% of the sub-project cost. Further, many water users' organizations stopped the implementation of the plan because it was burdensome to prepare and submit detailed design reports (prepared by a consultant hired by the water users' organization) that were required after they were qualified as sub-projects. (2) sub-projects were not materialized due to the low level of completeness of the detailed design reports (though in case of materialized sub-projects, the quality of detailed design reports improved after being redesigned by the consultant under the project).

Component B did not assume a clear number of sub-projects at the time of appraisal. Of the 102 projects agreed upon by JICA after the commencement of the project, 48 were completed, accounting for 47% of the planned value. Component B's plan was not achieved because: (1) the cost required was higher than in the detailed design report, and it became necessary to reconsider the project plan and the formation of a sub-project was not advanced because the amount of incentive to farmers (US\$12,000 per household) for the above-mentioned joint part (water intake, joint infrastructure) was not sufficient; and (2) In order to promote advanced technical irrigation, incentives were improved for the farmers. Originally, 100% of the investment amount at the farm level had been borne by farmers by ministerial ordinances; this was lowered to 50%, and the rest was to be borne by the government (project). However, the formation of sub-projects had not been progressed as scheduled and could not begin due to time constraints.

The degree of achievement of the project outputs as a whole would be 88% of the target when using the weighted average, reflecting the percentages of A1, A2, and B (72.3%, 11.1%, and 16.5%, respectively) to the sum of the components A and B of the planned project cost.

Table 1. Planned and actual outputs

Component	Plan	Actual
Component A1 (number of sub-projects)	31 sub-projects in all 10 regions in Costa	31 sub-projects in 6 regions ⁷ in Costa (Headworks: 5 sites, Canal: 117 km)
Component A2 (number of sub-projects)	12	9
Component B (number of sub-projects)	102	48
Component C	n.a.	<u>Component A:</u> Number of participants: 8,157 persons from 15 water users' organizations <u>Component B:</u> Number of participants: 10,355 persons from 10 water users' organizations
Consulting services (Excluding Component C)	- Overall project management - Monitoring and evaluation	Same as planned

Source: Documents provided by JICA, response to questionnaire and interviews with the executing agency.



Headwork (Lima Region)



Rehabilitated canal (Lambayeque Region)

3.2.2 Project Inputs

3.2.2.1 Project Cost

The project cost was within the plan (90% of the planned amount). Considering the number of sub-projects which were not completed (Component A2 and Component B), as discussed in “3.2.1 Project outputs,” the degree of achievement of the project outputs as a whole is 88% of

⁷ Piura Region, Lambayeque Region, La Libertad Region, Lima Region, Ica Region, Arequipa Region

the planned level; thus, it can be said that the actual project cost is almost commensurate with the degree of achievement of the project outputs.

Table 2. Planned and actual project cost

(Unit: million yen)

	Planned (Appraisal)						Actual (by source)		
	Foreign currency		Local currency		Total		ODA Loan	Peruvian side	Total
	ODA Loan		ODA Loan		ODA Loan				
Component A	200	84	4,583	3,788	4,783	3,872	3,976	604	4,580
Component B	585	211	366	366	951	577	373	117	490
Component C	0	0	557	447	557	447	614	50	664
Consulting services	138	138	600	600	738	738	830	96	926
Administrative expenses, etc.	0	0	746	0	746	0	0	936	936
Taxes	190	0	1,236	0	1,426	0	0	1,141	1,141
Price escalation	37	14	104	75	141	89	0	0	0
Contingency	41	15	318	234	359	249	0	0	0
Total	1,191	462	8,510	5,510	9,701	5,972	5,793	2,944	8,737

Source: Compiled from documents provided by JICA and the executing agency.

Note: 1) Exchange rate was 1 sol=31.6 yen in planned amounts and 1 sol= 33.8 yen in actual amounts (2007–2015 averages). 2) There is no information regarding a breakdown of local and foreign currencies for actual amounts.

3.2.2.2 Project Period

The project period significantly exceeded the plan by 168% (114 months compared to the planned 68 months). The main reasons that the project period exceeding the plan include (1) prolonged negotiations with consultants and delayed conclusion of consultant contracts by one year, (2) delays in the appraisal and approval of sub-projects (delays in contributions from water users' organizations, additional time necessary in the approval of sub-projects, due to correction and/or reformulation of technical files delivered by the water users' organizations, and redesign of approval procedures due to SNIP system revisions), and (3) delays in the formation of Component B sub-projects, as shown in "3.2.1 Project outputs."

Table 3. Planned and actual project period

	Planned (appraisal)	Actual
Signing of loan agreement	December 2006	December 2006
Consulting services (Including Component C)	December 2006–July 2012	October 2007 –February 2013
Component A	July 2007 –April 2011	June 2008 –October 2014
Component B	August 2007 –February 2011	March 2010 –May 2016
Project completion (project period)	July 2012 (68 months)	May 2016 (114 months)

Source: Documents provided by JICA and the executing agency, response to questionnaires by the executing agency.

Note: Definition of project completion set at the appraisal was completion of self-evaluation by the executing agency. Actual project completion is the timing when all the project component completed.

3.2.3 Results of Calculations for Internal Rates of Return (Reference only)

At the time of appraisal, the Financial Internal Rate of Return (FIRR) was not calculated, nor was the Economic Internal Rate of Return (EIRR) of the project as a whole. At the same time, the EIRR calculations were performed using one of the larger representative sub-projects, but the sub-project was ultimately not executed in the project.⁸ Since the condition differs from the time of appraisal, no comparison can be made. However, as a result of calculating the EIRR of the Tukume project (canal development) in the Lambayeque Region, which is one of the relatively large-scale sub-projects at the time of ex-post evaluation, using the following calculation basis that was used at the time of appraisal, the EIRR of the Tukume project was 29.6%.

- Expenses: Project cost and maintenance expenses (excluding taxes).
- Benefits: Expansion of agricultural production through refurbishment of irrigation facilities and farming guidance.
- Project life: 25 years.

Thus, although the project cost was within the plan, the project period significantly exceeded the plan. Therefore, efficiency of the project is fair.

3.3 Effectiveness and Impacts⁹ (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

In this project, the following Operation and Effect Indicators¹⁰ were established to measure project effects. Although some data were available at the time of completion, data on Operation

⁸ At the time of appraisal, the EIRR was calculated as 19.7% for the Chinchá Alta project (canal improvement).

⁹ Sub-rating for Effectiveness is to be put with consideration of Impacts.

¹⁰ They were set as indicators of component A1.

and Effect Indicators, which indicates trends in the entire project, were not monitored by the executing agency and could not be obtained at the time of ex-post evaluation.

Table 4. Operation and effect indicators (for 31 sub-projects under Component A1)

Indicator	Target	Actual	
	2014	2016	2018
		Year of Completion	2 Years after Completion
Irrigated area (ha)	162,693	110,913	110,913
Number of direct beneficiaries (or households)	53,986	40,534	40,534
Cultivated area of major crops (ha)	162,693	108,782	n.a.
Production volume of major crops(t)	7,321,185	n.a.	n.a.
Yield of major crops (t/ha)	45	n.a.	n.a.
Collection ratio of water tariff (%)	100	92	n.a.
Efficiency of conduction (%)	90	89	n.a.
Efficiency of distribution (%)	90	72	n.a.
Budget allocated for operation and maintenance in the budget of water users' organizations (%)	75	n.a.	n.a.
Number of irrigation associations that implement proper operation and maintenance of irrigation facilities (number)	96	72	n.a.

Source: Documents provided by JICA, questionnaire responses from the executing agency and interviews with the executing agency.

Note: 1) The figures for irrigated area, number of direct beneficiaries, cultivated area of major crops, yield of major crops, and number of irrigation associations that implement proper operation and maintenance of irrigation facilities are "total". The figures for collection ratio of water tariff, efficiency of conduction efficiency of distribution, budget allocated for operation and maintenance in the budget of water user's organizations are "average". 2) The figure for collection ratio of water tariff at completion is for 2015, and the figures for efficiency of conduction and efficiency of distribution at completion are for 2014.

However, at the sub-projects visited during the field survey,¹¹ these indicators generally indicate an improvement trend after the project. Taking into account the results of the qualitative survey,¹² it can be said that the effects of this project have been generally as planned, as discussed in the following paragraphs.

(1) Irrigated area and number of direct beneficiaries

¹¹ For Component A, 11 sub-projects were visited. Eleven sub-projects were selected to cover northern, central, and southern Costa.

¹² In the field survey, 11 sub-projects, 6 water user's organizations (32 committee members, of which two were women) and 8 irrigation associations (36 committee members, of which three were women), 43 ordinary farmers other than committee members,(of which five were women) were interviewed on Component A through key-informant interviews and group interviews. Irrigation associations have been further subdivided by region-based committees or sectors, and interviewees have been led by representatives of each committee/sector. Representatives of various committees/sectors with different conditions were collected and interviewed at the sub-project site, from the committees/sectors near the intake to the committees/sectors at the end. Component B was interviewed through group interviews with six farm groups (15 in total, one woman).

The water utilization efficiency improvement and agricultural production expansion were expected in effect 162,693 hectares of agricultural land and 53,986 households. In reality, after the changes to the target sub-project mentioned in “3.2 Efficiency” were implemented, 110,913 hectares of agricultural land and 40,534 households benefitted.

(2) Cultivated area, production volume, and yield of major crops

In the above-mentioned Tukume project, which was the largest of the sub-projects, the cultivated area increased drastically because water could be distributed to the end of the canal that had not been previously reached. Otherwise, however, the cultivated area remained unchanged or slightly increased because it mainly focused on the rehabilitation or improvement of the existing canals. Production volume and yield also tended to increase and improve. According to interviews with water users’ organizations and irrigation associations, the improvement of soil and fertilizer was also reported. Additionally, the increase in water volume increased the number of harvests and shortened the cultivation period, resulting in an increase in production volume and an improvement in unit yield.

Table 5. Cultivated area and production volume (sub-project wise)

	2006	2008	2010	2011	2012	2013	2014	2015	2016	2017
1. Cultivated area (ha)										
Facalá project	8,520	n.a.	n.a.	n.a.	n.a.	n.a.	8,520	8,410	8,390	8,450
Paján project	3,890	n.a.	n.a.	n.a.	n.a.	n.a.	4,116	4,123	4,051	4,083
Tukume project	n.a.	7,500	n.a.	10,000	9,800	9,000	8,500	9,000	10,500	10,919
El Pueblo project	n.a.	6,150	n.a.	6,183	6,184	6,184	6,176	6,181	6,182	6,183
Matriz project	n.a.	n.a.	3,310	n.a.	3,320	3,650	3,880	3,850	3,878	n.a.
Victoria project	n.a.	n.a.	n.a.	850	n.a.	n.a.	855	887	893	923
2. Production volume (thousand tons)										
Facalá project	616	n.a.	n.a.	n.a.	n.a.	n.a.	591	576	539	626
Paján project	304	n.a.	n.a.	n.a.	n.a.	n.a.	304	312	251	309
Tukume project	n.a.	68	n.a.	78	80	83	86	87	87	93
El Pueblo project	n.a.	40	n.a.	49	43	46	49	53	53	49
Matriz project	n.a.	n.a.	59	n.a.	62	75	87	83	86	n.a.
Victoria project	n.a.	n.a.	n.a.	47	n.a.	n.a.	47	49	50	51
3. Yield (t/ha)										
Facalá project	72	n.a.	n.a.	n.a.	n.a.	n.a.	69	69	64	74
Paján project	78	n.a.	n.a.	n.a.	n.a.	n.a.	74	76	62	76
Tukume project	n.a.	9	n.a.	8	8	9	10	10	8	9
El Pueblo project	n.a.	7	n.a.	8	7	8	8	9	9	8
Matriz project	n.a.	n.a.	18	n.a.	19	21	22	22	22	n.a.
Victoria project	n.a.	n.a.	n.a.	55	n.a.	n.a.	55	55	56	55

Source: Responses to questionnaires by water users’ organizations.

Note: 1) Facalá project is a headwork development. Other projects are the rehabilitation/improvement of canals. 2) The main crops are as follows. Facalá project: sugarcane. Paján project: sugarcane. Tukume project: rice, maize, and cotton. El Pueblo project: rice. Matriz project: maize and potatoes. Victoria project: maize and sugarcane.

(3) Collection ratio of water tariff

As of 2017, the average collection ratio of water tariff for the four water users' organizations that responded to the questionnaires was 87%, and the ratio remained at a high level. In particular, the Chancay-Lambayeque Water User's Organization (Lambayeque Region), which implemented seven Component A1 sub-projects, the highest number in the project, and is the nation's largest water user's organization in terms of coverage, collects 100% of its water tariff because it is prepaid.

On the other hand, the Chili Regulado Water Users' Organization (Arequipa Region), which implemented two Component A1 sub-projects, has a water tariff collection ratio of only 70% as of 2017. According to explanations from the water users' organization, nine installment payments are made annually, and the water tariff collection ratio is the figure at the end of the year. If the collection ratio is low, it means there was a payment delay at the end of the year. If left unpaid, water will not be distributed the next year. The water users' organization is making efforts to collect their water tariff through issuing notice to farmers who have not been paid their water tariff.

Table 6. Collection ratio of water tariff (average)

	2006	2014	2015	2016	2017
Collection ratio of water tariff (%)	85	92	91	90	87

Source: Response to questionnaires by water users' organizations.

Note: The number of respondents (water users' organizations) is four (for seven sub-projects).

(4) Efficiency of conduction and distribution

The efficiency of conduction and distribution has improved drastically since the implementation of the project. As of 2017, the average conduction and distribution efficiency of the sub-projects that responded were 80% and 71%, respectively, which was a significant improvement from 43% and 48% before the project was implemented (2006).

Table 7. Sub-project wise efficiency of conduction and distribution (average)

	2006	2008	2011	2012	2013	2014	2015	2016	2017
Efficiency of conduction (%)	43	80	84	98	96	82	83	83	80
Efficiency of distribution (%)	48	84	74	71	67	66	67	69	71

Source: Responses to questionnaires by Water users' organizations.

Note: The number of respondents is eight (sub-projects).

(5) Securing of maintenance costs and the state of maintenance

According to the water users' organizations and irrigation associations visited, the ratio of maintenance costs to the budget is between 60% and 65%, and although the target value has not been reached, a certain level of maintenance costs has been secured. Regarding the number of irrigation facilities that were properly maintained and managed by water users' organizations, all eight of the sub-projects responded that they were properly maintained.

3.3.1.2 Qualitative Effects (Other Effects)

Effects commonly reported in interviews with the water users' organizations, irrigation associations, and beneficiary farmers, and effects that are considered to be particularly prominent cases, are as follows.

Increase in water volume and shortening of water distribution time

Water volume increased in almost all sub-projects. Farmers shared the view that there was sufficient water throughout the year, that water loss was reduced, and that the shortening of water distribution time was the greatest effect. In some cases, water could be distributed to areas where the water had not previously reached because of its location at the end of the canal.¹³

Increase in production and introduction of new crops

Previously, crops were cultivated once a year; after implementation, in some cases, the crop could be cultivated twice a year and the production increased due to the shortening of the harvest period.

In Component B, water was able to be pumped to a higher altitude that was previously impossible to cultivate; therefore, in some cases, the cultivated area has been enlarged, productivity has improved, and quality has improved.

Regarding Component B, advanced technical irrigation enabled efficient water use, and high value-added crops and new crops (asparagus and cotton) were introduced.

Strengthening the Organizational Capacity of Water Users' Organizations

Participation in training in the component for capacity building of water users' organizations in this project has led to learning where to maintain and it is utilized in subsequent maintenance, especially at the irrigation association level. In addition, the efficient use of water after project implementation is achieved due to an increase in knowledge and practice, including preparation of work plans for water distribution and usage of meters and tools. Manuals are also utilized.

Reduction of maintenance burden

¹³ In one case, there was a complaint that water supply was reduced. Irrigation associations and farmers believed that it was caused by the design of the canal but according to the PSI, the removal and cleaning of sedimentary garbage is insufficient.

All of the water users' organizations, irrigation associations, and farmers felt that the reduction in maintenance burden was a major positive outcome. Previously, the area around the canal used to be covered with dense grasses and accumulated dirt and trash, which obstructed the distribution of water. The labor and cost of weeding and trash removal were burdensome; however, this project greatly reduced maintenance of the improved portions of the canals, thus relieving this burden significantly.

3.3.2 Impacts

3.3.2.1 Intended Impacts

At the time of the appraisal, "improvement of agricultural income," "creation of employment opportunities," and "revitalization of regional economies" were the projected impacts. The following impacts were confirmed through interviews with beneficiaries.

(1) Improvement of Agricultural Income and Living Conditions

- In four of the sites interviewed in the qualitative survey, the opinion was that agricultural income increased by about 30% due to an increase in production. In addition, the development of access roads in this project has made shipping from some sites easier.
- Previously, borrowings had to be made at the time of cultivating; however, borrowing became unnecessary or the amount of borrowing decreased after implementation.
- All Component B farmers experienced significant increases in agricultural income, expansion of sales channels, increased agricultural spending, and purchases of new land.
- Increases in income have resulted in improvements in living conditions, including renovations of houses, purchases of home appliances, and investments in education (advancing to technical schools and universities).
- Implementation of Component B has allowed some farmers to live with their families and subsist solely on agriculture, despite the fact that they were formerly migrating.

(2) Creation of employment opportunities and revitalization of regional economies

- There is a case in which the water volume increased due to the construction of the head work, and a private enterprise developed agribusiness for export of jojoba, grape, asparagus, etc. (head work in Bernalese, Ika Region). Employment has been generated in the crop processing factory, and about 400 positions (for harvesting, packaging, etc.) have been generated in the region (300 households participating in the irrigation association). Therefore, families and relatives are able to obtain work.
- Component B farmers have hired local residents during cropping and harvesting.
- In some cases, land prices increased due to the development of canals.



Farmers visited water users' association for payment of water tariffs (Lambayeque Region)



Filtering facilities and a farmers group in Component B (Lima Region)

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

No negative impact on natural environment has been identified. In this project, environmental considerations were confirmed in accordance with *the JBIC Guidelines for Environmental and Social Considerations* (2002). According to interviews with the executing agency, mitigation measures were appropriately taken based on monitoring plans regarding air pollution, noise vibrations, and water pollution during construction, which are commonly caused by irrigation development, and no major problems occurred. According to the executing agency, all the sub-project sites do not correspond to natural conservation areas such as national parks or habitats of rare wildlife such as endangered species.

(2) Resettlement and Land Acquisition

No land acquisition or resettlement has occurred as a result of the implementation of this project. In addition, the executing agency and the water users' organizations for which the interview were conducted confirmed that consultations with the residents revealed no complaints for all the sub-projects at the time of the implementation of this project.

(3) Unintended Positive/Negative Impacts

- Following implementation of this project, an irrigation association has carried out additional canal rehabilitation in a PSI project. In the future, the irrigation association plans to rehabilitate the main canal and extend the rehabilitation canal covered by this project. According to the irrigation association, the experience of the implementation of this project has led to the improvement of the irrigation capacity of the association, and further development has become possible.
- A woman who participated in a Component B farm group introduced advanced technical irrigation on land inherited from her father, and her own income from agriculture enabled

her to make decisions within her home. For example, she bought an apartment with her own funds and rented it out.

- As for the Component B farmer groups, nearby farmers often visited them and received training. As a result, 18 new areas of advanced technical irrigation were launched by neighboring farmers who visited the farm groups.

From the above, it is difficult to compare the plans and the results of the effectiveness of the project because quantitative data on operation and effect indicators, which indicates the trend of the entire project, are not available, and a part of the sub-project has been changed. However, it can be said that the results of the qualitative surveys are taken into consideration and the sub-projects that were visited during this survey generally show a trend of improvement after the project. Regarding impact, the expected improvement in agricultural income, the creation of job opportunities, and the revitalization of regional economies have been observed. Therefore, the project has largely achieved its objectives, and the Effectiveness/Impact is high.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional / Organizational Aspect of Operation and Maintenance

The operation and maintenance of the facilities developed in this project is carried out by the water users' organization and its irrigation association. The organizational structure (decision-making and jurisdiction) and the division of roles between them are clear, and support from local governments will be provided as necessary. Therefore, there is no problem.

One Water Users' Organization (Junta de Usuario) has been established per valley (in some cases, more than one organization in a valley) and several Irrigation Associations (Comision de Regantes) exist below them. Water users' organizations are responsible for the operation and maintenance of headworks and large-scale main canals, and irrigation associations are responsible for other canals. Irrigation associations also undertake the operation and maintenance of the secondary and lower canals. The responsibility for operation and maintenance of irrigation facilities primarily rests with water users' organizations, but some of the operations and maintenance of irrigation facilities can be entrusted to irrigation associations. Based on this, the irrigation associations maintain the irrigation facilities as described above.

Organizational Structure of Water Users' Organization

Although the size of the water users' organizations varies greatly, in general, the organization consists of executive staff members (presidents, chief accountants, secretariats, directors, etc.) who are not paid (only allowances) who are selected by all members and paid general staff members. The general staff consists mainly of the management department (accounting, etc.) and the operation and maintenance department (manager in charge of each irrigation association,

headworks construction manager and operator). Separately, a manager, who is a contracted professional, is in charge of management of the water users' organizations.

The annual general meeting is held twice a year (approving the budget for the next year and reporting income and expenditures) to four times a year, and all members are required to participate in the meeting (Members are called twice. The first meeting requires 50% or more participation, and the decision making at the second meeting can be made only by participants).

Organizational Structure of Irrigation Associations

Each irrigation association consists of senior officials (president, chief accountant, secretary, directors, etc.) and a small number of regular staff (secretaries, operators, accountants, etc.). The annual general meeting is held twice a year (budget approval for the following year, income and expenditure report, etc.).

Relations with PSI and Local Governments

The water users' organization is registered with the National Water Management Bureau (ANA: Autoridad Nacional del Agua), and ANA approves the annual cultivating plans, water tariff, irrigation infrastructure maintenance plans, etc. of each association through local offices. The regional government monitors the operation and maintenance of the irrigation facilities, and if there is a problem, the regional government will provide financial support for repair.

3.4.2 Technical Aspect of Operation and Maintenance

The water users' organizations and irrigation associations have no technical problems with respect to the maintenance of the facilities developed in this project. However, there are no systems in place for maintaining and improving skills, such as a regular training system, and some organizations do not share or transfer skills.

Specialized operators are assigned in each water users' organization and operate and maintain the headworks based on manuals.

Regarding the routine operation and maintenance of trunk canals, as no special advanced techniques are required, no issues are observed. The monitoring of irrigation associations by the water users' organizations is being carried out. However, PSI and the water users' organizations have indicated that some irrigation associations are in need of improvement because they were unable to open and close their floodgates on time and the number of maintenance practices was limited.

There is no regular training system. PSI provided training for water users' organizations and irrigation associations on maintenance (e.g., water volume measurement, water distribution, tariff collection, management methods) in connection with newly developed projects, but will not follow-up thereafter. Some organizations believe they need regular training. Large water

users' organizations have a large number of general employees, and technology is being transferred. However, some small water users' organizations and irrigation associations do not share or transfer skills as an organization due to the replacement or retirement of executives and employees.

3.4.3 Financial Aspect of Operation and Maintenance

No financial problems are observed in terms of the operation and maintenance.

The main financial sources of the water users' organizations and irrigation associations are water tariffs, and revenues and expenditures are almost constant. Water tariffs are basically collected by water users' organizations and distributed between water users' organizations and irrigation associations under their jurisdiction after a small portion has been paid to the government (in some cases, collection of water tariffs is outsourced to irrigation associations). Distribution ratios are not uniform, but vary among water users' organizations and irrigation associations.

As shown in "3.3.1 Effectiveness," the water tariff collection rate at the completion of the project was 92%, and the average water tariff collection rate under the sub-project jurisdiction, which was examined in the field survey at the time of the ex-post evaluation, was 87%; this rate is maintained at a high level without any issues. Although the collection rate has been decreasing in some organizations, according to PSI, they are able to conduct sufficient maintenance from the water tariff as a whole. In many cases, the water tariff is paid in advance, and water is not distributed if no payment is made. Thus, the system ensures that water tariffs are collected.

The maintenance costs account for about 60% to 65% of the expenditures in the water users' organizations and irrigation associations interviewed. Large-scale repairs and the renewal of observation equipment will be funded by the reserves of water users' organizations and, if necessary, by regional governments. Disaster responses are funded by the central government.

3.4.4 Status of Operation and Maintenance

The facilities developed by this project are regularly cleaned and maintained, and the conditions of the facilities are generally good. However, some problems have been observed as some facilities require more frequent cleaning in order to secure the water volume.

Maintenance of headworks and large-scale canals are mainly carried out annually (in some cases, twice a year). After the harvesting of the main crops, maintenance is planned and executed (concrete repairs and dredging of sedimented sand and stones using machinery) based on an evaluation of the current state of the facilities. In addition, herbicidal treatments and trash removal are performed twice to four times a year, although this varies depending on the sub-project.

According to the field survey at this ex-post evaluation and PSI, the facilities developed in this project are well maintained. However, there are cases in which, in canals flowing through urban areas, the residents dump their garbage into the canals. The garbage accumulates and eventually affects the water volume. Additionally, in some canals, illegal occupants in the vicinity of the canal installed pipes for drainage on their own. Water users' organizations and irrigation associations have requested that the city hall remove these, but this has yet to be completed.

Among the sub-projects examined on-site during ex-post evaluation, 11 concrete panels were damaged due to heavy rains and flood damage in early 2017 on the Paján Canal in La Libertad. While this does not necessarily affect the function of the canal, some unrepaired canals are listed within the central government budget for restoration.

Thus, some minor problems have been observed in terms of the technical aspect and current status. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The Irrigation Sub-Sector Project was implemented in the Pacific coastal area of Peru known as the Costa region. The purpose of this project was to improve water use efficiency and expand agricultural production, thereby contributing to increasing agricultural profits, through the rehabilitation and improvement of irrigation facilities, the development of on-farm irrigation facilities, and the strengthening of water users' organizations. The relevance of this project is rated as high; it has been consistent with the development plan of Peru for irrigation, the development needs for efficient use of irrigation, as well as Japan's ODA policy. The project has produced the following effects: more efficient use of water, increased agricultural production, and improved maintenance of irrigation facilities. It has also produced impacts such as improved agricultural income, creating job opportunities, and revitalizing regional economies. As such, the effectiveness/impact of the project is also rated as high. Regarding efficiency, the project cost was within the plan; project period significantly exceeded the plan due to delays in the sub-project approval process by the Peruvian government and the executing agency, as well as delays in the formation of beneficiary groups for the introduction of advanced technical irrigation. Therefore, efficiency is rated as fair. There is room for improvement in terms of sustainability, including training for beneficiaries and more frequent cleaning of the facilities developed in this project; however, there are no problems in the institutional and financial aspects of facility operation and maintenance. Therefore, sustainability is rated as fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

The water users' organizations and irrigation associations that operate the sub-projects vary in size, and small-scale organizations/associations do not necessarily inherit operations and maintenance and management skills. As a result, in some cases, the skills and frequency of operation and maintenance are not consistent; however, PSI does not have a system and budget established to follow-up the situation. In addition, PSI does not establish a system for collecting data to verify the effects of this project. In order to effectively utilize the facilities developed in this project over the long run, it is desirable that the PSI apply for funding from the Ministry of Agriculture and Irrigation, and follow-up on the state of the operation and maintenance tasks and effectiveness of the facilities, and implement of operation and maintenance training for the water users' organizations and irrigation associations.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

1. Importance of Financial Analysis for Selection of Beneficiary Organizations in Projects Assuming Partial Cost-Sharing by Beneficiary Organizations

This project is composed of a large number of sub-projects, and the self-burden of beneficiaries (water users' organizations) is essential to the execution of the sub-projects. During the implementation of the project, many sub-projects were changed, although changes in sub-projects had been assumed to occur even at the time of the project appraisal. The reason for this is that although the water users' organizations agreed to the 20% cost-sharing at the time of sub-project application, many of the sub-projects were ultimately unwilling to contribute 20% and were thus withdrawn from the project. Originally, the percentage of cost-sharing was 15 % and increased to 20% later under the related project supported by the World Bank. This revised percentage was applied to this project. In selecting the sub-projects, the necessity of the project, economic performance assessment, financial condition, etc. was examined, a practice that was initiated under Unidad Coordinadora del Proyecto Subsectorial del Irrigacion; UCPSI (the former organization of PSI). Regarding the financial condition of water users' organizations, the water tariff collection rate was mainly examined, and detailed financial analyses such as borrowing capacity were not performed. Water users' organizations that finally implemented more than the originally planned number of sub-projects were creditworthy and able to borrow from private banks for the self-burden portion of the project. If water users' organizations with high creditworthiness were selected from the beginning, it would have been possible to

minimize the sub-project selection modifications because they would have contributed their portion by borrowing the necessary amount from the start. As a result, the project would have been implemented more efficiently. This system of own contribution by beneficiaries is effective given the high need to cover the obsoleted infrastructure. For projects that consist of sub-projects in which some costs are assumed to be borne by beneficiaries, a more detailed review of the financial status of the beneficiary organization is necessary.

2. The necessity of establishing a data collection system for measuring project effects

At the ex-post evaluation, it was not possible to collect quantitative data on the effects of the entire sub-project, such as cultivated area, production volume, water tariff collection rate, efficiency of water conduction and distribution, maintenance cost, and the number of irrigation associations that properly conduct maintenance. At the time of appraisal, PSI, the executing agency, was supposed to collect such data; however, the data collection system at PSI was not clearly formulated. PSI is an organization mainly engaged in the development of irrigation facilities and does not generally collect data such as cultivated area and agricultural production volume, which were specified as the effect indicators. This information is managed by ANA (cultivated area) and agricultural offices (production), and PSI does not have access to specific data at sub-project level, because it is managed by the beneficiary organizations and institutions mentioned above.

Therefore, during the project planning phase, it is necessary to grasp the jurisdiction and system of the data management organization, to establish a system within the executing agency, or to establish a system for ensuring data collection. For example, data collection could be ensured by having relevant organizations participate in the project in the form of steering committees.

END

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs		
- Rehabilitation and improvement of irrigation facilities (intakes, canals, incidental facilities and river revetment etc.) (Component A1)	31 sub-projects	31 sub-projects
- Installation of measurement and control system (Component A2)	12 sub-projects	9 sub-projects
- Installation of advanced technical irrigation (Component B)	102 sub-projects	48 sub-projects
- Capacity building of water users' organizations (Component C)	n.a.	- Number of participants for training for Component A: 8,157 persons from 15 water users' organizations - Number of participants for training for Component B: 10,355 persons from 10 water users' organizations
- Consulting services (excluding component C)	Overall management and supervision component, Monitoring & evaluation component	Same as planned
2. Project Period	December 2006 –July 2012 (68 months)	December 2006 –May 2016 (114 months)
3. Project Cost		
ODA Loan Portion	5,972 million yen	5,793 million yen
Peruvian side	3,729 million yen	2,944 million yen
Total	9,701 million yen	8,737 million yen
Exchange rate	1 sol = 31.6 yen (As of December 2004)	1 sol = 33.8 yen (Average from January 2007–December 2015)
4. Final Disbursement	October 2014	

Note: Information on the breakdown of foreign currency portion and local currency portion of actual project cost was not available

Plurinational State of Bolivia

FY2017 Ex-Post Evaluation of Technical Cooperation Project
“Project of Establishment of Implementation System
for Sustainable Rural Development Phase II”

External Evaluator: Yusuke Hasegawa, International Development Center of Japan Inc.

0. Summary

The “Project of Establishment of Implementation System for Sustainable Rural Development Phase II” (commonly called “Rural Change Project II”) aimed at establishing an integral rural development model to conserve natural resources and improve living standards, and its implementation system based on the cooperation of related organizations in the northern part of the department of Chuquisaca in Bolivia. With the overall goal of improving the quality of life of small farmers in the Department, the project was implemented by training core human resources in rural development in communities, municipalities, the Departmental government and the university, and carrying out rural development projects in line with the needs of the communities. This project is of high relevance because it was highly consistent with Bolivia’s development plans of the country and agricultural sector, development needs of the target area and Japan’s ODA policy, and because the project approach was appropriate. Effectiveness and impact of the project are high, because this project largely achieved the project purpose since the implementation system was established with the University of Saint Francis Xavier (Universidad San Francisco Xavier de Chuquisaca, hereinafter referred to as “USFX”) as the core organization to be able to take advantage of the clarified rural development model on a constant basis, although a comprehensive implementation system was not established. The overall goal is also identified to be achieved as planned. Although the relatively frequent replacement of Counterparts (C/Ps) and the departure of the Department from this project had negative influence on the progress of the project activities, subsequent works were conducted by the effort of the JICA experts and the C/Ps of USFX, resulting in the achievement of the expected outputs. As a whole, efficiency of the project is high because the project cost was lower than planned and the project period was as planned. Sustainability of the project effects is fair, because some problems have been observed in terms of the technical and financial aspects though sustainability from the policy and institutional perspectives is considered to be high.

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

1. Project Description



Project Location



Former demonstration farm where the terrace is maintained (Catana, Municipality of Yamparaez)

1.1 Background

The northern part of the department of Chuquisaca in the Plurinational State of Bolivia (hereinafter referred to as “Bolivia”) is one of the poorest areas where the rates of poverty and extreme poverty are 92.5% and 87.8%, respectively (National Institute of Statistics, *Population and Housing Census 2012*). Land suitable for cultivation has been reduced and land productivity has been deteriorated caused by large-scale soil erosion and depletion of water resource, and farmers engaged in subsistence agriculture and stock farming have had distressed life. This has prompted farmers to migrate to the other areas, which has been perceived as a major social problem in the area.

In order to demonstrate technical improvement measures under such circumstances, the Japanese government conducted a study titled *the Verification Study of Sustainable Rural Development based on Soil and Water Conservation* from 1999 to 2003 in the department of Chuquisaca. The results were compiled as the rural development plan and soil erosion prevention technique. While the survey presented technical guidelines, the establishment of a system to promote development projects was left as an issue using the survey results.

With a view to solving this problem, at the request of the Bolivian government, JICA conducted a technical cooperation project “Project of Establishment of Implementation System of Sustainable Rural Development,” which was equivalent to Phase I of this project with USFX, the department of Chuquisaca and four municipalities in the project areas as the implementing agencies from January 2006 to January 2008. In the Phase I project, development plans were formulated for eight communities in the four municipalities, and human resources related to rural development were trained. Also, an investigation on development funding sources was conducted.

In response to the additional request of the government of Bolivia, this project was carried out for the five-year period from May 2009 to May 2014, expanding the areas to 36 communities in nine municipalities¹ in the north of the department of Chuquisaca.

1.2 Project Outline

Overall Goal		A rural development model is extended and the quality of life of small farmers in the northern part of the department of Chuquisaca is improved.
Project Purpose		<p>A rural development model (*1) and implementation system (*2) will be established through implementing rural development projects in the northern part of the department of Chuquisaca.</p> <p>(*1) Rural development model: It is a model utilized by municipalities, the Department and university, and shows how to proceed rural development for the residents of the communities in the northern part of Chuquisaca Department to autonomously tackle conservation of natural resources and improvement of living standards. This model consists of “development technology” and “cycle of development project”. Development technology is a list of techniques that can be utilized for conservation of natural resources and improvement of livelihoods and shows a method to utilize according to the situation of the area. The cycle of development project is a method of participatory planning, implementation, monitoring and evaluation.</p> <p>(*2) Implementation system: It is a system whereby the rural development model can be implemented by municipalities, the Department and university of the Bolivian side on their own (securing personnel, budget, and external funds; establishing roles, responsibilities and collaboration system among related organizations).</p>
Outputs	Output 1	Core human resources for integral rural development are trained in communities, municipalities, the Department and USFX.
	Output 2	Through the implementation of integral rural development projects based on community development plan, process from planning to implementation of integral rural development projects is modeled.

¹ Nine municipalities: Sucre Rural-Distrito 8, Yotala, Poroma, Tarabuco, Yamparaez, Zudañez, Presto, Mojocoya, and Icla.

	Output 3	Internal and external development funds for implementation of integral rural development projects are procured by municipalities, the Department and USFX.
	Output 4	Coordinating Committee for defining the direction of integral rural development of northern Chuquisaca is properly operated by municipalities, the Department and USFX.
Total cost (Japanese Side)	381 million yen	
Period of Cooperation	May 2009 – May 2014	
Implementing Agency	Municipal government of northern Chuquisaca (nine municipalities), Commonwealth of Northern Chuquisaca Municipalities, Departmental government of Chuquisaca, USFX, Ministry of Agriculture, Rural Development the Environment (reorganized into Ministry of Rural Development and Land in 2009)	
Other Relevant Agencies / Organizations	None	
Supporting Agency/Organization in Japan	Ministry of Agriculture, Forestry and Fisheries	
Related Projects	Ministry of Agriculture, Forestry and Fisheries, “Validation Study of Sustainable Rural Development based on Soil and Water Conservation” (1999–2003); JICA, “Project of Establishment of Implementation System for Sustainable Rural Development Phase I” (2006–2008)	

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

The achievement level of indicators at the time of the evaluation was high: the project results and the project purpose were judged to have been almost achieved.

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation (Including other impacts.)

Impact and ripple effects of the Project were identified at the time of the evaluation: it was judged that there was sufficient prospect of achieving the overall goal after the project was completed.

1.3.3 Recommendations from the Terminal Evaluation

- It is necessary to steadily prepare a list of techniques and manuals for participatory rural development during the six months to completion of the project.
- The list of techniques created in the project and the manuals for participatory rural development are expected to be utilized by USFX. Until the completion of the project, efforts should be made toward the public relations and extension of the results of the project even for a person or an organization other than USFX interested in rural development of Chuquisaca, so that the results can be utilized widely after the completion of the project.
- It is expected that the organizations involved in rural development in the northern part of Chuquisaca respect each other's position and activities and tackle common issues in rural development.

2. Outline of the Evaluation Study

2.1 External Evaluator

Yusuke Hasegawa, International Development Center of Japan Inc.

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: October, 2017 – January, 2019

Duration of the Field Study: March 5, 2018 - April 26, 2018; July 26, 2018 - August 10, 2018

3. Results of the Evaluation (Overall Rating: A²)

3.1 Relevance (Rating: ③³)

3.1.1 Consistency with the Development Plan of Bolivia

The project was in line with the direction of both the national medium- and long-term development plans and the sector development plan of the ministry in charge of agriculture, from the time of the planning through to the completion of the project. In other words, the *National Development Plan (2006-2011)* developed in 2006 under the government of President Evo Morales, and *the Patriotic Agenda 2025* which is a long-term vision that took over it, both placed an emphasis on poverty reduction and rural development, indicating that the project and the plans shared the common purpose of improving living standards through rural development including food production. In addition, the sector development plan titled *Reforming Rural Areas, Agriculture and Forestry* formulated by the then Ministry of Agriculture, Rural Development and the Environment (Ministerio de Desarrollo Rural, Agropecuario y Medio

² A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

³ ③: High, ②: Fair, ①: Low

Ambiente, hereinafter referred to as “MDRAyMA”) in 2007, focused on “securing food sovereignty and safety” and “promoting food production and rural development in an integrated way,” and the same policy was taken over by the *Agricultural and Pastoral Sector Development Plan (2011-2015)* formulated by the Ministry of Rural Development and Land (Ministerio de Desarrollo Rural y Tierras, hereinafter referred to as “MDRyT”) that was established by the reorganization of MDRAyMA. Then, the succeeding development plan (2014-2018) updated by MDRyT emphasizes “food sovereignty and safety”, “sustainable family agriculture” and the like. These series of sector development plans were consistent with the project that intended to improve the living standards of small farmers through improvement of food production and rural development.

3.1.2 Consistency with the Development Needs of Bolivia

Although the improvement in the poverty and social development situations in the target area can be seen from the time of planning to completing this project, there have still been large development needs from various aspects: this project was well aligned with these development needs. From the data comparison between 2001 and 2012 of the National Bureau of Statistics, although the poverty ratio decreased in all of the nine target municipalities and the basic service coverage was clearly improved as well, all municipalities did not reach the average level of the country and the Department except for some such as Sucre which includes urban areas. As of 2012, the poverty ratio of a municipality remained more than 90%. In addition, while agriculture has been a key sector in the economy of Chuquisaca, accounting for 13% of the Departmental GDP of 2014 next only to mining (19%) and the administrative services (19%), its real annual growth rate from 2010 demonstrated only 1.8% in spite of that of the Departmental GDP being 7.8%. According to the 2012 Census, 38% of workers in the Department belonged to the industry of agriculture, livestock farming, forestry and fisheries (whilst 27% of workers did in the entire country), and more than 80% of those were seen to make their living principally by agriculture and livestock farming (Source: National Institute of Statistics, *Statistical Yearbook 2016, Population and Housing Census 2012 and Agriculture Census 2013*). This implies that stagnation of agriculture has a relatively large impact on the economy of the Chuquisaca Department. Therefore, the need to strengthen the agricultural sector remained high. In addition, reduction of forest resources across the country, including the target area, was in progress until the completion of this project, the need to deal with the conservation of natural resources still existed. According to the Food and Agriculture Organization of the United Nations (FAO), net deforestation area of Bolivia during 2010 and 2015 was 289,000 ha annually, and the county was included in the top 10 of the world in terms of reduced area size (Source: FAO, *Global Forest Resources Assessment 2015*).

3.1.3 Consistency with Japan's ODA Policy

This project was consistent with Japan's aid policy at the time of planning of the project. JICA's *Country Implementation Plan of Bolivia* formulated in 2006 set "poverty reduction of small farmers" as one of the six cooperation programs, and the program was positioned under two priority areas of "Social Development" and "Production Improvement." The contents of this project, which aimed at establishing a model and implementation system of rural development projects leading to improvement of living standards of small farmers, were consistent with the above program. In addition, Japan's *Country Assistance Program for Bolivia* (April 2009), whose preparation work was underway at the time of planning of this project, placed "social development for poverty reduction," and "sustainable economic growth" as two pillars of assistance. The former covered regional development including infrastructure development of agriculture and rural areas, and the latter contained agricultural sector including direct support to farmers. Both of them were in line with this project aiming at improving living standards of small farmers through carrying out rural development projects.

3.1.4 Appropriateness of the Project Plan and Approach

In this project, the planned content of Output 4 (Proper operation of the coordination committee by related organizations) was not be achieved. The content had been clarified as a concrete form of coordination and division of roles among the implementing agencies, as a result of examination in the mid-term review of the project. After that time, however, differences of opinions between the Departmental government and USFX became apparent. This triggered prolonged discussions for nearly a year, such as on proposed system reconstruction of this project, resulting in the withdrawal of the Departmental government from this project. It became realistically impossible to achieve the result. Project Design Matrix (PDM)⁴ of this project stated that "C/Ps do not change significantly" as an external factor related to the achievement of the project purpose. It is considered that the statement assumed the effect of frequent changes of staff in the implementing agencies on the anchoring of technology and the project progress, and that it could not assume the possibility of withdrawal of an implementing agency that had developed cooperative relations since the preceding projects (i.e. the validation study by the Ministry of Agriculture, Forestry and Fisheries and the phase I project). Therefore, we find the planned basic approach of the project reasonable.

From the above, this project was highly consistent with Bolivia's development plan and development needs, as well as Japan's ODA policy. Also, the project plan and approach were appropriate. Therefore, its relevance is high.

⁴ Project Design Matrix is a "theoretical framework" used for project planning, monitoring and evaluation. It is composed of project summary, indicators, means of collecting data, external conditions, inputs, and assumptions.

3.2 Effectiveness and Impact⁵ (Rating: ③)

3.2.1 Effectiveness

3.2.1.1 Project Outputs

Four outputs had been planned to be achieved by the time of completion through the activities in this project. As described below, Outputs 1, 2 and 3 were largely achieved, but Output 4 is judged not to have been achieved. The detail of the actual values for the outputs are summarized in the attached table.

As Output 1, “Core human resource in integral rural development is trained in communities, municipalities, the Department and USFX.” was planned. Through the creation of teaching materials and the implementation of training corresponding to the various needs of technicians of the implementing agencies and farmers, it is judged that the fostering of core human resources has almost been achieved.

Output 2 was set to be “Through the implementation of integral rural development projects based on community development plan, process from planning to implementation of integral rural development projects is modeled.” The “list of development techniques” and the manual of the development method were completed by the time of the project completion, through the process of carrying out activities such as the formulation of development plans of the target communities and the implementation of mini-projects based on the needs of the communities, as well as the implementation of monitoring and evaluation in the latter half of the project. Thus, the modeling of the process was achieved.

As Output 3, “Internal and external development funds for implementation of integral rural development projects are procured by municipalities, the Department and USFX.” was laid out. As a result of activities to enhance the ability to raise funds by the municipalities as the main target, such as organizing seminars, preparing manuals and creating databases, all the target communities submitted their applications to external funds support organizations. However, the realization of fund procurement was limited to some of the communities. Therefore, it is judged that the expected result was achieved to a certain degree.

In Output 4, “Coordinating Committee for defining the direction of integral rural development of northern Chuquisaca is properly operated by municipalities, the Department and USFX.” was expected. Specifically, it was planned that a coordinating committee would be set up to discuss and agree on the system of the division of roles and responsibilities among the implementing agencies engaged in integral rural development, and that the committee would be held regularly. According to the interviews with and the questionnaire answers from the implementing agencies, however, as stated above, the implementation system of this

⁵ Sub-rating for Effectiveness is to be put with consideration of Impact.

project stayed in an unstable state due to the differences of opinions between the implementing agencies that occurred during the project. As a result, the coordinating committee for discussing the division of roles among the implementing agencies was held only once, and there was no agreement in that committee. Since then the Departmental government withdrew from the project, the planned output was not achieved.

The terminal evaluation report of this project states that after the above coordination committee was held, JICA Bolivia office and the Ministry of Development Planning acted as mediators among the implementing agencies and clarified the division of roles, and the report goes on to conclude that an implementation system was substantially constructed. From the interviews with the persons concerned to the project in Bolivia and Japan conducted in the ex-post evaluation, applicable information, such as a document that shows a clear division of roles involving all of the implementing agencies including the Departmental government, was not be identified.

3.2.1.2 Achievement of Project Purpose

Table 1 Achievement of Project Purpose

Project Purpose	Indicator	Actual
A rural development model and implementation system will be established through implementing rural development projects in the northern part of the department of Chuquisaca.	1. One or more good practices that can be presented as rural development models are implemented at each city municipality.	It was achieved. In all 36 communities of the nine target municipalities, projects on natural resource conservation (soil conservation) and afforestation had been implemented at the time of the terminal evaluation. In addition, projects referred to as mini projects (with the total project cost upper limit of 6,000 US dollars), as well as pilot projects (upper limit of 10,000 US dollars) were implemented. Good practices were selected from these projects and introduced in the list of techniques. For example, "Production alternatives for strengthening household economy," one in the list of techniques, summarized examples of good projects that were successful in earning income from the activities.
	2. The personnel necessary for implementation of the rural development model is arranged in the Department, USFX and each municipality.	It was largely achieved. At the time of the terminal evaluation, an extension worker employed for this project was placed in the rural development section at each of nine target municipalities, and planning officers were also working as C/P of this project at seven communities. The Departmental government had started its own rural development project and had hired ten technicians at the completion of this project (2014). For USFX, see below 3.
	3. A section in charge of research, extension and human resources development to support	It was achieved. In the Faculty of Agriculture of USFX, the Institute of Integral rural development (IDRI) was established in April 2014, shortly before the

	integral rural development projects is established in the Faculty of Agriculture of USFX, and the necessary personnel is arranged.	completion of this project. All of the C/Ps of this project who had been appointed by the university were placed in IDRI.
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Project Purpose of this project was “A rural development model and implementation system will be established through implementing rural development projects in the northern part of the department of Chuquisaca,” where “rural development model” showed how to proceed rural development for the residents of the communities to autonomously tackle conservation of natural resources and improvement of living standards. The model consisted of “development technology” that was a list of techniques and a method utilizable and “cycle of development project” that was a method of participatory planning, implementation, monitoring and evaluation. “Implementation system” was explained as a system whereby the rural development model can be implemented by the related organizations on their own (securing personnel, budget, and external funds; establishing roles, responsibilities and collaboration system among related organizations). The purpose was expected to be realized through fostering the core human resources for integral rural development in communities, municipalities, the Department and USFX (Output 1); formulating the model of a process from planning to implementation of integral rural development projects by implementing the pilot projects in line with the needs of the community led by the trained human resources (Output 2); and building the implementation system of the model for its sustained implementation by improving the ability of related organizations to raise funds (Output 3) and preparing relevant personnel and organizations as well as coordinating mechanisms among the organizations (Output 4).

As shown in Table 1, the achievement level of the three indicators of the project purpose was high. As regards Indicator 1, a large number of rural development projects concerning agricultural development, environmental conservation, and social development were practiced in the municipalities. In addition, many cases that produced tangible results by the time of the project completion were confirmed from the interviews with the residents in the target communities. The success cases included such areas as afforestation, land conservation (countermeasures against gully erosion), terrace building, soil improvement, micro irrigation, cultivation of new crops such as vegetables and flowers, livestock improvement, women's group activities, and life improvement. For Indicator 2, although the C/P staff were sometimes changed during this project in the municipalities, the arrangement of the planned two C/Ps consisting of an extension worker and a planning officer in each municipality was largely maintained. On the other hand, one year after its withdrawal from the project in 2012, the Departmental government started its own rural development project that incorporated the methodology of this project (see below “3.2.2 Impact”). The Departmental technicians

remained deployed in the target communities of this project at the time of completion. Concerning Indicator 3, the C/P staff of USFX was transferred to the Institute of Integral rural Development (Instituto de Desarrollo Rural Integral, hereinafter referred to as “IDRI”), which was established in the Faculty of Agriculture of USFX by the time of completion of the project. The staff in IDRI continued to engage in the activities of the project.

However, judging from the relationship between the planned outputs and the project purpose, since Output 4 (Proper operation of the coordination committee) was not achieved, as mentioned above, it is inferred that the establishment of a comprehensive implementation system by the main organizations involved in rural development in the northern Chuquisaca was not completed. On the other hand, from the results of the other outputs, as well as from the achievement level of the indicators of the project purpose, it is understood that by the time of the completion of the project, the rural development model was clarified and that the implementation system was established with USFX as the core organization to be able to take advantage of the model on a constant basis. As described in “3.4 Sustainability,” IDRI defines its own organizational mission as promoting integral rural development in cooperation with all the related organizations in the Department, including the Departmental government, showing within and outside the institute the intention to collaborate with other organizations to advance rural development projects, along with its high commitment to integral rural development. Although a comprehensive implementation system was not established in the project, it can be interpreted that an important foundation of expanding integral rural development in the target area was built as a result of the establishment of a permanent institution with the objective described above.

In view of the above as a whole, the project largely achieved its purpose.



Introduced tank for small-scale irrigation
(Misión Pampa, Municipality of Presto)



Carnation grower who ships to the market in
Sucre (San Jose de Molles, Municipality of
Yamparaez)

3.2.2 Impact

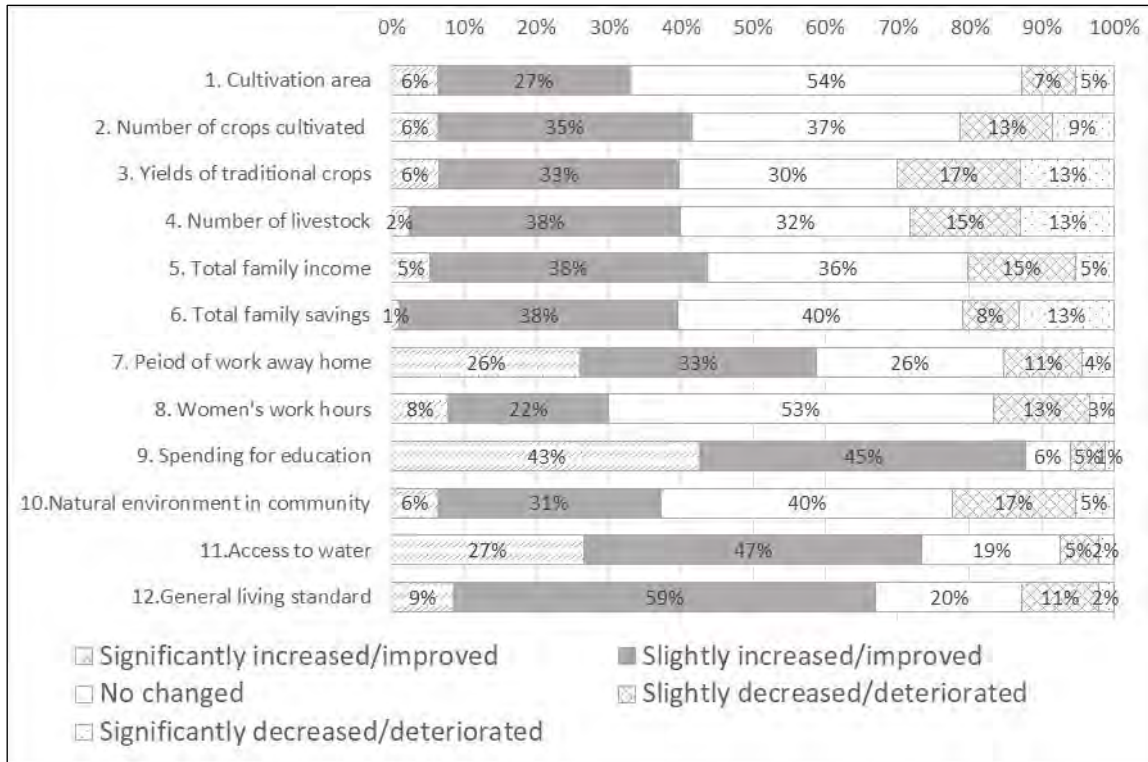
3.2.2.1 Achievement of Overall Goal

The overall goal of this project was “A rural development model is extended and the quality of life of small farmers in the northern part of the department of Chuquisaca is improved”. Since the expected timing of achieving the overall goal was not set in the relevant documents, such as ex-ante evaluation summary and PDM, the level of achievement was analyzed from the information available at the time of ex-post evaluation.

Table 2 Achievement of Overall Goal

Overall Goal	Indicator	Actual
A rural development model is extended and the quality of life of small farmers in the northern part of the department of Chuquisaca is improved.	1. Rural development projects utilizing the rural development model are implemented in more than 72 communities in the northern part of the department of Chuquisaca.	<p>It was achieved.</p> <p>The Departmental government, which withdrew from the project as an implementing agency, implemented its own program using the methodology of this project in the northern part of Chuquisaca (including some municipalities in the central part) from 2013 to 2015. The target communities of this program included 22 communities targeted by this project, totaling 63 communities. Together with the communities covered only by this project, in a total of 77 communities (14 only by this project, 22 by both projects, and 41 only by the Departmental program), rural development projects were implemented based on the same model. The program had components similar to this project (e.g. water resource reservation, soil conservation, vegetable and fruit tree cultivation, livestock farming, etc.), and technicians were placed in the municipalities by the Department.</p> <p>In addition, in the interviews with the municipalities, which were the implementing agencies, there were a large number of responses stating that rural development projects are carried out following the methodology of the model for some components of this project, in the communities other than the target ones of this project (See Table 3 below).</p>
	2. In the sample survey at the communities where the rural development model was utilized, more than 70% of the surveyed people realize that their standard of living improved compared with before the model was applied.	<p>It was largely achieved.</p> <p>A quantitative survey (The detail is elaborated below) conducted in eight communities extracted from the communities where the rural development model was utilized. The main results of the survey as follows:</p> <ul style="list-style-type: none"> ➤ With regard to production activities, income, and living aspects, clearly many answers from farmers showed improvement trends currently compared to before the project. ➤ Items markedly improved by percentage of respondents were “spending for education” (78%), “Access to living/drinking water” (74%), and “General living standard” (68%). Also 43% of the respondents answered that the total income of family has increased (the above ratios are the

		<p>combined figures of answers “significantly improved” and “slightly improved.”) (Figure 1). On the other hand, from the interviews with farmers in the target communities, in addition to the answered cases of increased revenue due to vegetables cultivation introduced by this project, there were also many responses that cultivation of vegetables for home consumption has helped the household economy improve even without selling.</p>
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Source: Quantitative Survey

Figure 1 Results of Quantitative Survey: Changes in living conditions of farmers compared to before 2010

The degree of achievement of the two indicators of the overall goal shown in Table 2 is high. In regard to Indicator 1, the department of Chuquisaca, which had placed the technicians as the implementing agency of this project until 2012, carried out a program with its own budget based on the rural development model of this project from 2013, after the departure from this project. In this ex-post evaluation study, the activities implemented under the Department’s program were regarded as the impact of this project. It should be noted that how exactly this program practiced the methodology of this project was not confirmed in detail in this ex-post evaluation. From the interviews with the concerned persons, including officers of the Department, however, there were not a few cases where the technicians who had served as C/Ps of this project from the Department later worked as technicians of the Department program. This implies that the project was clearly referred to in the field of the program. In

addition, although this project and the Department program were implemented in parallel in some municipalities, there were certain coordinating or supplementary relations between the two in the field, where the C/P of this project and the technician of the Department program, stationed in the same office of a municipality, made adjustments such as avoiding duplication of particular target people or areas.

In addition to the Departmental program, many cases were observed in the target municipalities of this project where rural development projects were conducted by themselves outside the target communities based on the methodology of the project, as mentioned in the next section,

From a quantitative survey⁶ that was conducted related to indicator 2, nearly 70% of the respondents recognized that their overall living standards have improved. The quantitative survey also shows that a certain percentage of respondents have increased their income. From the visits and interviews with farmers of the target communities, taking into consideration that this project especially targeted communities and farmers under adverse conditions of accessibility and land, cultivation of vegetables for home consumption brought about important impacts on many farmers at the subsistence or living level, even if the cultivation may not directly lead to money income.

Based on the above, the project has achieved its overall goal.

3.2.2.2 Status of the Project Effect after Completion

In this section, important changes and circumstances that were confirmed at the time of ex-post evaluation are described, on the effect of the planned project outputs and the project purpose after project completion.

⁶ In this ex-post evaluation, a quantitative survey was conducted with the objective of grasping the perception of changes in living standards of farmers in the communities where the rural development model was utilized. The outline of the implementation is as follows. The survey population of the 77 communities (See Table 2, the column of Indicator 1) was divided into two groups, after excluding the communities where data on the number of households were incomplete. One group (Group A) consisted of the communities where this project was implemented (32 communities) and the other (Group B) consisted of communities where only the departmental program was carried out (30 communities). Then, two-stage extraction was conducted for each group. In the primary extraction, eight sample communities were extracted by probability proportional extraction based on the number of households in each community. In the secondary extraction, 15 household farmers were extracted from each community. However, allocation of the number of communities to the two group does not reflect the proportion of household number of them, but six communities were chosen from Group A, and two communities from Group B. Also, in the sampling of farmers in the secondary extraction, it was not possible to randomly extract them for such reasons as the fact that the household list was not necessarily maintained, and there were districts difficult to access even in the community. Of the 120 sample farm households, the number of responses was 94 households (response rate: 78%). Among the respondents were 35 females and 59 males. Households survey population (after removal of incomplete community data) was 4,839 households, and the sampling error range was $\pm 10.0\%$ (for population proportion of 50%; confidence level of 95%) assuming a random sampling.

(1) Procurement of development funds for implementing integral rural development projects by the relevant agencies

Regarding the procurement of development funds planned as Output 3 in this project, according to the interviews with the municipalities which worked as implementing agencies and the answers to the questionnaire from them, at the time of the ex-post evaluation, the database on funds support organizations and the manual for procuring funds, which were introduced in this project, have hardly been recognized by the present officers in the relevant section of municipalities. Accordingly, funding applications utilizing these have not been carried out. Factors that the database and the manual are not utilized include 1) relevant persons in municipalities are replaced without carrying out the handover, 2) there was a perception among some C/Ps during the project that the procedures and regulations for acquiring foreign funds were complicated, 3) Major financial support programs, such as Fondo Indigena (indigenous fund: support program for rural infrastructure and social development from the state budget and hydrocarbon tax) and MIAGUA (“my water” program: financial support for water supply and irrigation development by Andean Development Corporation (CAF)), have been actively operated and municipalities have increased their utilization experience, and 4) some municipalities obtain information on financial support organizations through inquiries to such organization as the Commonwealth of Northern Chuquisaca Municipalities.

(2) Practice of integral rural development model

Relating to Indicator 1 of the project purpose, from the interviews with the current officers in the relevant municipalities and the visits of the target communities, the following examples of exercising the rural development model after the project completion were identified.

- 1) In the target communities, diversification of production such as vegetables and fruit trees, in combination with small-scale irrigation, are observed. While some farmers stopped vegetable cultivation which they had started in this project and some reduced their production to a self-consumption level, vegetable cultivation is rooted in many communities. In addition, there is a success case of a flower farmer, who expanded the greenhouse cultivation of carnation, which was initiated by the training as part of this project, now shipping 300 thousand carnations a year to the market in Sucre.
- 2) There are many examples of rural development projects practiced by municipalities on their own or municipalities and the Department utilizing a part of the technology or the method of integral rural development acquired in this project (such as soil conservation, afforestation, organization of women’s group, domestic animal health). Table 3 shows examples of activities by the target municipalities.

- 3) There is a case that a municipality has implemented its own project to evolve or complement the activities undertaken by this project. Specifically, the municipality of Zudañez independently supported a small-scale irrigation to promote vegetable cultivation for some farmers in the neighboring area which was missing from the target of this project in the community of Cerezal.

Table 3 Examples of utilizing methods and components of this project

Municipalities	Example of activity
Sucre (District 8)	<ul style="list-style-type: none"> • Support for soil recovery and production based on the planning of the community residents in seven communities (2016-2018)
Yamparaez	<ul style="list-style-type: none"> • Knitting and dressmaking training for women's groups (municipality's own additional support to San Jose de Molles and Molle Punku; new support to Jatun Khakha and La Mendoza) • Extension of afforestation activities in other communities which had interest after the project (in cooperation with the Ministry of the Environment and Water or the Department) (Talahuanca, Urayampara, Acharani, Kompucio, Palkamayu, Potrerros, Sirichaca, Pulki Abaroa, Esquisma), and utilization of afforestation protection method practiced in the project. • Continuing animal health activities utilizing domestic animal health equipment introduced in this project (promoter training, disease prevention campaign, etc. in collaboration with National Agricultural Health and Food Safety Service (SENASAG)).
Yotala	<ul style="list-style-type: none"> • The municipality opened a seedling center, triggered by the afforestation activities carried out in this project. As a municipal afforestation project, in Chamina, 10 ha was planted in addition to 3 ha planted by this project. The activities have been extended to other communities (Pulqui, Cancha Pampa, etc.). Afforestation campaign is carried out every year in the municipality.
Icla	<ul style="list-style-type: none"> • Promotion of vegetable cultivation through development of small-scale irrigation system by the Departmental program utilizing the method of this project (Chunca Cancha Baja, Chunca Potolo, Jatun Huasi, Tranquitas)
Tarabuco	<ul style="list-style-type: none"> • Training of various fields related to integral rural development (vegetable cultivation, soil improvement/recovery, organic cultivation, fruit cultivation management, food processing, small scale irrigation system) in the communities of El Carmen, Humahualso, Kara Kara, Tarcañi Alta, Tarcañi Baja, Tipa Villque, Paccha, Yerba Buena, Tambo Atajo, Moromarca, Cusi Wasi, Quiscoli Grande, and Quiscoli San Jaquin in collaboration with an NGO. They are carried out as municipality's program, which was started in response to the other communities' requests triggered by the project.

Source: Interviews with municipalities and questionnaire answers

(3) Personnel allocation related to implementation of the rural development model in the municipalities

In relation to Indicator 2 of the project purpose, two to eight technicians are arranged in the section of production development in each municipality (including the persons in charge of agriculture, animal husbandry, environment, disaster prevention, or other non-agricultural issues). They also include contract employees hired for a particular program. Although the staff size of the section is largely unchanged compared to the time of this project, there are municipalities that have fewer employees than before, such as Icla (three staff at the time of the ex-post evaluation from five at the time of the project). While the number of staff who have been working from the time of this project is limited, those who were engaged in this project in other municipality or the Departmental government as C/P technicians are observed in some cases.

(4) Personnel allocation in Institute of Integral rural development (IDRI) at USFX

With respect to Indicator 3 of the project purpose, seven faculty members, who used to work as the C/Ps of the project at IDRI established in April 2014 at USFX, have been working at the institute to conduct technical support to municipalities and provide research guidance to the university students (See “3.4 Sustainability” below for details).

3.2.2.3 Other Positive and Negative Impacts

From the results of the interviews and the questionnaire surveys to the implementing agencies, as well as the site visits and the interviews in 17 communities among the 36 target communities, which were conducted as part of the ex-post evaluation, the following impacts have been confirmed.

(1) Impact on the natural environment

Afforestation activities implemented in this project have provided necessary protection to the lands that were not covered with plants, suppressing soil erosion. A total of 567,000 seedlings were used in this project, and afforestation or reforestation was carried out covering at least 60 ha in each municipality. In addition, various construction works were conducted for soil conservation, such as stone walls, measures against gully erosion, infiltration trenches, water collecting ditches, etc. All these works for soil conservation have reached a length of 67,000 m in total, and a total of 20,000 m² of terraces has been developed.

According to the interviews with the officers of the municipalities, residents in Chamina Community of the municipality of Yotala recognize that the amount of spring water increased as a result of afforestation and vegetation protection at the water source where a small-scale irrigation was developed. Also, in the municipality of Icla, it is recognized that vegetation has

been recovered with soil erosion having decreased sharply in the communities of Molle Mayu and Kollpa Pampa.

(2) Awareness change of technicians in the municipalities and Department

Some of the technicians in the municipalities and the Department involved in this project stated the change in their own consciousness and its impact on their work afterwards. For example, a technician in the municipality of Yotala learned afforestation for the first time through this project, and at the time of ex-post evaluation he was actively promoting afforestation activities and campaigns in the municipality.

(3) Indirect effects on target areas and farmers

In many cases, this project targeted the communities located in remote areas under severe natural conditions in the municipalities. In that situation, indirect effects of this project on the living of farmers were observed in several communities (Presto Porvenir, Saichuma, Kollpa Pampa, Rio Tococho and Casa Grande). For example, increased production of subsistence crops and vegetables caused by the project eliminated the need of the farmer families for going out to a distant market to purchase them. In another case, because the water source was secured for the farmers by the project, it became unnecessary to spend their energy in collecting water.

(4) Gender effect

The strengthening of women's group activities led to their revenue growth and improved management capabilities, thus the advancement of the status of women in the community (increased involvement in community activities such as meetings and events; grant of responsibility based on the division of labor in the activity). In the group interview at a community, a beneficiary woman commented that in the project not only men but also women shared tasks such as making terraces, and she appreciated that unlike cooperation projects by other support organizations up until then, women and men could participate in the same training in this project. Also, in the same interview, the following three points were pointed out as changes brought by women's group activities. The first one was a change in awareness: the project activities made them clarify the things to do, though they had not understood what to do before the start of the activities. The second was improvement of concrete skills such as knitting. The third change was on the economic aspect through such group activities as running a mini-shop in the community by purchasing and selling everyday items and sharing the profits among the group members.

As described above, this project has largely achieved the project purpose of "A rural development model and implementation system will be established through implementing rural

development projects in the northern part of the department of Chuquisaca.” The overall goal has been achieved as planned through the extension of the model and improvement of small farmers’ quality of life. Although it was found about procurement of development funds that the municipalities gain information on funding support organizations by other means without utilizing the database developed as part of the project, it was also confirmed that the rural development model continues to be practiced and that various indirect impacts are actualized. Therefore, effectiveness and impact of the project are high.

3.3 Efficiency (Rating: ③)

3.3.1 Inputs

Inputs	Plan	Actual
(1) Experts	Long-term: 3 persons (180 MM ^{*1}) Short-term: 2 persons (26 MM)	Long-term: 7 persons (171 MM) Short-term: 6 persons (25 MM)
(2) Trainees received	Training in Japan and the third country (Planned number unknown)	Training in Japan: 8 persons Third Country Training Program (Ecuador): 4 persons
(3) Equipment	Vehicles, small-scale radio station equipment, OA equipment etc.	1 million bolivianos (mini bus, motorcycle, computer, wireless equipment, video camera, surveying equipment etc.)
(4) Expenses for supporting local project operation	Planned amount unknown	6 million bolivianos ^{*2}
Japanese Side Total Project Cost	460 million yen	381 million yen
Bolivian Side Total Project Cost	C/P personnel expenses, project offices, facilities such as farm fields, equipment, local costs	Placement of C/Ps (USFX, municipalities, Department of Chuquisaca (up to 2012)), provision of project offices and garage (USFX), costs for project operation (7 million bolivianos during 2009-2011)

*1: MM stands for man month.

*2: The exchange rate was approximately 16 Japanese yen (JPY) per 1 boliviano (BOB) at the time of the ex-post evaluation.

Source: Document provided by JICA

3.3.1.1 Elements of Inputs

Japanese experts were dispatched largely as planned, as shown in the above table. From the Bolivian side, a total of 36 persons were planned to be arranged as direct C/Ps, namely eight persons from USFX, ten persons from the department of Chuquisaca, two persons (one extension worker and one planning officer) from each of nine municipalities. Except for one municipality that participated in the activity in the middle of the project, C/Ps were placed from each institution from the start of the project. However, many of the C/Ps, mainly those from the Department and municipalities, were replaced frequently, which necessitated the implementation of trainings for capacity building to newcomers repeatedly. In the background of this situation exists a factor specific to Bolivia: it is common in Bolivia that technicians in the government agencies are employed on the basis of a contract for a period of less than one year, and that even the general staff are replaced by the change of the leader of the government agencies.

However, a more significant change that occurred to the system of implementing agencies during the project was a withdrawal of the Department from the project in 2013. As a result of unified local elections in April 2010, in all of the implementing agencies except for the municipality of Sucre and USFX, a political party based on the local indigenous group, called Socialist Movement (Movimiento al Socialismo, hereinafter referred to as “MAS.”), took office. After then, the operation of this project became stable as the political system of MAS was gradually stabilized. Nevertheless, stemming from the differences of opinion that occurred between the Department and USFX on the involvement and management of the project, discussions continued for almost one year concerning a proposed reconstruction of the implementation system of the project. This was followed by the withdrawal of the Department from the project. In fact, judging from the documents provided by JICA and the interviews with concerned persons of the two countries, it was difficult indeed to have supposed in advance a departure of the implementing agencies that had been in cooperation with Japan through the predecessor projects (the validation study by the Ministry of Agriculture, Forestry and Fisheries and phase I of the project)

According to the questionnaire answers from the implementing agencies, the withdrawal of Chuquisaca Department from the project caused the human resources as C/Ps stationed in municipalities as well as the financial inputs from the Department to stop from 2013. This had negative influence on the development of activities of this project, in such a sense that municipalities and JICA had to increase their burden on activities such as implementation of mini-projects. On the other hand, after the prolonged problem was settled, the operation of the project was facilitated. In addition, the withdrawal of the Departmental government affected the compilation work of the rural development model, which was supposed to be undertaken by the Department. This work was, however, conducted by the effort of the JICA experts and

the C/Ps of USFX, and the expected outputs such as the list of techniques and the methodology for exercising the rural development model were achieved as planned.

3.3.1.2 Project Cost

The planned amount of the total project cost on the Japanese side was 460 million yen. The actual cost amounted to 381 million yen (83% of the planned amount), falling within the plan.

It is considered that the actual cost was less than the plan by 17% for the reason that there was a period of stagnation of the project activities such as a temporary stop to accept applications for mini-projects, in the process of the Department departing from the project. From 2013 on, the mini-projects were again implemented without contributions from the Department. However, as a whole, there was a possibility that the number of mini-projects was suppressed. In addition, according to the documents provided by JICA, since the application of a mini-project was prepared based on the intention or plan of the community, it was difficult to estimate accurately the number of projects, amount of money, timing of start and so on. As a result, a total of 266 mini-projects in the 36 target communities, meaning seven projects per community on average, were carried out for environmental protection, production improvement and social development. From the above, it is judged that these inputs were commensurate with the outputs and provided flexibly in accordance with the situation. Of the total project cost of the mini-projects, JICA's share of contribution was about 33%.



Non-target vegetables farmer supported by the municipality (Cerezal, Municipality of Zudañez)



IDRI is actively utilizing the list of techniques and training materials created by the project (IDRI, USFX)

3.3.1.3 Project Period

The planned cooperation period of this project was five years. The actual period was 60 months (five years) as planned, from May 2009 to May 2014.

Both the project cost and project period were within the plan. Therefore, efficiency of the project is high.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and Political Commitment for the Sustainability of Project Effects

The *Patriotic Agenda 2025* and the *Agricultural and Pastoral Sector Development Plan (2014-2018)* mentioned in “3.1.1 Consistency with the Development Plan of Bolivia,” continued to be effective until the time of the ex-post evaluation. The project that aimed to improve the living standards through the improvement of food production and rural development was in line with these policies.

In addition, included in the 12 pillars of policies in the *Development Plan of the Department of Chuquisaca (Plan Territorial De Desarrollo Integral: PTDI) (2016-2020)* are reduction of extreme poverty, improvement of agricultural production and productivity to ensure food sovereignty, promotion of sustainable development and afforestation by respecting the “mother land.” These are aligned with the direction of the project.

Therefore, in the light of the national long-term vision, the agricultural and pastoral sector development plan and the Departmental development plan, the direction of policy was consistent with the purpose of this project even at the time of the ex-post evaluation: sustainability of the project from the policy aspect is high.

3.4.2 Institutional/Organizational Aspect for the Sustainability of Project Effects

As the main institution responsible for spreading the integral rural development model that was introduced by this project, the Faculty of Agriculture of USFX established IDRI in April 2014, shortly before the completion of this project. All of the C/Ps who had been appointed by the university were placed in IDRI. At the time of the ex-post evaluation, the Director and seven researchers or lecturers belonged to the institute, all of whom used to work as C/Ps of this project. Furthermore, three of them have been working since Phase I of the project.

IDRI specifies its objective, mission, and vision in the Strategic Plan (2016-2020), as follows⁷:

- Objective: To achieve an integrated and sustainable rural development that can be replicated at least in the Department in collaboration with the courses and faculties in the university in a multifaceted manner, by cooperating with the Departmental government, municipalities in the Department, and rural development organizations in the area.

⁷ IDRI (2015), *Plan Estrategico Del Instituto De Desarrollo Rural Integral 2016-2020* and USFX Faculty of Agriculture website: <http://Cienciasagrarias.Usfx.Bo/instituto/instituto-de-desarrollo-rural-integral> (accessed on September 1, 2018)

- Mission: As an institute adjunct to the Faculty of Agriculture at USFX, focus on sustainable integral rural development, through actions of management and generation of knowledge; based on research, extension, interaction and capacity building processes, interacting with sector organizations in accordance with regional development policies, to contribute to the improvement of life and alleviation of poverty.
- Vision: Consolidate a Departmental reference university entity, a pioneer of sustainable integral rural development, based on research, extension, interaction and capacity building processes, interacting with sector organizations in accordance with regional development policies, contributing to the improvement of life and relief to poverty.

In this way, IDRI has set the direction of the organization and arranged the staff in order to support and extend integral rural development projects by applying the rural development model created by this project.

In regard to actual activities, IDRI has concluded agreements with a total of 14 municipalities in the department of Chuquisaca, Potosí and Tarija during the four years since its establishment until the time of the ex-post evaluation and has provided cooperation such as training and technical assistance in such areas as vegetable cultivation, life improvement, forest management, urban and suburban agriculture (including some activities in preparation). On the facility aspect, in addition to the office on the premises of Faculty of Agriculture of USFX in Sucre City, IDRI has set up a new base of activities in the campus of the municipality of Yotala, in an attempt to strengthen its function by utilizing the facility that has the experimental farm field and training rooms and is located more closely to the rural areas.

In the department of Chuquisaca, the directorate of agriculture and industry (Dirección de Desarrollo Agropecuaria E Industrial, hereinafter referred to as “DDAI.”) under the Secretary of Productive Development and Economic Diversity has been in charge of the rural development projects. The directorate has ten technical staff in agriculture at the time of the ex-post evaluation. Though the Department is not engaged in such programs that take full advantage of the methodology of this project, as it was in the integral rural development program in 2013-2015, it has been carrying out its own program called “Agricultural Development Enhancement Program” since 2016. The program is composed of various components such as support for holding agricultural product fairs and construction of wheat flour mill. Currently, it is being considered that training of cultivation techniques coupled with the provision of seeds and fertilizer to the producer will be added as a new component. Since this activity assumes participation of the target farmers from the planning stage and provision of comprehensive support based on a combination of resources, this approach can be understood to partly incorporate the methodology of the project and the Department’s program implemented in 2013-2015.

In each of the nine municipalities, two to eight technicians are placed in the section of production development (often including the persons in charge of agriculture, animal husbandry, environment, disaster prevention, and so forth). They also include contract employees hired for a particular program. The staff size of the section is largely unchanged compared to the time of this project. Out of the 16 C/Ps in total who had been assigned by the municipalities at the time of completion of the project, six persons were identified to be working in the same position at the time of the ex-post evaluation (including those who returned from other position or organization recently). In addition to that, it was observed that some of the present technicians had been engaged in the project as C/Ps at other municipalities or the Department. As described above, since the completion of this project, IDRI have promoted rural development through training and technical assistance by concluding agreement with municipalities. Among the target municipalities of this project, Sucre (District 7), Tarabuco, Yamparaez, and Yotala have implemented rural development projects in cooperation with IDRI. On the other hand, Department's own programs are also implemented in municipalities, and some examples of cooperation between the municipalities and the Department in afforestation and animal health were observed.

From the interviews with the implementing agencies and their questionnaire answers, it was not confirmed that after the completion of this project, rural development projects were implemented through cooperation of USFX, the Department, and the municipalities, while there was no occurrence of duplication identified between activities on rural development by the university and those by the Department. In addition, in an interview with a municipality, there was a comment on the modalities of cooperation between related institutions in the light of the experience of this project, indicating that it would be desirable for the municipality to cooperate with the university and with the Department separately, rather than pursuing tripartite cooperation. Specifically, a project in response to technical problems could be worked in a cooperation between the municipalities and the university, and an area-wide project aiming at comprehensive development, such as the project at the small-basin level, could be done through cooperation between the municipality and the Department.

In consideration of the above, it is judged that a foundation of the cooperation system centered around USFX has been formed to sustain the effects of the project. IDRI was established for the purpose of promoting the integral rural development, and a large number of C/Ps of the project from the university have been involved in support of the integral rural development projects even after then. IDRI is also enhancing its function with the initiation of operation of the new facility. The cooperation system by the related institutions is not based on the three parties of USFX, the Department and the municipalities. However, USFX is actively promoting cooperative relations with municipalities. On the other hand, cooperation between the municipalities and the Department is taking place, as the Department programs are seen

implemented in municipalities. For the municipalities, tripartite cooperation is not necessarily considered a prerequisite to promotion of rural development projects. A substantive division of roles is seen in the current activities of related institutions, depending on the content and nature of the problems to be solved. Therefore, the sustainability of the effect of this project on the institutional aspect is largely high.

3.4.3 Technical Aspect for the Sustainability of Project Effects

As described above, the lecturers who used to serve as C/Ps of this project have been working in IDRI, and they actively utilize the list of techniques, brochures and teaching materials created in this project. These are used in the projects and training curriculums that IDRI supports and are exhibited or introduced in national and international seminars in the rural development or agriculture-related fields. A series of technical materials that were prepared in this project, have become the intellectual assets for IDRI to expand its activities as the core tools. IDRI also incorporates the methodology of “development cycle” that was an element making up the integral rural development together with the list of techniques, by making use of participatory tools for technical support in the cooperation to municipalities as stated above. Furthermore, playing a role to foster future technicians and engineers in agriculture and rural development as an educational institution of the university, at the time of the ex-post evaluation, IDRI was proposing within the university to open a new two-year course entitled the “Integral Rural Development Course” for senior technicians who already work as practitioners. If this course is realized, a continuous framework will be established to disseminate the technical products of this project to incumbent technicians in the Department and the municipalities.

Since the technicians of the Department and municipalities retire after two-three years in many cases, it was commonly observed that many of the C/Ps of the project had already been changed and the products such as the list of techniques were not utilized without a proper takeover between the relevant officers at the time of the ex-post evaluation. On the other hand, there was also a case in which a present technical officer in some municipality who was not directly the C/P of the project stated that he refers to the list of techniques and brochures created by the project when necessary and introduces these materials to newly employed officers for their reference as needed. In addition, it is observed that some technicians at one municipality move to another municipality in the Department or the Departmental government in their career. As described above, among the present technicians at the nine municipalities are those who used to serve as the C/Ps of this project at a different municipality or used to be engaged in the Department program utilizing the technique of this project as technical officer at the Department. Many of the officers who worked as the C/Ps of the project stated in the interviews at the time of the ex-post evaluation that they have been taking advantage of the acquired knowledge and skills through participation in this project for their current jobs.

From the above, IDRI has been contributing to the maintenance of technology necessary for sustaining the effects of this project through retaining human resources and actively utilizing the technical results of this project. In the Department and municipalities, the tendency for technical human resources to move among the municipalities in the same department and between the municipalities and the Department would be leading to technical spillover in the Department to some extent, through the experience and technology accumulated in individuals being utilized in other municipalities. However, there remain challenges to systematic inheritance of technology in a state of low retention of human resources. Therefore, the sustainability of the effect of this project on the technical aspect is moderate.

3.4.4 Financial Aspect for the Sustainability of Project Effects

In Bolivia, due to a significant decline in oil prices since 2015, the hydrocarbon tax revenues (Impuesto Directo a los Hidrocarburos, hereinafter referred to as “IDH.”) and the royalty income, which the government receives from oil and natural gas producers and are allocated to the departments, municipalities, and national universities, have been greatly reduced after peaking in 2014. This effect has also reached the financial situations of USFX.

On the other hand, according to the interviews with IDRI, each of the teachers of IDRI whose important mission is to research and extend in the field of rural development, is required by the university to set in advance the time ratio of his/her engagement in educational activities (work for classes and student teaching along the university curriculum) and research activities (other work on his/her own such as research, extension and external training). For example, one could be set to work on educational activities for 60% and on research activities for 40% of the total work hours. Then, the university allocates to IDRI the budget corresponding to the amount calculated based on the total work hours and the unit amount of salary set on an individual basis. Therefore, the budget of IDRI that corresponds to personnel expenses has basically been allocated from the university every year. According to the interviews with IDRI, although there is a possibility that the time ratio of research activities and educational activities will be changed, the total number of hours that is the basis of the budget is expected to be relatively stable in the future. On the other hand, with regard to expenses necessary for research activities and specific equipment and instruments other than general ones, IDRI is required to cover the costs on its own, for instance, by seeking for external financial resources, not from the university budget. In this sense, the academic staff of IDRI are exploring the possibility of cooperation with municipalities, NGOs, and other funding support agencies on a routine basis. Table 4 indicates major projects funded by external funding support agencies that IDRI participated after its establishment in 2014. It should be noted that apart from these activities, IDRI has carried out the activities including technical guidance based on the agreement with municipalities described above and specific training for technicians.

Table 4 Major projects by external fund support agencies participated by IDRI

Period (Year)	Project name	Financial support organization	Budget amount (Boliviano)
2014-2016	Food Sovereignty and Food Safety Integrated Development Project (D ISSA)	2 KR (Counterpart Fund)	5,066,133
2015	Technical support for sustainable and autonomous hygiene for the ecological toilet project in the suburb of Sucre city	SNV (Netherlands)	146,440
2015-2016	Vegetable cultivation management improvement project in Eco Region 2	World Bank - INIAF (Instituto Nacional de Innovación Agropecuaria y Forestal)	1,252,800
2015	Expert capacity building training for clean vegetable production	LIDER (Línea Institucional de Desarrollo Rural)	22,864
2015	Equipment for IDRI laboratory	PSCU (Proyecto Sucre Ciudad Universitaria)	363,121
2016-2017	Technical adaptation to climate change through forest breed production and plantation in the Andes Highland	COSUDE (Switzerland), University of Mayor de Saint Simon Forestry School (ESFOR - UMSS)	406,030
2018-2019	Elaboration of a portfolio of integral projects in the sub-basin of Yuraj Molino, Pocona city in Cochabamba Department	Fondo Mallorquín de Solidaridad y Cooperación (Spain)	752,000

Source: Compiled from the questionnaire answers from USFX

In addition, as described above, at the time of the ex-post evaluation, as part of the educational activities, IDRI was proposing to open a two-year course entitled the “Integral Rural Development Course” for senior technicians already working as practitioners. If it is realized, a mechanism to continuously acquire tuition fee income will be established.

In the Departmental government, 1.5 million to 3 million Bolivianos was allocated annually to the program that it independently implemented during the three years after departure from this project. However, no successor programs of the same kind are currently implemented. As described above, the Department has been implementing its own program named “Agricultural Development Enhancement Program” since 2016, but the direction of the budgetary scale of the program in the future is not necessarily clear.

Since the majority of municipal budget revenue is allocated from the central government tax revenue (including IDH), obtaining new financial sources through external programs has become important to the municipalities with the allocation decreasing.

Development projects are carried out in the municipalities through programs of the central government such as the Indigenous Fund (Fondo Indígena) and the Rural Economic Inclusion Program (ACCESOS) and in cooperation with universities or NGOs. According to the interviews with the municipalities, they are attempting to acquire information on such external programs in various ways. Some of them also answered that they were making significant efforts for the works including negotiation and coordination in order to realize such programs in their municipalities. This implies that it is not always easy to secure financial resources. In this way, in the municipalities, since realization of development projects depends on whether to obtain external funds, such as programs of the central government, NGOs and foreign institutions, financial uncertainty is considered to continue.

Some problems have been observed in terms of the technical and financial aspects. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aimed at establishing an integral rural development model to conserve natural resources and improve living standards, and its implementation system based on the cooperation of related organizations in the northern part of the department of Chuquisaca in Bolivia. With the overall goal of improving the quality of life of small farmers in the Department, the project was implemented by training core human resources in rural development in communities, municipalities, the Departmental government and the university, and carrying out rural development projects in line with the needs of the communities. This project is of high relevance because it was highly consistent with Bolivia's development plans of the country and agricultural sector, development needs of the target area and Japan's ODA policy, and because the project approach was appropriate. Effectiveness and impact of the project are high, because this project largely achieved the project purpose since the implementation system was established with USFX as the core organization to be able to take advantage of the clarified rural development model on a constant basis, although a comprehensive implementation system was not established. The overall goal is also identified to be achieved as planned. Although the relatively frequent replacement of C/Ps and the departure of the Department from this project had negative influence on the progress of the project activities, subsequent works were conducted by the effort of the JICA experts and the C/Ps of USFX, resulting in the achievement of the expected outputs. As a whole, efficiency of the project is high because the project cost was lower than planned and the

project period was as planned. Sustainability of the project effects is fair, because some problems have been observed in terms of the technical and financial aspects though sustainability from the policy and institutional perspectives is considered to be high.

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

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

- (To IDRI, USFX) Promotion of continuous exchanges with technicians of municipalities: Though this project aimed to establish the implementation system of integral rural development projects based on shared responsibility and cooperation among the Departmental government, municipalities and the university, a comprehensive system based on the harmonization of the three parties was not realized. Meanwhile, although technicians who work for rural development projects in municipalities generally have high mobility of employment, many of them continue to work as technicians within the Department or the country. If the university and technicians in the municipalities have an interface on a routine basis, the possibility of forming more projects in collaboration can be created. Therefore, it is suggested that by having more frequent contact with the people involved in rural development in the field, USFX play a role as “reference center” to the issues that such technicians face in their work. This would enable the university itself to understand the needs in the field and broaden the possibility of identifying new collaboration projects with the municipalities. As an example of concrete activities, it is considered that USFX will organize a network with technicians who were involved as the C/Ps in this project as the core members and continuously carry out exchange activities such as network events, seminars and workshops, in an attempt to actively extend rural development in the area. It is expected that forming a group of “graduates” engaged in this project would raise a sense of belonging and solidarity to the university, thereby promote the members to create a base of cooperation as alumni and raise their motivation to keep integral rural development.
- (To IDRI, USFX) Disclosing of the list of techniques and brochures on the website: The technical results of the project such as the list of techniques and brochures created as part of the project activities are still actively utilized by IDRI in various occasions. On the other hand, there was an opinion from the current technicians of some municipalities that used to be the implementing agencies of the project that they want to use these publications in their field but do not keep them at hand. It would be preferable that USFX disclose them on the website to the extent possible so that technicians at the Department and municipalities and farmers who need such information at the site of rural development could easily refer to them.

4.2.2 Recommendations to JICA

Indirect support for USFX's activities of network formation: In order to promote the sustainability of this project and extend its effects to other communities and areas, USFX (IDRI) needs to play a further role as a central institution of research and human resource development on integral rural development. It is proposed that JICA render indirect support to promote the above-stated networking activities between IDRI and the technicians in the municipalities. For example, it could consider dispatching resource persons or providing financial support for seminars, workshops and observation visits to other areas planned as part of these activities.

4.3 Lessons Learned

Selection of the implementation agencies considering employment stability in planning a project aimed at establishing the implementation system in a country where employment of government officers is generally unstable

In Bolivia, it is generally recognized as a major problem that employment of officers of government agencies (national government, departments, and municipalities) is susceptible to influence of contract type and change of leaders of the organization, thus unstable. It can be said that this project was highly challenging in the sense that it aimed at actualizing a continued implementation system by multiple institutions in such a country. On the other hand, the retention rate of the C/P teachers at USFX which was one of the implementing agencies is very high, even including those who have been working from the phase I of the cooperation, which is thought to be a major factor having contributed to promoting the project activities in terms of technical as well as operational aspects. Thus, in a country like Bolivia where the staff are highly mobile in government agencies such as municipalities due to the influences of employment contract and elections, it is expected to increase a possibility of sustaining project effectiveness and inheritance of technology by including an organization where employment is more stable (such as universities and research institutions in Bolivia).

END

Attachment

Achievement of Outputs

Outputs	Indicators	Actual Results
1. Core human resources for integral rural development are trained in communities, municipalities, the Department and USFX.	1. Ten university teachers, eight Departmental technicians, nine municipal extension workers, nine municipal planning officers and community leaders (at least 10% of the beneficiaries) are trained respectively.	It was largely achieved. During the project implementation period (2009-2013), 11 teachers of USFX, eight Departmental technicians, 16 extension workers in the municipalities, were trained. As described below in 3., during the same period a total of 64 persons participated in training for community leaders, the target ratio of leaders trained (10% of the beneficiaries = approximately 200 persons) was not reached. This may have been affected by the delay in the project's progress in the process of the Department separating from the project.
	2. Training materials and a curriculum that reflect the training results are elaborated.	It was largely achieved. Training materials were prepared for 32 themes. The manuals consist of six kinds for extension workers and 26 kinds for farmers, responding to various needs such as afforestation, soil conservation, cultivation of various horticultural crops (vegetables, fruit trees, flowers), livestock farming, beekeeping, and strengthening of organizations. The curriculum for training human resources for integral rural development projects based on these various teaching materials was not created, because the Integral rural development Institute (IDRI) had not yet started its full-scale activities.
	3. In the section for research, extension and human resource development of USFX, one training course for technicians and two training courses for farmers are implemented a year.	It was achieved. C/Ps of USFX played a central role in providing 24 training sessions to planners in the municipalities during the period of the project, participated by a total of 287 persons. In the communities, 211 training sessions in 21 communities were held for farmers, and at least 2,635 persons participated. Among them, a total of 64 farmers participated in the trainings for community leaders. USFX established IDRI in April 2014, before the completion of the project, the C/Ps of the university were placed in IDRI.
2. Through the implementation	1. 36 communities in the target nine	It was achieved.

<p>of integral rural development projects based on community development plan, process from planning to implementation of integral rural development projects is modeled.</p>	<p>municipalities each have community development plan.</p>	<p>In this project, community development plans and annual implementation plans for the target communities were planned to be prepared after conducting a baseline survey on each community and organizing the problems and activity needs of the community based on the survey results, through participatory workshops by community residents. The community development plan was prepared in all of 36 target communities by the time of completion of this project.</p>
<p></p>	<p>2. Based on monitoring and evaluation results of individual mini-projects and pilot projects, a list of techniques that can be utilized for conservation of natural resources and improvement of living conditions is organized.</p>	<p>It was achieved. Activities through mini-projects and pilot projects were carried out in all target communities, totaling 266 projects implemented. In the latter half of the project period, monitoring and evaluation of the projects were executed on a full scale, and the results were compiled and a list of nine techniques was created.</p>
<p></p>	<p>3. The methodology of participatory planning, implementation, monitoring and evaluation of integral rural development projects is summarized as a cycle of development project.</p>	<p>It was achieved. The methodology of participatory planning, implementation, monitoring and evaluation that had been practiced through the project was compiled and prepared as a manual of methodology for integral rural development projects titled "Project cycle."</p>
<p>3. Internal and external development funds for implementation of integral rural development projects are procured by municipalities, the Department and USFX.</p>	<p>1. Procedures for fund procurement are organized. 2. Extension workers, planning officers of municipalities and officers of the Department and USFX understand the various funding application procedures.</p>	<p>It was achieved. Activities were undertaken to organize information on various financial support organizations and to promote understanding of fund application procedures in order to raise the development fund procurement capability by the implementing agencies including municipalities. Specifically, in order to learn different application procedures by support organizations, seminars and briefing sessions for relevant officers in the municipalities were held by each support organization. Guidance materials were also prepared for each parliament of municipalities. In addition, along with a fund procurement manual, "Fund</p>

		management”, a CD-ROM containing a database that summarized the information on these support organizations. Also, training sessions on their operation were provided in the municipalities. The work of this component was carried out by a fund management team composed of C/Ps of USFX and the municipalities and Japanese experts.
	3. Appropriate application documents have been prepared for procuring funds for integral rural development projects in the target 36 communities.	It was achieved. As a result of the above activities for promoting understanding, up to October 2013, applications were submitted to a total of seven funding support institutions from all target communities. The number of applications amounted to 21 (including projects covering multiple municipalities), with a total of 58 million Bolivianos (approximately 928 million yen).
	4. The funds procured at the target 36 communities are utilized.	It was partly achieved. According to the questionnaire responses from the implementing agencies at the time of the ex-post evaluation, out of the projects for which applications were submitted, it was confirmed that eight projects totaling 13 million bolivianos (approximately 208 million yen) were approved by four institutions by February 2014. A state of all target communities realizing fund procurement by the time of the project completion, which the project had planned to achieve, was not accomplished. As possible reasons, in addition to the factors such as the degree of conformity with the supporting policy of the funding institution, retirement or replacement of C/Ps at the municipal level may have had an influence. However, it is possible to understand that fund procurement by the implementing agencies was achieved to a certain extent.
4. Coordinating Committee for defining the direction of integral rural development of northern Chuquisaca is	1. Coordinating Committee has been established to work on integral rural development in the northern part of Chuquisaca Department, in which the division of roles among municipalities, the	It was not achieved. Implementation system of this project continued in an unstable state due to the difference of opinions among the implementing agencies during the implementation of the project, and there was no agreement on the division of roles in the Coordinating Committee that was held only once.

<p>properly operated by municipalities, the Department and USFX.</p>	<p>Department and USFX is agreed.</p> <p>2. Coordinating Committee is regularly held to discuss and coordinate the activities for integral rural development.</p>	<p>It was not achieved.</p> <p>Coordination Committee was held only once as described above.</p>
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Column: Lessons Learned from the Comparison of Implementation System Improvement Projects in the Agricultural Sector in Bolivia

Two technical cooperation projects were implemented almost simultaneously in Bolivia with the aim of improving implementation systems in the agricultural and rural development sectors: the “Project of the Implementation System for Sustainable Rural Development Phase II” (CR2) and the “Project for Value-added Agriculture and Forestry for the Improvement of the Livelihood of Small Scale Farmers in Northern La Paz” (PANLAP).

The survey analysis conducted in conjunction with this ex-post evaluation categorized the characteristics of the implementation system development in both projects and the differences in the actual status of the project effects. It also analyzed the contributions and impediments to the realization of the results, referencing examples of similar projects in other Latin American countries. Based on this analysis, two categories of lessons are presented: (1) lessons learned from projects implemented in countries with characteristics and backgrounds similar to Bolivia; and (2) lessons common to agricultural and rural development projects aimed at improving implementation systems targeted not only at Bolivia.

1. Lessons Learned from Projects Conducted in Countries with Characteristics and Backgrounds Similar to Bolivia

Countermeasures against risks particularly likely to arise in projects implemented in countries with characteristics and backgrounds similar to Bolivia are listed below. In addition to addressing risks during the implementation of projects, these countermeasures also address risks that may arise after the completion of projects.

(1) Response to the risk to employment continuity of technicians at implementing agencies

In countries where national institutions or practices do not ensure the employment continuity of members of the implementing agency, not only are the activities delayed and the effects of the activities hampered during the project, but also the sustainability of the project’s results after its completion is hampered. When projects are implemented in countries with such systems and practices, the following risk response methods are considered.

- 1) It is important to ensure the continuity of project activities as a whole and the maintaining of technological systems involved by ensuring that the core technologies of the project are retained in institutions with higher employment continuity by including institutions that have implemented different employment practices and systems. In the case of the projects analyzed, as shown in CR2, it would be appropriate to assign responsibility for technology development in the project to the university which assumed the role and had high employment stability of its staff working for the project, rather than government and

administrative agencies.

- 2) When it is impossible to expect an appropriate succession at the time of a technician's turnover at the implementing agency, it is important to transfer technology directly to the beneficiary farmers and communities during the implementation of the project and to disseminate the target technology to the field as much as possible. In this case, since individual farmers directly possess the technology rather than receiving it through the engineers of the implementing agency who were intended to disseminate the technology after the project, the scope of extension is narrowed. However, to reduce these constraints to a certain extent, it is possible for the project to target producer organizations and social organizations in the target area.

(2) Response to the continuity risk of the implementing agency itself

In countries where the employment of lower-level staff, such as engineers, is affected by the appointment of top-level personnel in the government and in administrative agencies, it is challenging for implementing agencies to continuously commit to cooperation projects. In particular, when the head of the implementing agency is constantly changing due to election results and the wishes of a higher organization, it is necessary to judge the prospects of organizational stability more carefully. While it is difficult to predict how such political risks will materialize during the project period, it is possible to consider the following responses.

- 1) Include the establishment of laws and systems in project activities. Aiming for the establishment of laws and systems in cooperation projects is considered effective in ensuring a stable system that will not be influenced by turnover in the top management of implementing agencies. This is said with the acknowledgement that implementing projects can be difficult, particularly when the project aims to introduce laws and regulations that stipulate the involvement and cooperation of multiple organizations.
- 2) As in (1) above, including implementing agencies that are considered to have relatively few political risks and possess core technologies can enhance the continuity of project-wide activities and stabilize the maintenance of technology.

2. Lessons Common to Agricultural and Rural Development Projects for the Improvement of Implementation Systems

The following three points are the lessons learned from projects aimed at improving implementation systems.

(1) Confirmation of project structure and steps

Projects aimed at improving implementation systems are undertaken by combining various components, and there are no projects that merely put in place an implementation system

diagram. From this perspective, it is particularly important to consider the following two points when planning a project to develop an implementation system.

- 1) In addition to clearly defining what the implementation system will be developed for, namely, the plan, model, etc. to be implemented after establishing the system, the following elements will have a major impact on the realization of the establishment of the system: the positioning and nature of the plan or model and whether the formulation of the plan or model itself is included in the content of the project.
- 2) As in the projects examined in this analysis, it takes a long time to establish and stabilize systems when developing implementation systems for agricultural and rural development in specific regions, from the development of technologies such as appropriate crop varieties and cultivation methods to the guidance and practice of production, processing, and marketing. In CR2, the fact that some progress had already been achieved in the accumulation of elemental technologies required for integral rural development has contributed to the realization of the results. On the other hand, in its initial plan (before the extension of the project), PANLAP concentrated on developing implementation systems and technologies for the cultivation of appropriate rice and cacao varieties, and it envisioned steps to promote the extension and extended practice of these developments in its next phase. Therefore, it is somewhat likely that these technologies could not have been disseminated without an extension of cooperation when it was decided that the next phase would not be implemented, and that the results of the project as a whole would not have been achieved. Accordingly, it is important to carefully consider procedures and steps that take into account the context, positioning, and risks inherent in the process of implementation when planning a project.

(2) Alignment of the mission of the organization in charge with the project

Although neither project was able to establish a comprehensive collaboration system among the relevant organizations as originally planned, the approach of the lead implementing agency in utilizing the technical results of the project has led to a certain degree of sustainability for CR2. This was largely due to the fact that the mission of the Institute of Integral Rural Development (IDRI), established by the University of Saint Francis Xavier, was consistent with the extension and deployment of the “Integral Rural Development Model.” On the other hand, the National Institute for Innovation in Agriculture, Livestock and Forestry (INIAF), whose role is research, development, and extension of seeds related to agriculture and forestry, only played a part in the various activities of the value-added agricultural strategy relating to rice and cacao production that PANLAP was aiming to establish. This is considered to be one reason why INIAF was unable to demonstrate sufficient leadership in its project. Therefore, when considering the implementing agency at the planning stage of projects aimed at developing implementation systems, it is

important to center the organization whose role and function will allow full utilization of the technical results generated by the project.

(3) Consideration of regional characteristics and the mobility characteristics of the parties involved in the project

Northern La Paz, which is the target area of PANLAP, is an Amazonian region located in a lowland area isolated from the highland city of La Paz geographically, environmentally, and culturally. Because of the lack of specialist human resources within the region, there were many cases in which technicians engaged in the project at the implementing agency were recruited from other places, such as La Paz City. As a result, there were misunderstandings due to unfamiliarity of local practices by the employed technicians and early retirements due to problems within their families. In addition, the main activities of the project were carried out in indigenous Takana communities. Some representatives of the implementing agencies referred to the possibility that the lifestyle and social characteristics of the Takana impacted the results of PANLAP. For example, it was pointed out that for the Takana people, who were mainly engaged in traditional livelihoods such as hunting, fishing, and mobile agriculture, irrigated rice cultivation based on joint work in paddy fields is an entirely new technology and method, and it is necessary to consider the possibility that it will take a long time for them to accept these practices.

In light of these factors, it is especially important to consider the geographical conditions of the region and social and cultural factors of the local residents who will become the producers, including their lifestyles, historical customs, manners, and temperaments, in addition to the technical suitability of the crops to be promoted and the land to be targeted when planning implementation system development projects. This is especially true for projects targeting specific areas, such as CR2 and PANLAP. It is also important to reflect these factors in the approach to developing the system. Furthermore, when employing non-local project personnel, such as engineers, it is advisable to pay attention to characteristics such as their compatibility with the local community and the outlook for domestic mobility associated with employment during the implementation phase of the project.

Plurinational State of Bolivia

FY2017 Ex-Post Evaluation Report of Technical Cooperation Project
“Project for Value-Added Agriculture and Forestry for Improvement
of the Livelihood of Small Scale Farmers in Northern La Paz”

External Evaluator: Yusuke Hasegawa, International Development Center of Japan Inc.

0. Summary

The “Project for Value-Added Agriculture and Forestry for Improvement of the Livelihood of Small Scale Farmers in Northern La Paz” (hereinafter referred to as “the project”) aimed to establish a value-added agriculture and forestry base by formulating value-added agricultural strategies based on improved farming by increasing the productivity of single-year crops and introducing permanent crops and by developing a strategy implementation system of relevant organizations through pilot projects and strengthening the capacity building of relevant organizations and farmers, thereby, improving the livelihood of farmers and reducing poverty in the northern La Paz region in Bolivia. The Project was aligned with the Bolivian National Development Plan and the Agriculture Sector Development Plans, which emphasize poverty reduction of small-scale farmers, developmental needs of the target areas, and Japan’s assistance policies. It also recognized the appropriateness of the intended phase separation and the project approach. Therefore, the project is considered highly appropriate. The project purpose was achieved with high productivity and added value for both rice and cacao. However, the project did not fully achieve its overall goal because rice markets have deteriorated and communities without demonstration farms have not yet introduced irrigated rice cultivation. Therefore, the project has fair effectiveness and impact. Efficiency is low because both the project cost and project period exceeded the plan. No major problems have been observed in the policy background. However, major financial problems and some organizational and technical problems have been observed. Therefore, the project effects have low sustainability.

Therefore, this project is evaluated to be unsatisfactory.

1. Project Description



Project Location



Cacao tree of a farmer trained under the project
(San Felipe Community)

1.1 Background

There was insufficient development in the northern La Paz region in Bolivia, despite high potential for agricultural production. While 90% to 95% of the economically active population was engaged in agriculture, many farmers did not have adequate cultivation techniques and were unable to harvest commercially viable agricultural products (JICA, *Preparatory Survey for Northern La Paz Development Project focusing on Cacao, Bolivia*, 2009). Consequently, not a few farmers earned their livelihoods through illegal timber harvesting. However, the decline in income resulting from deforestation made farmers increasingly aware of the need for stable income through other methods.

Against this background, the government of Bolivia requested the government of Japan to provide technical cooperation to comprehensively strengthen production, processing, and distribution of recommended crops and to promote development in the area by increasing agricultural productivity. In response, the project was launched with the planned period of three years from March 2010 to March 2013. It had four implementing agencies: the Ministry of Rural Development and Lands (Ministerio de Desarrollo Rural y Tierras, hereinafter referred to as “MDRyT”) - the National Institute for Agricultural and Forestry Innovation (Instituto Nacional de Innovación Agropecuaria y Forestal, hereinafter referred to as “INIAF”), the Department of La Paz, the Municipality of San Buenaventura (hereinafter referred to as “SBV”), and the Municipality of Ixiamas (hereinafter referred to as “IXM”). This project was envisioned as Phase 1 to be implemented in the first three years of the seven-year overall cooperation, and the base would be developed in this phase for full-scale implementation of the value-added agriculture and forestry strategy expected in Phase 2.

1.2 Project Outline

Overall Goal	To alleviate poverty of small-scale farmers in the Project's target area	
Project Purpose	To establish a value-added agriculture and forestry base within the Project's target area	
Outputs	Output 1	A strategy for value-added agriculture and forestry is elaborated through the improvement of the production system.
	Output 2	Capacities of relevant institutional engineers and small-scale farmers are strengthened to implement the value-added agriculture and forestry strategy.
Total Cost (Japanese side)	431 million yen	
Period of Cooperation	March 2010 - September 2014 (Extension period: March 2013 - September 2014)	
Implementing Agencies	Ministry of Rural Development and Lands - National Institute for Agricultural and Forestry Innovation, Department of La Paz, Municipality of San Buenaventura, Municipality of Ixiamas (Responsible Agency: Ministry of Rural Development and Lands)	
Other Relevant Agencies/ Organizations	None	
Supporting Agencies/Organizations in Japan	Contractor (Chief Advisor): TASK Co., Ltd. (March 2010 - September 2013)	
Related Projects	World Bank, "National Roads and Airport Infrastructure Project" (2011-2018) "Integrated Community-Driven Territorial Development for Remote Communities in the Amazon" (2014-2017)	

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

It was judged as follows: The project purpose was unlikely to be achieved. The value-added agricultural strategy was under development, and challenges remained for securing funds and human resources to implement the strategy undertaken by the four implementing agencies directly involved in the project in Bolivia. The roles and responsibilities of each organization under the strategy were under consideration and the project had not yet reached the stage of formulating detailed action plans based on the strategy.

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation (including other impacts)

It was difficult to determine attainability at terminal evaluation. One of the overall goal indicators was the increase in income of small-scale farmers. Although this project was intended to conduct baseline surveys and establish numerical indicators, it was impossible to accurately estimate farmer income due to the existence of income other than agriculture (illegal timber harvesting, etc.).

1.3.3 Recommendations from the Terminal Evaluation

It was concluded that the project period needed to be extended to achieve the project purpose and ensure the sustainability of cooperation results. The following recommendations were made.

- Further emphasis on direct technical guidance to farmers is desirable. Practical technical guidance would be provided by expanding the scale of irrigated rice cultivation from a pilot scale to one that would generate income in a demonstration farm. Technical guidance should be continued for cacao. In addition, it is recommended to train neighboring communities other than those with demonstration farms to pursue technological spillovers.
- It was desirable to secure an extension period of one year and six months for the expansion and maintenance of the demonstration farm, maintain it for two seasons of irrigated rice cultivation, and continue agroforestry¹ for cacao.
- Hereafter, implementing agencies should follow up on activities within their respective responsibilities. It was also necessary to clarify the responsibilities and roles of the national coordinator.
- In accordance with the division of roles among Bolivian agencies, it was essential to continuously allocate personnel, and secure and execute budgetary allocations.

2. Outline of the Evaluation Study

2.1 External Evaluator

Yusuke Hasegawa, International Development Center of Japan Inc.

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: October, 2017 - January, 2019

Duration of the Field Study: March 5 - April 26, 2018 and July 26 - August 10, 2018

¹ Agroforestry is a form of cultivation that is intended to be sustainable, by not only planting cacao but also combining it with trees and other crops such as citrus fruits and platano (a kind of banana), considering the agricultural ecosystem of the region.

3. Results of the Evaluation (Overall Rating: D)²

3.1 Relevance (Rating: ③)³

3.1.1 Consistency with the Development Plan of Bolivia

From planning to completion, the purpose of this project was consistent with the policies in both medium- and long-term national development plans and sector plans of the ministry in charge of agriculture. First, the *National Development Plan (2006-2011) “Live Well (Vivir Bien),”* formulated under the administration of President Morales in 2006, and its long-term vision, the *Patriotic Agenda 2025 (Agenda Patriótica 2025)*, both emphasized poverty reduction and rural development, and were consistent with the project’s overall goal of reducing poverty of small-scale farmers. The *Sector Development Plan (2007)* of the erstwhile Ministry of Agriculture, Rural Development and Environment (Ministerio de Desarrollo Rural, Agropecuario y Medio Ambiente, hereinafter referred to as “MDRAyMA”) stated that, “securing food sovereignty and food security” and “integrated promotion of food production and rural development” as strategies. The MDRyT, established through the reorganization of the MDRAyMA, continued the same policy in the *Agriculture and Livestock Sector Development Plan (2011-2015)*. Subsequently, the MDRyT updated the *Development Plan (2014-2018)* to emphasize, among others, “food sovereignty and food safety” and “sustainable family agriculture.” These plans were consistent with the expected project results of improving the production systems of small-scale farmers to implement the value-added agriculture and forestry strategy, and thus the overall goal of reducing poverty until the completion of the project. At the Department level, the *La Paz Department Development Plan (2007-2010)* followed the aforementioned direction of the *National Development Plan* and aimed at building a society and economy to overcome poverty. The next plan (*La Paz Department Development Plan until 2020*) formulated in 2010 also called for poverty reduction, aiming for integrated and sustainable development based on productivity improvement and inclusive and equitable economic promotion. Both were aligned with the project’s goals of improving productivity and reducing poverty of small-scale farmers.

3.1.2 Consistency with the Development Needs of Bolivia

Poverty and basic services in the target areas have improved from the planning to the completion of the project. However, except for SBV’s water supply and basic sanitation services, which were relatively developed already, there remain large disparities in the conditions between this area and national averages. Thus, the conditions were well aligned with the project aimed at improving these services. For example, according to data from the

² A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

³ ③: High, ②: Fair, ①: Low

National Statistical Institute in 2012, the poverty rate was 62% for SBV and 77% for IXM compared to the national average of 45%. Electricity service coverage was 71% for SBV and 61% for IXM compared to the national average of 85%.

In terms of agricultural production, as described in the “1.1 Background,” La Paz Department's agricultural production, including the target areas, remained sluggish for a long time, with continued need for productivity improvement. The implementation of this project was consistent with developmental needs. According to an analysis by the department’s *Integral Regional Development Plan (2016-2020)*, the department’s share in Bolivian GDP was 25% in 2014, which was on a long-term downward trend. The plan cites weaknesses in the productive structures of La Paz Department and notes that no crops in the agricultural sector have significantly increased production over the last two decades.

3.1.3 Consistency with Japan's ODA Policy

The content of this project was consistent with Japan’s assistance policies at the time of planning the project. JICA’s Country Assistance Implementation Plan for Bolivia, formulated in 2006, established “poverty reduction for small-scale farmers” as a cooperation program that contributed to both “social development” and “productivity improvement,” which were priority areas of assistance, and this project was positioned below the program. The project, which aimed to raise incomes through improved productivity of small-scale farmers, is considered consistent with the program. In addition, *Japan’s Country Assistance Program for Bolivia (April 2009)* had two pillars of support: “social development for poverty reduction” and “assistance for sustainable economic growth.” The former included rural development, including the development of agricultural infrastructure such as irrigation, and the latter included technical support in the agricultural sector. These measures were in line with the project aiming to improve the living standards of small-scale farmers by improving their productivity.

3.1.4 Appropriateness of the Project Plan and Approach

(1) Grand design of two-phase cooperation

The project was originally planned as the first part (three years, Phase 1) of the overall seven-year cooperation. The phased approach envisioned a collaboration and cooperation system among relevant organizations in Phase 1, and developing full-scale value-added agricultural activities in Phase 2. In practice, Phase 2 cooperation was not implemented, and cooperation on this project was extended for 18 months.

The approach was to enable the relevant organizations to establish a support system for farmers in Phase 1. This idea is considered appropriate for sustaining and expanding the effect of cooperation. The division of phases also reflected the shared recognition of the difficulty of

establishing a system based on past project experiences in Bolivia. Therefore, this approach was reasonably appropriate. However, it is considered possible to have examined the activities in advance, from the aspect of how the results of Phase 1 could be preserved, if the system was not established in Phase 1, and Phase 2 was not implemented.

(2) Extension of cooperation and changes in approach to “development of implementation base”

This project (Phase 1) was extended to achieve the project purpose, which was considered difficult to achieve during the initial cooperation period at the time of the terminal evaluation, and to ensure the sustainability of cooperation results. However, the extension was accompanied by a change in the indicators of the Project Design Matrix (PDM)⁴ (for details, see “3.2 Effectiveness and Impact”). This is because the approach to establishing the implementation base for achieving the project purpose was changed from developing the division of roles and systems of relevant government organizations to realizing value-added agriculture in the target areas, using the recommendation of the terminal evaluation, of emphasizing direct technical guidance to farmers.

To a certain extent, the extension of the project and the revision of indicators related to the project purpose and project results were reasonable for the following reasons. At the time of terminal evaluation, the range of the project effects, such as the results from on-site activities in experimental farms and others and the technology acquisition of farmers, was small. Without the extension, it was unlikely that such results would have been utilized and disseminated. In addition to the development of the supporting system of cooperation and role sharing among the relevant organizations toward a value-added agriculture and forestry strategy, the possession of technologies on the ground, as stated above, can be another important factor in the promotion of the strategy. It is reasonable to a certain extent to focus on practical guidance for farmers during the extended cooperation period and revise the indicators to prepare a foundation for smooth acceptance and effective dissemination, when the cooperation system of the relevant agencies is established in the future.

Based on the above, this project was highly relevant to Bolivia's development plan and development needs, as well as Japan's ODA policy. The project planning and approaches are considered to have been largely appropriate. Therefore, its relevance is high.

⁴ A “theoretical framework” used to plan, monitor, and evaluate projects. It consists of a project summary, indicators, means of collecting data, external conditions, inputs, and assumptions.

3.2 Effectiveness and Impact (Rating: ②)⁵

3.2.1 Effectiveness

3.2.1.1 Achievement of Project Purpose

(1) Changes in the Project Design Matrix (PDM)

The project purpose was “to establish a value-added agriculture and forestry base within the target area of the project.” The project purpose was expected to be achieved through the formulation of a value-added agriculture and forestry strategy plan by improving production systems (Output 1) and strengthening the capacity of engineers in relevant agencies and small-scale farmers to implement the strategy (Output 2).

The PDM was revised three times during project implementation. When revising from the second to the third edition (the last edition), due to the aforementioned extension, significant changes were made to the expected outputs and indicators of outputs and project purpose. Behind the changes was the inability to formulate a value-added agriculture and forestry strategy plan during the initial cooperation period. This was mainly due to the long-term absence and frequent turnover of counterpart (C/P)⁶ officers and lack of collaboration among implementing agencies. As a result, the scope of responsibility and division of roles among the agencies, which were key elements of the plan, were not clarified. Accordingly, the project shifted its approach to the project purpose of “establishing an implementation base for value-added agriculture,” and then intended to establish the base through the realization of value-added agriculture in the target areas and by having farmers maintain the technologies shared in this project. Therefore, in the final PDM, major changes were made to the project purpose indicators from those concerning the establishment of implementation system of the implementing agencies of the value-added agriculture and forestry strategy (securing funds and human resources, sharing of roles and responsibilities, and so on) to those related to the increased production of rice and cacao. In addition, the “development of implementation system,” which was previously included in Output 2, was removed, and the positioning of the value-added agriculture and forestry strategy plan related to Output 1 was changed from a government plan formulated by the relevant organizations, to a proposal document prepared mainly by the project team.

As stated in “3.1.4 Appropriateness of the Project Plan and Approach,” there was a certain degree of appropriateness in the revisions of such approaches and indicators. Accordingly, the achievement level of the project purpose is assessed based on the final version of the PDM.

⁵ Sub-rating for Effectiveness is to be put with consideration of Impact.

⁶ Refers to the person in charge of the project at the implementing agency

(2) Achievement of Project Purpose

Table 1 Achievement of Project Purpose

Project Purpose	Indicator	Actual
To establish a base for value-added agriculture and forestry in the target area	① In the demonstration farms ⁷ , rice production of 6t/ha/year or more is achieved through the introduction of irrigated rice cultivation. (production volume of slash-and-burn upland rice in the target area is 1 to 2t/ha/year)	<p>It was achieved.</p> <p>According to the document provided by JICA, the production volume reached 16t/ha/year as a result of the test production of irrigated rice during the implementation stage of this project.</p> <p>For rice production in the demonstration farms in 2014, when this project was completed, the performance data had to rely on partial information obtained through interviews with individual farmers⁸, as the data was not collected systematically. However, a farmer in BeA produced approximately 8.8t/ha in the three harvests of the year. In SRM, it is estimated that 7.7 to 9.4t/ha were produced from the entire demonstration farm in the year, combining the rainy season and the second harvest. Although the number of farmers participating in the demonstration farm activities was relatively limited in both BeA and SRM, it is judged that the planned level of production was achieved in the final year of this project.</p>
	② Derelict cacao fields are recovered in the demonstration farms, and cacao production improved from the current level of about 20kg/ha/year to 100kg/ha/year or	<p>It was largely achieved.</p> <p>According to the document provided by JICA, the average yield of nine farmers who harvested in 2013 out of all cacao farmers who received guidance in this project was about 175kg/ha, sufficiently exceeding 100kg/ha.</p> <p>Approximate cacao yields of the three farms (two farmers in BeA and one in SF) in 2014, whose responses were obtained in the ex-post evaluation, were 92kg/ha, 276kg/ha, and 92 kg/ha, respectively (all based on interviews).</p> <p>Thus, the average production of cacao had already far exceeded the planned volume in 2013 (100kg/ha), and data for a full-year of</p>

⁷ In this project, the demonstration farms were developed in three communities of Bella Altura in SBV, and Santa Rosa de Maravilla and San Felipe in IXM. In this report, these communities are referred to as BeA, SRM, and SF, respectively. Demonstration farms for irrigated rice cultivation were set up in BeA and SRM. Both farms were expanded in the extended period of this project.

⁸ These interviews were conducted as part of the qualitative survey (Qualitative Survey 1) carried out during ex-post evaluation. Qualitative Survey 1 aimed to confirm the achievement status of the project purpose in the three communities of BeA, SRM, and SF, where the demonstration farms were prepared and identify the project impact. The survey targeted all farmers in the three communities. However, it was not possible to contact some farmers for the following three reasons. (1) Some farmers own residences in neighboring towns, in addition to one in the community, and usually live in the former. (2) Some farmers were away from the community for a medium and long term because they were staying in other areas as migrant workers, or working in forest areas in a group of community members. (3) Some refused to cooperate because they were busy. In total, 63 households were registered in the three communities. Of them, 47 were considered to be ordinarily living in the communities, and 36 were interviewed. The interviews included common question items to the quantitative survey (which targeted communities without the demonstration farms) to obtain the aggregated results of changes in farmers' income covering the entire area of the project.

	more.	2014 from certain farms showed that the planned level of production was largely achieved.
③	In communities with demonstration farms, small-scale farmers utilize post-harvest processing technology for rice and cacao, introduced by the project.	It was achieved. According to members of rice producer associations who played a central role in rice cultivation in BeA and SRM, farmers harvesting rice in the demonstration farms performed a series of tasks, such as threshing, drying, and polishing rice by the completion of the project. According to interviews with several farmers, many were performing post-harvest processing, such as fermentation and drying of cacao beans extracted from cacao pods by the completion of the project. Therefore, rice and cacao farmers who participated in the activities of the demonstration farms were using the post-harvest treatment technology introduced by this project.
④	In communities with demonstration farms, small-scale farmers acquired the knowledge to sell rice and cacao under better conditions.	It was achieved. In the interviews with the farmers in communities with rice demonstration farms, such attempts were undertaken during the project by those who participated in irrigated rice cultivation on the demonstration farms, as joint selling and shipping of the harvested rice, to sell under favorable conditions. For cacao, it was confirmed that paste processing was being practiced with the intention to sell at a high price during the project implementation stage. Therefore, rice and cacao farmers in communities where the demonstration farm activities were carried out were induced to sell their products under better conditions.

The four project purpose indicators shown in Table 1 were highly achieved. All these indicators were concerned with improving farmer skills in communities with demonstration farms. For rice, planned yields were achieved in both the pilot production stage of the initial cooperation period (before extension) and the expanded demonstration farm in the extended period. Cacao also achieved its target production as of 2013.

With regard to the relationship between the project purpose and the results of planned activities, activities under Output 2 aiming to strengthen the capacities of engineers in the relevant organizations and small-scale farmers are considered to have contributed to achieving the indicators. As explained in the appendix, the C/Ps became able to provide guidance to farmers using technical manuals, although their technical level likely varied due to the frequent turnover of C/P personnel. In addition, small-scale farmers had acquired basic techniques by the completion of the project, practicing the use of technologies not implemented before, such as collaborative activities in irrigated rice cultivation, and sharing

technologies promoted by advanced farmers in cacao cultivation. Based on the relevant documents of this project and interviews with farmers, it is believed that although rice farmers did not acquire sufficient skills in terms of some cultivation and management methods adopted during project implementation, the basic techniques proposed in this project are judged to have been acquired for both crops. On the other hand, in communities with demonstration farms, the number of farmers participating in irrigated rice cultivation declined significantly throughout the project period, and the number of farmers participating in expanded demonstration farm activities during the extended cooperation was about half for both BeA and SRM. Reasons for withdrawal included heavy physical burden in the irrigated rice cultivation process and domestic factors such as disease and migration.

Although the value-added agriculture and forestry strategy plan expected under Output 1 was formulated by the completion of the extended cooperation, the logical path from this output to the project purpose was not necessarily clear. At the seminar to present the project results, the strategy plan was reported to the participating organizations and producers; however, they did not make any specific commitments on the coordination and division of roles. As mentioned above, the value-added agriculture and forestry strategy plan, which was positioned as a government plan, was changed to a proposal document at the start of extended cooperation, and the project purpose indicators were changed accordingly. This perhaps made the role of the strategy plan in achieving the project purpose unclear.

As described above, although the number of rice farmers who improved irrigated rice cultivation techniques was limited and the path from some output to the project purpose was unclear, judging by the overall project purpose indicators, the project largely achieved its purpose.



The second ear grows in the former demonstration farm (April 2018)
(Santa Rosa de Maravilla Community)



Rice husk storage and drying table provided during follow-up cooperation
(Bella Altura Community)

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

(1) Changes in the Project Design Matrix (PDM)

The overall goal of this project was “to reduce the poverty of small-scale farmers in the target area.” Although the ex-ante evaluation summary did not specify the time to achieve the overall goal, the overall goal was also positioned as the project purpose of Phase 2 cooperation (four years) envisioned when planning this project. Therefore, the achievement would have been approximately four years after project completion. Since the timing of the ex-post evaluation was close to this estimated period, the degree of achievement was verified based on the information obtained at the time of ex-post evaluation.

In the PDM revision accompanying the project’s extension, the overall goal indicators were also changed. Prior to the change, it was planned that the target values of “agricultural income” and “share of agricultural income in total income” of small-scale farmers in the target area would be set as indicators based on the household survey conducted in this project. However, the household survey revealed that it was difficult to set and verify numerical targets due to data unreliability. For example, farm income, such as from illegal logging in the target area had to be estimated. Therefore, the increase in production of rice and cacao in communities with demonstration farms was used as indicators. In this ex-post evaluation, the achievement level of the overall goal will be verified based on the final version of the indicators. However, as reference information, the status of income changes of farmers in the target area obtained from the quantitative survey⁹ will also be examined.

(2) Achievement of Overall Goal

Table 2 Achievement of Overall Goal

Overall Goal	Indicator	Actual
To alleviate poverty of small-scale farmers in the target area of the	① In communities with demonstration farms, small-scale farmers have achieved	It was not achieved. The qualitative survey ¹⁰ of farmers in the three communities with demonstration farms revealed that respondent farmers self-sufficient in rice (i.e. did not purchase rice) in the past year was extremely low. That is, 1

⁹ In this ex-post evaluation, a quantitative survey was conducted to ascertain the increase in agricultural income of small-scale farmers in the target area and the impact on small-scale farmers in communities without demonstration farms. Farmers (households) of eight communities were selected as the survey population, and two-stage extraction was conducted. The eight communities were decided by excluding three communities with demonstration farms and one community with poor-access among the 12 communities in the household survey conducted in 2012 as part of this project. In the primary extraction, five sample communities were selected by equal probability extraction. In the secondary extraction, farmer families, equivalent to 40% of the total number of households, were selected from each community for a total sample size of 80. However, in the secondary extraction, it was not possible to randomly extract farmers as the household list was not necessarily maintained, and some districts were difficult to access even within the community. Of the 80 sample households, 79 responded (response rate: 99%), consisting of 32 females and 47 males.

¹⁰ See footnote 8.

project	self-sufficiency in rice.	<p>out of 16 households in BeA, none of the 11 households in SRM, and 3 out of 9 households in SF; therefore, 4 out of 36 households in the 3 communities (percentage of self-sufficient households was 11 %) (see Table 3).</p> <p>In the same survey, a small number of farmers produced rice in the past year: two, three, and four households in BeA, SRM, and SF respectively; therefore, 9 households (25 %) out of 36 in the 3 communities.</p>
	② In communities with demonstration farms in the target area, small-scale farmers earn income by selling rice and cacao.	<p>Moderate achievement</p> <p>The qualitative survey showed that very few farmers sold rice in the past year: one household in BeA and none in SRM and SF. As stated above, only nine farmers produced rice in the three communities.</p> <p>Considering the special circumstances of BeA in the past year (described later), the results in the year prior to the last were also reviewed. Out of 36 farmers in the three target communities, 22 were producing, and 9 were selling rice (about 41% of the producers and 25% of the total farmers interviewed). The market price of rice has decreased in the last few years, making the farmers less willing to produce rice as a source of income.</p> <p>The communities experience variations in cacao production. In BeA, out of the 16 farmers interviewed, 13 households (81% of the interviewed farmers) were producing cacao, of which 12 households (92% of the producing farmers) were selling it in the form of beans and/or paste. However, no farmers interviewed in SRM produced cacao due to damage from disease and ants. In SF, of the nine farmers interviewed, seven households (78% of the interviewed farmers) were producing cacao, of which four (57% of the producing farmers) were selling it in certain forms.</p>
	③ In the other communities, small-scale farmers utilize the technology introduced by the project.	<p>Limited Achievement</p> <p>The quantitative survey in five communities without demonstration farms, 21 and 3 households among the 79 households interviewed participated in the project activities (e.g., seminars and training) on rice and cacao, respectively. 11 households had visited the demonstration farms, and 18 had heard about the techniques or other issues introduced by this project from other farmers who participated in the project. While 54 and 40 farmers produced rice in 2017 and</p>

		<p>2018, respectively, utilizing the traditional upland rice cultivation method, the irrigated rice cultivation recommended in this project has not been introduced.</p> <p>19 and 17 farmers produced cacao in 2017 and 2018, respectively. However, they do not include the three households who responded that they participated directly in the activities of this project. Of the 19 cacao producers in 2017, 13 and 7 households answered that they sold cacao beans and processed paste, respectively.</p> <p>According to the interview results as part of Qualitative Survey 2¹¹, which was conducted in a community (Tahua) without a demonstration farm, and not included in the target communities, a farmer who participated in the project activities for cacao has been supporting other cacao farmers in the community in grafting and pruning tasks, using the techniques he acquired in the project.</p>
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As shown in Table 2, the overall achievement of the three overall goal indicators is limited.

Regarding Indicator ①, the following factors contributed to the small number of farmers who were self-sufficient in rice and/or producing rice in communities with demonstration farms.

- As background, the price of rice in the local market has declined significantly due to its mass production and sales by Mennonites¹², who have begun migrating to the target area in recent years. Consequently, many farmers in both SBV and IXM municipalities recognize that rice production is no longer worth the effort, and have either stopped or reduced production. Visits and interviews at the Rurrenabaque (Beni Department) market, which is the main market where farmers from both cities sell their products, show that in recent years many customers have come to prefer cheaper Menonite-produced rice than rice produced by farmers from local communities.
- BeA was targeted by the Bolivian government’s housing development project between

¹¹ As part of this ex-post evaluation, in addition to Qualitative Survey 1 that targeted the communities where the demonstration farms were developed, Qualitative Survey 2 was conducted to confirm the effect of this project on small-scale farmers in communities without demonstration farms. The survey included interviews with community representatives and three farmers in Tahua, a municipality of IXM. Tahua was selected because it had the largest number of households among the three remaining communities out of the target communities of the household survey implemented during the project, excluding those already chosen by the quantitative survey and the three communities with demonstration farms. Another reason was that the community was located relatively close to one with a demonstration farm.

¹² Mennonites are mainly German immigrants who belong to the Christian Anabaptist denomination. In migrant areas, they live traditional lives in groups and are engaged in agriculture and livestock farming. In Bolivia, Santa Cruz Department has a large number of their colonies, some of which have moved to the target area of the project since around 2012. At the time of this ex-post evaluation, there are two Mennonite communities in IXM.

2017 and mid-2018, with many farmers stopping rice production in 2017. The project is a housing support scheme for poor districts through which the national government and municipality provide materials for buildings, and the target households bear the burden of building work. As the housing project was completed by July 2018, some farmers showed intention to resume rice production from October of the same year. However, based on the aforementioned market environment, it is expected that many will produce rice for self-consumption.

With regard to Indicator ②, as mentioned above, the number of farmers producing rice is limited and the number selling rice is small. Only farmers who participated in the demonstration farm activities (about four farm families in BeA and SRM each) continued to cultivate irrigated rice after project completion in communities with demonstration farms, and the other rice farmers are cultivating upland rice. On the other hand, many farmers earn from producing and selling cacao in two communities.

With regard to Indicator ③, the utilization of introduced technologies was judged to be limited as a whole because there was no adoption of irrigated rice cultivation that was targeted by this project. As for cacao, one farmer who participated in the project activities used his acquired techniques to support other farmers, while few farmers participated directly in project activities in the quantitative survey, and those who participated were not cultivating cacao at the time of this ex-post evaluation.

Table 3 Production and Sales of Rice and Cacao by Individual Farmers
in Communities with Demonstration Farms

Community	Number of households/ Constant resident among them	Number of households interviewed	Participated in this project/ Not participated	Rice (2018)					Cacao		
				Production	Selling	Purchasing	Self-sufficient	Unknown	Production (2018)	Selling beans (2017)	Selling paste (2017)
Bella Altura (BeA)	22/20	16	12/4	2	1	14	1	1	13	8	9
Santa Rosa de Maravilla (SRM)	22/17	11	10/1	3	0	10	0	1	0	0	0
San Felipe (SF)	19/10	9	8/1	4	0	5	3	1	7	3	1

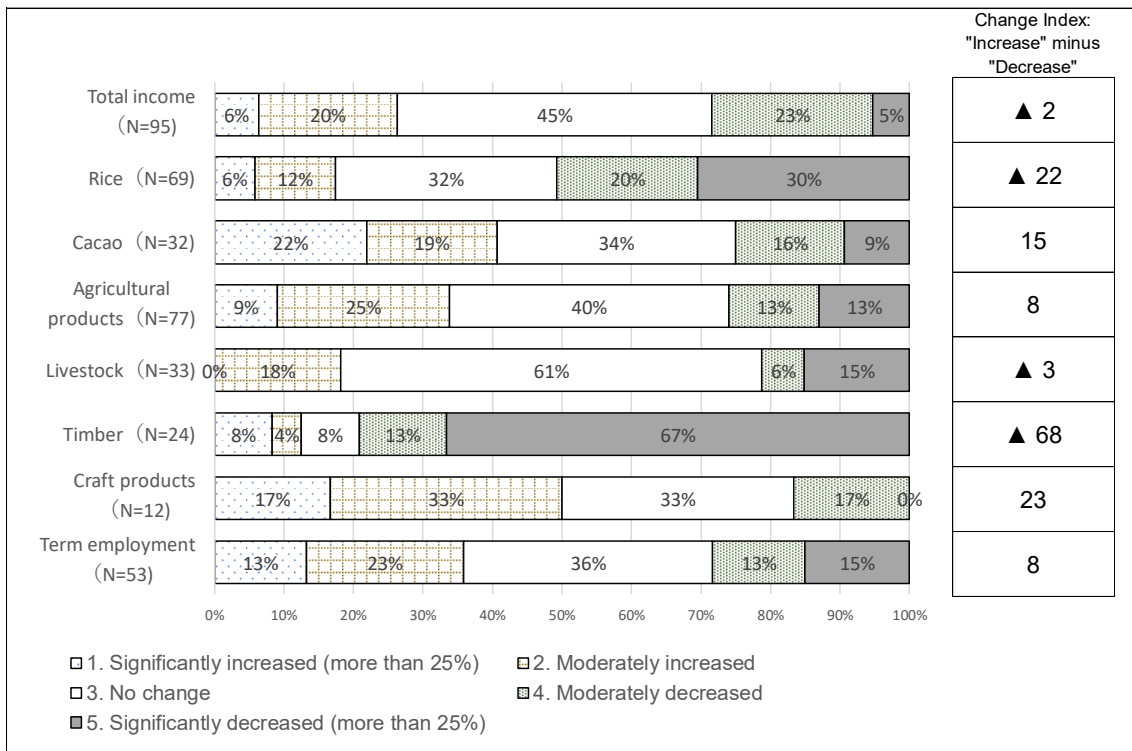
Source: Qualitative Survey 1

In addition to these three indicators, the results of quantitative and qualitative surveys to understand the income changes of farmers in the target area over the last five years in

relation to the overall goal “To reduce poverty of small-scale farmers in the target area” are as follows (see Figure 1).

As for total income, 45% farmers answered “no change,” 26% answered “significantly increased” or “moderately increased,” and 28% answered “significantly decreased” or “moderately decreased.” For rice income, the answers were 32%, 18%, and 50%, and for cacao income, 34%, 41%, and 25%, respectively. For income from timber, the answers were 8%, 12%, and 80%, respectively. From the results of these surveys, we calculated the “rate of increase” minus the “rate of decrease” as an index indicating the overall degree of change for each income item. These income items can be categorized into groups of items showing a clear upward trend (craft products, cacao), a slight upward trend (agricultural products, term employment), almost unchanged (total income, livestock farming), and a clear downward trend (timber, rice). It is difficult to accurately calculate the income changes because the income scale and proportion of each item varies depending on the farmer. However, the clear decline in rice income and increase in income from cacao support the recent decline in rice market prices confirmed in this ex-post evaluation and that many cacao producers in communities with demonstration farms are also selling cacao. Of the 110 farmers in the quantitative survey, 70 purchased rice (share of self-sufficient farmers: 36%). According to the household survey conducted in 2012 as part of this project, of the 116 households, 63 were self-sufficient farmers (share of self-sufficient farmers: 57%), indicating that the share of self-sufficient rice farmers is decreasing in the entire target area.

The quantitative survey results showed no clear change in gross income overall; however, income from timber declined significantly. Income from agricultural products other than rice and cacao increased slightly. Interviews in the qualitative survey revealed that some farmers were attempting to increase the production of traditional crops such as bananas and corn, as well as cash crops such as cacao, citrus, acai, and cupuassu, in response to the sharp decline in timber income. Although it is impossible to draw accurate conclusions from the results of this survey, it can be inferred that the share of agricultural income in the total income of small-scale farmers has the same trend as in the past, or is slightly increasing.



Note: Common questions were asked in the quantitative survey targeting communities without demonstration farms and Qualitative Survey 1, which targeted all households in communities with demonstration farms. Figure 1 shows the aggregates of both results.

Source: Quantitative Survey and Qualitative Survey 1

Figure 1 Changes in income of farmers in the target area over the past five years

As the overall goal, it was expected that the utilization of technologies introduced by this project would lead to self-sufficiency in rice and income generation from rice and cacao in communities with demonstration farm activities. However, the willingness of farmers to produce and sell rice has declined, especially due to changes in markets over the entire target area, and very few farmers have achieved self-sufficiency and income generation. A certain proportion of farmers produce and sell cacao, although the situation varies depending on the community. In communities without demonstration farms, the introduction of irrigated rice cultivation has not been achieved. Some examples of technical utilization of this project are recognized for cacao. Thus, the project has achieved a limited level of its overall goal.

3.2.2.2 Status of Project Effects after Completion

Of the outputs and project purpose planned in the project, the key changes identified at the ex-post evaluation regarding the status of effects after project completion are described here.

(1) Implementation system development of the value-added agriculture and forestry strategy plan

With respect to Output 1, the relevant organizations made no specific commitments on coordination and role sharing of the value-added agriculture and forestry strategy plan, which was announced as a proposal document at project completion, and no implementation system was established by the relevant organizations by that time.

Interviews with relevant parties indicated that after project completion, INIAF had hired engineers for rice and cacao for a certain period and continued their activities in the Northern La Paz region. However, there were no integrated activities based on the cooperation and harmonization of the relevant agencies as was proposed by the above strategies, including other organizations. Subsequently, from January 2016 to March 2017, the JICA Bolivia Office worked with INIAF to follow up on this project (F/U). The aim was to apply irrigated rice cultivation technology and improve post-harvest processing and commercialization of rice, focusing on production and marketing of rice seeds that were expected to be highly profitable. In total, eight farmers participated in this F/U cooperation in BeA and SRM. At the end of the activity, a memorandum of intent (Carta de Intenciones) was signed to confirm the cooperation of the department, municipalities, INIAF, seed buyers, rice farmers' association, and so on, to establish a value chain for the production of rice seeds in the Northern La Paz area. The memorandum of intent is expected to remain in force for two years, and the municipalities will play a leading role in promoting the implementation of the initiative. The results of interviews with relevant agencies regarding their handling of the memorandum are as follows. 1) INIAF independently provided seed production support to rice farmers in BeA and SRM after the F/U, which is scheduled to continue in the future. However, INIAF faces financial problems, and a rice engineer stationed in SBV was withdrawn in December 2017. 2) In the Department, the Deputy Governor signed the memorandum of intent, but the Secretariat of Economic Development and Industrial Transformation (Secretaria Departamental de Desarrollo Económico y Transformación Industrial, hereinafter referred to as the "SDDETI"), which had cooperated with the F/U activities, did not recognize the existence of the memorandum at the time of the ex-post evaluation. 3) Although both SBV and IXM municipalities are aware of the memorandum, the implementation of activities is essentially dependent on the implementation of programs with external funds due to budget constraints, and there is no movement to actively promote cooperation among relevant organizations. Thus, although an opportunity was created to share the recognition that comprehensive efforts by relevant organizations are necessary for realizing value-added agriculture in the Northern La Paz area, the response of each organization was limited at the time of the ex-post evaluation, and there is no consensus and division of roles.

(2) Status of effects of project purpose indicators

As mentioned above, the F/U cooperation provided support for rice seed cultivation in relation to project purpose indicator ①, and 1.3 ha of the 4.4 ha area of the entire former demonstration farm was certified by INIAF as a seed cultivation field. The F/U cooperation aimed to revitalize the rice producers' associations formed in BeA and SRM at project completion and sell the seeds to a government-affiliated seed company; however, this did not happen because of low production volumes and procedures for obtaining contract qualifications for farmers. After the F/U, in the harvest period of March 2018, three farmers continued to produce seeds in the former demonstration farm with the support of INIAF, with yields ranging from 1.4 t/ha to 1.7 t/ha. In the last two years, the former demonstration farm has not experienced two crops of irrigated rice a year. Poor water intake in BeA and leakage due to ants in SRM has made it impossible for the entire field to demonstrate sufficient capacity. Therefore, the effect on rice yield set in Indicator ① has not been sustained.

For project purpose indicator ②, the 2017 data were collected in the three communities where demonstration farm activities were implemented. There was no cacao production in SRM for the last two years due to damage by disease or ants; however, in BeA and SF, cacao production by proactive producers ranged from 92 kg/ha to 230 kg/ha in 2017. Cacao growth is largely influenced by the weather and disease outbreaks, in addition to the level of management by cacao farmers. However, productivity growth is sustained, especially among farmers who are highly motivated to cultivate cacao.

As for project purpose indicator ③, rice farmers continue to work on threshing, drying, and milling after harvest. Cacao producers also work on post-harvest processing such as fermentation, drying, and paste processing.

For project purpose indicator ④, rice farmers who participated in the F/U cooperation attempted to jointly develop sales channels for the rice seeds they produced. For cacao, as stated above, a producers' association was established in BeA to standardize the quality of beans and paste and to promote branding. These are all moves to utilize and develop the sales innovations and expertise addressed in this project, indicating that the project effects continue to be realized.

3.2.2.3 Other Positive and Negative Impacts

(1) Impact on the natural environment

Responses to the questionnaire and interviews with implementing agencies, and interviews with farmers at communities with demonstration farms and with concerned persons of the project revealed no negative effects of this project on the natural environment.

There was no information available on the situational changes of illegal logging of forests. However, as the results of the quantitative survey show, market prices have declined due to a decline in domestic and overseas demand for timber in recent years, farmers' income from forestry has fallen dramatically, and other sources of income have to be established to compensate for this decline. Cacao cultivation as an alternative source of income may have contributed to curbing the illegal logging of forests; however, it is difficult to determine its impact.

(2) Resettlement and land acquisition

All the demonstration farms in the three communities developed in this project were prepared using the common land in the community and there was no resettlement or land acquisition. There were no complaints or comments on resettlement or land acquisition in interviews with the target farmers in this project, including those involved in activities other than demonstration farm activities.

(3) Effects on gender aspect

Two of the three members of the rice producers' association in BeA were women, who negotiated and communicated with external supporters as beneficiary groups in JICA's F/U cooperation and subsequent seed production support by INIAF. Mostly men had undertaken these jobs. Furthermore, in the community, two individuals played an active role in decision-making on F/U cooperation and management of rice production. Since collaborative work is particularly required for irrigated rice cultivation, the activities of this project and the F/U have led to the promotion of women's activities within the community. For example, as described later, some farmers who have not been involved in demonstration farm activities after project completion indicated their willingness to start (resume) cultivation of irrigated rice in the future. The women members play a key role as contact persons for these willing farmers to exchange information and consult regarding rice.

(4) Establishment of cacao producers' association in BeA

In BeA and SF, farmers who proactively participated in cacao activities have taken the lead in sharing techniques and collaborating with other cacao farmers. In BeA, in particular, a cacao producers' association called ASEPCH MADIDI (Asociacion de Elaboradores de Pasta Casera de Chocolate Madidi) was established in 2018. The Madidi National Park and Italy supported the construction of a processing center and provided equipment and technical guidance on fermentation, drying, sorting, processing, and packaging of cacao. The association members themselves decided to sell a packaged product named "home-made chocolate" directly in the market, rather than selling it to a major chocolate manufacturer. At

the time of the ex-post evaluation, the association had already conducted a trial sale and sold 200 boxes (for the price of 20 Bolivianos¹³ per box). Many of the 15 members of the association were trained in the project, and they stated in interviews that the techniques they learned in this project, particularly soft skills in post-production, are very helpful.

Summarizing the evaluation results of effectiveness and impact, since this project has to some extent achieved the project purpose and overall goal, effectiveness and impact of the project are fair. For the project purpose, both rice and cacao have achieved high productivity and added value. Regarding the overall goal, while many cacao farmers produce and sell cacao, the project's effects on rice have not been fully realized due to the influence of market conditions, and irrigated rice cultivation in communities without demonstration farms has not yet been introduced. In addition, to continue the project effects, there is no comprehensive implementation system of agriculture and forestry strategy based on the division of roles and collaboration among relevant organizations. However, other indirect impacts were confirmed, such as promotion of women's participation, sharing and cooperation of techniques among cacao farmers, and contribution to producers' association activities.



Cacao tree grafted a year and a half ago (Bella Altura Community)



Many cacao farmers process and sell paste (Bella Altura Community)

¹³ The exchange rate at the time of the ex-post evaluation was 1 Boliviano (BOB) = approximately 16 Japanese yen.

3.3 Efficiency (Rating: ①)

3.3.1 Inputs

Inputs	Plan	Actual
(1) Experts	Chief advisor/ Agricultural management improvement/ Annual crops, Project coordinator/ Implementation structure, Perennial crops, Other experts as necessary (no information on man-month)	Chief advisor/ Agricultural management improvement (2 persons); Project coordination/ Dissemination and implementation structure development (3 persons); Rice cultivation and dissemination (3 persons); Irrigation drainage (1 person); Farmer household economy (1 person); Cacao expert from Brazil (1 person)
(2) Trainees received	No information on the number of persons	Training in Japan (twice) 10 participants Third Country Training in Brazil (5 times) 20 participants
(3) Equipment	Provision of necessary equipment, including vehicles, within the budget	Vehicles, laptop computers, copy machines, video cameras, digital cameras, and others
(4) Expenses of local project promotion	No information	5 million Bolivianos (Estimated amount until the project completion as of August 2014)
Japanese Side Total Project Cost Total	270 million yen	431 million yen
Bolivian Side Inputs	Budgetary measures required for the deployment of counterparts, establishment of project offices, cost sharing for the establishment of demonstration farms, and project implementation	Deployment of counterparts, provision of project offices, provision of pilot farms, and local cost expenses

Source: Documents provided by JICA

3.3.1.1 Elements of Inputs

Experts in the planned fields were largely dispatched.

In the extension period, emphasizing on teaching rice cultivation techniques, inputs commensurate with the planned results were planned, such as intensive placement of experts on rice cultivation/dissemination. However, according to the documents provided by JICA, in reality, experts on “Chief advisor/Agricultural management improvement” and “rice cultivation/dissemination” were not dispatched as planned. The former was absent for approximately one year prior to the completion of the project without bidders for public notices, and twice JICA dispatched its internal expert to the project as chief advisor for short-terms. The latter expert was absent for about four months for health reasons. Accordingly, the JICA Office hired a local consultant to address the strategy plan, which was

its main task. Consequently, such management had no major negative impact on the output, such as expansion of demonstration farms and preparation of the strategy plan.

As for the C/P placement on the Bolivian side, the total number of persons assigned by August 2014 was 44 for the 10 main positions, as described in “Annex Achievement of outputs,” according to the analyses of the documents provided by JICA. Of these, the National Coordinator (NC), which was not originally planned, was assigned by INIAF during the implementation of this project, as the promotion of project activities was significantly hampered by the departure and absence of many C/Ps. Although the activities of the project implementation team had been facilitated to a certain extent under the NC who took office in July 2012, the frequent turnover and absence of C/Ps did not improve until the completion of the project. During the extension period, JICA hired three local consultants to cover the lack of C/P placement. In addition, delays in budget execution occurred due to personnel turnovers at the top of the four implementing agencies and changes in the administrative system. According to the documents provided by JICA, the Bolivian side was supposed to bear the cost of the project office and farm management; however, most of this cost was borne by the Japanese side due to the delay in the budget execution procedure.

The main reasons for frequent C/P turnover and absence are as follows.

- (1) In Bolivian government agencies, project engineers are generally employed based on a term-contract of less than one year, as were the C/Ps of this project.
- (2) In Bolivia, with the change of the head of the government agency, it is also common for regular staff to be turned over, and it is common for the new management to suddenly change the policies promoted by their predecessors or dismiss their employees.
- (3) Salary arrears were common among the implementing agencies of this project.
- (4) The C/P of two municipalities, in particular, had a low salary level, and many employees were recruited from outside the target area. Therefore, in some cases, the C/P left the project during the contract.

This had a major impact on the project’s activities. According to interviews with individuals involved in the project at the time, experts had to repeatedly provide guidance every time C/Ps were replaced. As for the top management of the four implementing agencies, the two committees (Joint Coordination Committee and Management Committee) established to facilitate project operations were not functioning appropriately due to constant turnover of managers, and the Bolivian implementation system based on the expected coordination among these organizations remained weak.

According to interviews with some C/Ps at the time, the initial period of this project, particularly in early 2010, was a period of confusion for the Bolivian government and administrative agencies. The constitution was amended in 2009, and the shape of national

and local governance has changed dramatically. In response, government and administrative organizations had to confront organizational reforms and determine the content and scope of their activities. One interviewee stated that at that time, government staff was working by trial and error. Frequent personnel turnover, including the mayors of the two municipalities, policy changes, and unpaid salaries, were particularly prevalent at the time. However, interviews with concerned individuals suggest that it was difficult to foresee the extent of confusion when planning this project.

3.3.1.2 Project Cost

The project cost on the Japanese side totaled 431 million yen (160% of the planned amount) compared to the planned amount of 270 million yen, significantly higher than planned. This was probably because the project extension resulted in additional expenditure on personnel and project activities of experts, and as JICA employed three local consultants to cover the shortage of C/Ps.

3.3.1.3 Project Period

The planned period of this project was 36 months. However, it was extended by one year and six months; therefore, the actual period was 54 months (150% of planned period) from March 2010 to September 2014, significantly longer than planned.

As described in “1.3 Outline of the Terminal Evaluation,” it was judged difficult to achieve the project purpose within the planned period and that the project effects generated were unlikely to continue; therefore, the project was proposed to be extended.

Consequently, both the project cost and project period significantly exceeded the plan. Therefore, efficiency of the project is low.

3.4 Sustainability (Rating: ①)

3.4.1 Policy and Political Commitment for the Sustainability of Project Effects

At the time of the ex-post evaluation, the policy direction of development and dissemination of rice and cacao technology to reduce poverty and secure the food sovereignty of small-scale farmers, and the policy to expand production focusing on the Northern La Paz area are continuing.

Based on the *Patriotic Agenda 2025* described in “3.1.1 Consistency with the Development Plan of Bolivia,” the *Economic and Social Development Plan (2016-2020)* (*Plan de Desarrollo Económico y Social 2016-20*; hereinafter referred to as “PDES”) aims to expand the production of small-scale farmers in the Amazonian region, including Northern La Paz, as one of the pillars of productive food sovereignty and diversification of production. Sustainable

production of cacao is listed as one of the specific programs. In addition, the *Integrated Development Plan for Agriculture, Livestock and Rural Sector Strategies (Plan del Sector Agropecuario y Rural con Desarrollo Integral Para Vivir Bien) (2016-2020)* prepared in accordance with PDES mentions the development and production of high-quality seeds in Priority Strategy 2 “Technological Development and Innovation.” In line with these policies, INIAF states that it will continue to improve and disseminate technologies such as the introduction of high-quality cacao varieties, and research and develop seeds for various crops, including rice.

La Paz Department’s *Integral Development Plan (Plan Territorial de Desarrollo Integral*, hereinafter referred to as “PTDI”) for 2016-2020 emphasizes productive economic development as one of the pillars of development set in accordance with PDES, and aims to strengthen production chains in accordance with the potential of each area within the department. SBV’s *PTDI 2016-2020* advocates the establishment of food sovereignty in line with national and department plans and regional economic development through production diversification. Major priority products include cacao, livestock farming, fish farming, rice, and sugar cane. IXM’s *PTDI 2016-2020* incorporates rice cultivation and irrigation, in addition to livestock farming, agroforestry and sustainable tourism, to diversify production, based on the municipal economy’s previous dependence on timber.

3.4.2 Institutional/Organizational Aspects in Sustainability of Project Effects

As stated in “3.2.2.2 Status of Project Effect after Completion,” by the time of the ex-post evaluation, there were opportunities to share the recognition that the comprehensive efforts of relevant agencies across the value chain were needed to achieve value-added agriculture in the Northern La Paz area through F/U cooperation and other occasions. However, the response of each organization is limited, and there is no consensus and division of roles.

Since 2011, INIAF, which was the implementing agency responsible for this project, has been the implementing institution of the *National Rice Program* and the *National Forest Program* in Bolivia. Of the INIAF’s three main lines of work (research, production and services, seeds), the research department is responsible for implementing these national programs. The *National Rice Program* promotes the development of high-yielding varieties, production of high-quality seeds, and dissemination of these technologies to ensure food security and reduce poverty by improving rice productivity and quality. The program targets La Paz Department along with the departments of Santa Cruz and Beni. However, according to interviews with INIAF, at the time of the ex-post evaluation, the research division in the Northern La Paz area had conducted no specific activities based on these national programs. According to interviews conducted in July 2018 with the production and services division, which is responsible for the expansion and dissemination of developed seeds, a total of only

ten staff members are in charge of supporting production and dissemination on the ground over the country. For La Paz Department, one engineer is in charge of a wide area, including three departments of La Paz, Potosi, and Oruro. Also, In December 2017, rice cultivation engineers stationed in the SBV office completed their assignment, and there is a marked shortage of personnel to continue work in the Northern La Paz area.

At La Paz Department, SDDETI, which was in charge of this project, is responsible for promoting measures for diversification of production and industrialization. At the time of ex-post evaluation, 22 staff members, including about ten under short-term contracts, belong to the secretariat. Department Agricultural Services (Servicio Departamental Agropecuario, hereinafter referred to as “SEDAG”) is another departmental organization that provides technical and extension services to farmers. There are 13 technical staff members, including five officers under short-term contracts. SDDETI rendered support for the incorporation of the rice producers association in the F/U cooperation. On the other hand, although the Department signed the memorandum of intent for establishing the rice seed value chain, which was created as a result of the F/U cooperation, not sharing the information internally led to not realizing concrete activities thereafter.

The Production Development Division, which was in charge of this project at SBV, covers five areas (tourism, environment, agriculture, agricultural machinery, and risk response) and has four engineers, including a manager, and three contract consultants. At IXM, at the time of the ex-post evaluation, one engineer and three project contract staff members are engaged in production development. Both municipalities have a division to support farmers in improving productivity; however, staff is limited.

As for the situation of farmers in the target area, interviews at two municipalities and communities with demonstration farms showed that several farmers were willing to start (resume) cultivation of irrigated rice, apart from those already engaged in irrigated rice cultivation on the demonstration farms.

Based on the above, although the importance of collaboration among the relevant agencies of this project is recognized to a certain extent by the respective agencies, as yet, there is no momentum to form proactive collaboration on the part of Bolivia and to implement strategic support based on such collaboration. In addition, although divisions support the improvement of farmer productivity in respective institutions, they have a limited number of personnel. Particularly, INIAF, which was the main implementing agency of the project, faces concerns about the continuation of the project effects in terms of the lack of human resources in the section responsible for the expansion and dissemination of seeds. In conjunction with the above, sustainability from the perspective of the organization is an issue.

3.4.3 Technical Aspect for Sustainability of Project Effects

INIAF stores the electronic data of the technical manuals and guidelines for rice and cacao prepared in this project. The data were referred to in the F/U cooperation. An incumbent officer of IXM who worked as C/P of the project for some time responded that he uses the technical manuals as needed, but the current officers of SBV and the Department did not know about the manuals. These technical documents are no longer used because technicians, especially those under employment contracts of less than one year, are frequently replaced, and information handover is not frequent between staff.

In terms of retaining technologies by continuing project activities, INIAF was involved in F/U cooperation on supporting rice seed production, as mentioned above. Since the planting season in October 2017, after the F/U cooperation was concluded, INIAF has provided rice seeds (Taita and Chasqui) that it developed and technical support for production to farmers in BeA and SRM, who were also targeted by the F/U. As described later, INIAF's budget has been declining and the scale of this support is very small. However, since the promotion of high-quality seeds is a core business of INIAF, the support is scheduled to continue from 2018 onwards. Such continuous implementation of cooperation is expected to contribute to the maintenance of technology in INIAF, which provides support, and promotes technology accumulation among target farmers.

As described in "3.2.2.2 Status of Project Effects after Completion," the target farmers of this project have basic skills to continue the cultivation of irrigated rice and cacao, mainly led by the farmers from communities with demonstration farms. However, some farmers indicated that they need advanced knowledge and skills, such as preventing and coping with new diseases in cacao cultivation.

In summary, the manuals prepared in this project were reused in the F/U cooperation, and INIAF continues to implement a part of the project and F/U cooperation in the field. However, in Department and municipalities, it was not confirmed that incumbent technicians, with the exception of some cases, directly used the techniques of this project. Although farmers in communities with demonstration farms possess basic techniques for cultivating and processing irrigated rice and cacao, some technical problems of project sustainability remain.

3.4.4 Financial Aspect for Sustainability of Project Effects

INIAF's budget for activities has been declining in recent years. Although the amount of funds from government resources has been largely maintained, the scale of the overall budget reduction has affected the activities, and the sustainability of the INIAF from a financial standpoint is currently low. Examining the changes in INIAF's budget by source of financial resources over the last three years, the World Bank loans accounted for more than half the total budget in 2015 and 2016; however, in 2017, they declined significantly to around 25% (Table

4). This may be because the Agricultural Innovation and Services Project (PISA) with INIAF as the implementing agency since 2011, was completed in 2017.

According to interviews with INIAF personnel, national programs, including those for rice and cacao (forests) will continue to be implemented by the research and development section, and the production services section will continue to provide technical guidance on seeds to farmers. However, INIAF also answers that in terms of the financial position, budget reduction due to a decline in World Bank funds would be likely to affect the scope of INIAF activities. As of July 2018, 42 million Bolivianos was allocated as the annual activity plan (POA) budget for 2018 (cf. 72 million Bolivianos for the 2017 POA budget), and it is looking for sources of external support. It is considered that although INIAF will continue the above-mentioned support for seed production in BeA and SRM, financial constraints will also affect the employment of engineers for this purpose.

Table 4 Trends in Budgets by Funding Source in INIAF

	2015		2016		2017	
	Budget (Bolivianos)	Share (%)	Budget (Bolivianos)	Share (%)	Budget (Bolivianos)	Share (%)
Government Budget and Special Funds Transfer	48,036,519	25%	36,000,167	29%	35,537,342	49%
World Bank Loans	126,504,787	66%	69,949,124	57%	18,065,064	25%
Donations from foreign institutions	18,365,796	10%	17,603,024	14%	18,598,101	26%
Total	192,907,102	100%	123,552,314	100%	72,200,507	100%

Note: The share of each item has been rounded to the nearest whole number, and the total for 2015 is not 100%.
Source: INIAF, *Memoria Institucional 2015, 2016, 2017*

In the Department, SDDETI has a mission of public investments in the productive sector and pre-investment surveys, with program expenditures between 2014 and 2017 ranging from 8 million to 13 million Bolivianos. SEDAG conducted projects for promoting and expanding production, with program expenditures ranging from 6 million to 12 million Bolivianos over the same period. Although there is no specific trend in the total expenditure, there is a track record in the implementation of the Project to Strengthen Cacao Production in the Amazon Region. On the other hand, there has been no project for rice, indicating that rice is currently not a high priority.

In the agricultural development unit under the production development division in SBV, the 2018 budget is 120,000 Bolivianos, and the 2018 budget for IXM's production unit is 200,000 Bolivianos, both of which are primarily used as contributions from municipality in the implementation of external programs. SBV is planning to promote the mechanization of rice production using a program by the Indigenous Fund (Fondo Indígena), which is expected to start soon. IXM incorporates rice irrigation into its PTDI, assuming the implementation of

national programs, but no specific resources were available at the time of the ex-post evaluation.

In summary, there are major concerns about the sustainability of INIAF's financial position at present. In addition, for the municipalities, realization of activities largely depends on securing funds from external programs. Thus, overall financial sustainability is a major challenge.

Therefore, major problems have been observed in terms of the financial aspect and some problems in terms of the organizational and technical aspects. Therefore, sustainability of the project effects is low.

4. Conclusion, Lessons Learned, and Recommendations

4.1 Conclusion

This project aimed to establish a value-added agriculture and forestry base by formulating value-added agricultural strategies

based on improved farming by increasing the productivity of single-year crops and introducing permanent crops and by developing a strategy implementation system of relevant organizations through pilot projects and strengthening the capacity building of relevant organizations and farmers, thereby, improving the livelihood of farmers and reducing poverty in the northern La Paz region in Bolivia. The Project was aligned with the Bolivian National Development Plan and the Agriculture Sector Development Plans, which emphasize poverty reduction of small-scale farmers, developmental needs of the target areas, and Japan's assistance policies. It also recognized the appropriateness of the intended phase separation and the project approach. Therefore, the project is considered highly appropriate. The project purpose was achieved with high productivity and added value for both rice and cacao. However, the project did not fully achieve its overall goal because rice markets have deteriorated and communities without demonstration farms have not yet introduced irrigated rice cultivation. Therefore, the project has fair effectiveness and impact. Efficiency is low because both the project cost and project period exceeded the plan. No major problems have been observed in the policy background. However, major financial problems and some organizational and technical problems have been observed. Therefore, the project effects have low sustainability.

Therefore, this project is evaluated to be unsatisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agencies

This project attempted to demonstrate successful practices in value-added agriculture, from cultivation to sales of irrigated rice and cacao. Consequently, farmers participating in

demonstration farms harvested rice, which was distributed among them, shipped jointly, and earned them a large income. Although some farmers are willing to cultivate irrigated rice after observing these successes, others seem hesitant to participate in irrigated rice cultivation due to the recent deterioration of the market environment, unseasonable weather, and various input costs related to paddy field development. To sustain the aforementioned results, it is proposed that respective relevant agencies support farmers as much as possible, particularly at the introduction stages, such as paddy field development, to create conditions in which farmers can sustain motivation and continue production independently, even at a small-scale initially. For example, as in the past, the municipality may provide support with farming machines such as tractors, provide information on farming and markets to willing farmers, and guidance by reusing the technical manuals and guidelines prepared in this project. INIAF may promote certification of seeds and provide guidance on seed cultivation, and the Department could refer farmers to financial support agencies.

4.2.2 Recommendations to JICA

JICA's F/U cooperation in 2016-2017 has renewed awareness of the importance of collaboration among relevant organizations. On the other hand, as we have seen in the F/U, various challenges exist not only in cultivation technology, but also in the entire production chain, including the distribution and marketing stages, such as securing production volume. Assuming that it takes a long time for the division of roles and collaboration among Bolivian institutions, JICA should hold seminars on the development of production chains in the target areas by relevant agencies, including farmers. It should also conduct continuous ex-post monitoring of demonstration farms with INIAF, as was conducted after the conclusion of the F/U, to foster and maintain awareness of the project among the relevant organizations. It was observed that a community has taken a step toward self-reliant development by processing and selling cacao products in the market in La Paz. This was possible by obtaining support for equipment from external organizations, and utilizing the techniques acquired in this project. With the possibility of new sales channels, it would also be useful to consider promoting collaboration between cacao farmers and companies with different types of needs in relatively small quantities of supply, for example, of topping cacao added to ice cream.

4.3 Lessons Learned

Usefulness of assigning on-site operation coordinator with multiple implementing agencies

As described in “3.3 Efficiency,” this project consisted of four implementing agencies, each of which agreed to assign C/P engineers or technical officers. However, the project was delayed due to the frequent turnover and absence of such C/Ps. In addition, the project was intended to develop value-added agriculture and forestry strategy based on collaboration among the

implementing agencies, and the cooperation and coordination of these four agencies was essential. However, as the heads of the agencies changed frequently, the project was forced to re-coordinate, including fresh decision-making. Due in part to employment practices in Bolivia, the problem of employing engineers was not resolved until the end of the project. However, during project implementation, the national coordinator responsible for on-site management was newly assigned to the project team as the representative of the Bolivian C/Ps. Since then, the project began smooth operations. In particular, the third national coordinator played an active role during the extended cooperation period, with fewer dispatches of Japanese experts. In a project such as this, in which C/P employment is unstable or complex coordination among the relevant local agencies is required, such as the involvement of numerous implementing agencies, it is useful to establish the supervisory position for on-site operations of all implementing agencies.

Inclusion of farmer organizations to ensure the sustainability of technologies in the project, expecting frequent C/P turnover

As described above, the frequent turnover and absence of decision-makers and personnel in charge at the implementing agencies caused delays in the project and hampered the achievement of the planned result, which was the establishment of a collaboration system among the relevant organizations. However, one reason for such frequent personnel turnover were the practices of employing technical staff in Bolivian government agencies, and this situation was expected to a certain extent during project planning. Accordingly, when planning a project in Bolivia or in a country where the employment of C/P staff is generally unstable, it is necessary to ensure the sustainability of the project effects assuming such a situation. This project recognized that the farmers in question possess techniques for cultivating, processing, and selling rice and cacao by strengthening direct guidance to participating farmers in demonstration farm activities. However, to maintain and expand technologies, it is worthwhile to consider incorporating farmers' organizations or social organizations based in the local area constantly as recipients of the instructed techniques into the project design. In this regard, when selecting such farmers and social organizations, it is necessary to examine the activities of the organization, its operational state, and the organization's representation in the target areas.

Project designing for premature termination of phased cooperation

This project was envisioned as Phase 1 of two phases of total cooperation (seven years). Based on the implementation base of the value-added agriculture and forestry strategy to be developed, full-scale implementation and expansion of value-added agriculture was planned in Phase 2. This idea of phasing was based on the experiences of many technical cooperation projects in Bolivia in which the lack of implementation system of C/P organizations limited the

results of the cooperation or prevented the sustainability after the cooperation was completed. Accordingly, this project was designed to prioritize establishing the systems of relevant organizations (securing necessary resources, sharing of roles, approval of strategy plan, etc.), and activities such as technical testing and dissemination of rice and cacao were on a preparatory scale for the next phase. Therefore, when it was decided not to implement Phase 2, it was also judged that if Phase 1 were completed during the initial period, it would not ensure the sustainability of the project effects. Consequently, the project period was extended to provide direct technical guidance to farmers. When designing a series of cooperation projects considered to be particularly difficult, such as this project that needed collaboration and cooperation among numerous related organizations, it is necessary to fully examine how to ensure project results and its sustained effectiveness upon termination during implementation, and subsequently, plan the components of the project activities.

END

Attachment

Achievement of Outputs

Outputs	Indicators	Actual Results
1. Through improvement of the production system, a value-added agriculture strategic plan is formulated.	① A plan is formulated that comprises policies for production chains (cultivation, processing, and distribution) of rice and cacao for small-scale farmers in the target area.	<p>It was achieved.</p> <p>A value-added agriculture and forestry strategy, “Strategic Plan for Strengthening the Rice and Cacao Production Chains in the Northern Part of La Paz” (PEPAC) was prepared by September 2014 by a consultant employed by the JICA office.</p> <p>PEPAC aimed to promote activities based on agreement among institutions related to agricultural development in the region and develop the production chains of irrigated rice and cacao (processing, distribution, and commercialization) for the next five years (2015-2019). It was positioned as a proposal document. As a basic principle of the strategy, cooperation and harmonization among relevant government agencies and provision of financial aid to promote the participation of public specialized agencies were presented.</p> <p>A seminar to announce the completion and achievements of this project was held in September 2014 in which the relevant organizations and producers participated. The seminar included a report on PEPAC; however, no concrete commitments were signed by the relevant organizations for collaboration and role sharing.</p>
2. Capacity of technicians of related institutions and small-scale farmers is strengthened to implement the value-added agriculture and forestry strategy.	① Technicians in related institutions provide technical guidance on cultivation and processing of rice and cacao to small-scale farmers by utilizing manuals, guidelines, and dia de campo (field workshops) developed in the project.	<p>It was largely achieved.</p> <p>Technical manuals were written on cultivation management, harvesting, and processing of rice and cacao, and utilizing the manuals, 17 seminars for technicians and farmers and 15 sessions of domestic field training were undertaken by August 2014.</p> <p>In the extended period of this project, “Farmers schools” were opened in several main communities to spread the relevant technology. All C/P technicians participated in the schools to provide training to farmers together with Japanese experts.</p> <p>For the ten major positions of C/Ps (a national coordinator, two from each of NIAF, Department of La Paz, SBV, and IXM, an assistant for project operation), 44 persons were placed during the project period until August 2014, according to the document provided by JICA.</p> <p>Although there was variation in the technical level of the C/Ps due to their frequent replacements, it was possible for the C/P technicians to teach farmers using the technical manuals.</p>
	② Small-scale	It was largely achieved.

	<p>farmers acquire techniques proposed in the project.</p>	<p>Interviews at communities with demonstration farms for irrigated rice cultivation showed that a series of tasks not undertaken before, such as group work and management in cultivation, distribution of harvests, joint shipment and consideration of marketing timing, were practiced during the project period. Cacao farmers who participated in the third country training in Brazil, acting as instructors, shared cultivation management techniques among farmers during the project period.</p> <p>On the other hand, some interviews revealed that the cultivation and sales methods practiced by rice farmers during the project included those not necessarily optimal (e.g., direct sowing of seeds in paddy fields in some cases, rather than transplanting seedlings).</p> <p>In addition, in communities with demonstration farms, the number of farmers who participated in irrigated rice cultivation decreased sharply due to their withdrawal from the activity during the project period. The number of participating farmers in the activities (such as expansion of demonstration fields) during the extended period of the project was about five families each in BeA and SRM. Although there was no record of the number of participating farmers at the beginning of the project, 12 of 16 farmers interviewed at the ex-post evaluation in BeA and 10 of 11 farmers interviewed in SRM had participated in irrigated rice cultivation activities at demonstration farms, if only for a short period of time. Their reasons for discontinuing activities include large physical burden in rice cultivation, and family circumstances such as illness and migration.</p>
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Column: Lessons Learned from the Comparison of Implementation System
Improvement Projects in the Agricultural Sector in Bolivia

Two technical cooperation projects were implemented almost simultaneously in Bolivia with the aim of improving implementation systems in the agricultural and rural development sectors: the “Project of the Implementation System for Sustainable Rural Development Phase II” (CR2) and the “Project for Value-added Agriculture and Forestry for the Improvement of the Livelihood of Small Scale Farmers in Northern La Paz” (PANLAP).

The survey analysis conducted in conjunction with this ex-post evaluation categorized the characteristics of the implementation system development in both projects and the differences in the actual status of the project effects. It also analyzed the contributions and impediments to the realization of the results, referencing examples of similar projects in other Latin American countries. Based on this analysis, two categories of lessons are presented: (1) lessons learned from projects implemented in countries with characteristics and backgrounds similar to Bolivia; and (2) lessons common to agricultural and rural development projects aimed at improving implementation systems targeted not only at Bolivia.

1. Lessons Learned from Projects Conducted in Countries with Characteristics and Backgrounds Similar to Bolivia

Countermeasures against risks particularly likely to arise in projects implemented in countries with characteristics and backgrounds similar to Bolivia are listed below. In addition to addressing risks during the implementation of projects, these countermeasures also address risks that may arise after the completion of projects.

(1) Response to the risk to employment continuity of technicians at implementing agencies

In countries where national institutions or practices do not ensure the employment continuity of members of the implementing agency, not only are the activities delayed and the effects of the activities hampered during the project, but also the sustainability of the project’s results after its completion is hampered. When projects are implemented in countries with such systems and practices, the following risk response methods are considered.

- 1) It is important to ensure the continuity of project activities as a whole and the maintaining of technological systems involved by ensuring that the core technologies of the project are retained in institutions with higher employment continuity by including institutions that have implemented different employment practices and systems. In the case of the projects analyzed, as shown in CR2, it would be appropriate to assign responsibility for technology development in the project to the university which assumed the role and had high employment stability of its staff working for the project, rather than government and

administrative agencies.

- 2) When it is impossible to expect an appropriate succession at the time of a technician's turnover at the implementing agency, it is important to transfer technology directly to the beneficiary farmers and communities during the implementation of the project and to disseminate the target technology to the field as much as possible. In this case, since individual farmers directly possess the technology rather than receiving it through the engineers of the implementing agency who were intended to disseminate the technology after the project, the scope of extension is narrowed. However, to reduce these constraints to a certain extent, it is possible for the project to target producer organizations and social organizations in the target area.

(2) Response to the continuity risk of the implementing agency itself

In countries where the employment of lower-level staff, such as engineers, is affected by the appointment of top-level personnel in the government and in administrative agencies, it is challenging for implementing agencies to continuously commit to cooperation projects. In particular, when the head of the implementing agency is constantly changing due to election results and the wishes of a higher organization, it is necessary to judge the prospects of organizational stability more carefully. While it is difficult to predict how such political risks will materialize during the project period, it is possible to consider the following responses.

- 1) Include the establishment of laws and systems in project activities. Aiming for the establishment of laws and systems in cooperation projects is considered effective in ensuring a stable system that will not be influenced by turnover in the top management of implementing agencies. This is said with the acknowledgement that implementing projects can be difficult, particularly when the project aims to introduce laws and regulations that stipulate the involvement and cooperation of multiple organizations.
- 2) As in (1) above, including implementing agencies that are considered to have relatively few political risks and possess core technologies can enhance the continuity of project-wide activities and stabilize the maintenance of technology.

2. Lessons Common to Agricultural and Rural Development Projects for the Improvement of Implementation Systems

The following three points are the lessons learned from projects aimed at improving implementation systems.

(1) Confirmation of project structure and steps

Projects aimed at improving implementation systems are undertaken by combining various components, and there are no projects that merely put in place an implementation system

diagram. From this perspective, it is particularly important to consider the following two points when planning a project to develop an implementation system.

- 1) In addition to clearly defining what the implementation system will be developed for, namely, the plan, model, etc. to be implemented after establishing the system, the following elements will have a major impact on the realization of the establishment of the system: the positioning and nature of the plan or model and whether the formulation of the plan or model itself is included in the content of the project.
- 2) As in the projects examined in this analysis, it takes a long time to establish and stabilize systems when developing implementation systems for agricultural and rural development in specific regions, from the development of technologies such as appropriate crop varieties and cultivation methods to the guidance and practice of production, processing, and marketing. In CR2, the fact that some progress had already been achieved in the accumulation of elemental technologies required for integral rural development has contributed to the realization of the results. On the other hand, in its initial plan (before the extension of the project), PANLAP concentrated on developing implementation systems and technologies for the cultivation of appropriate rice and cacao varieties, and it envisioned steps to promote the extension and extended practice of these developments in its next phase. Therefore, it is somewhat likely that these technologies could not have been disseminated without an extension of cooperation when it was decided that the next phase would not be implemented, and that the results of the project as a whole would not have been achieved. Accordingly, it is important to carefully consider procedures and steps that take into account the context, positioning, and risks inherent in the process of implementation when planning a project.

(2) Alignment of the mission of the organization in charge with the project

Although neither project was able to establish a comprehensive collaboration system among the relevant organizations as originally planned, the approach of the lead implementing agency in utilizing the technical results of the project has led to a certain degree of sustainability for CR2. This was largely due to the fact that the mission of the Institute of Integral Rural Development (IDRI), established by the University of Saint Francis Xavier, was consistent with the extension and deployment of the “Integral Rural Development Model.” On the other hand, the National Institute for Innovation in Agriculture, Livestock and Forestry (INIAF), whose role is research, development, and extension of seeds related to agriculture and forestry, only played a part in the various activities of the value-added agricultural strategy relating to rice and cacao production that PANLAP was aiming to establish. This is considered to be one reason why INIAF was unable to demonstrate sufficient leadership in its project. Therefore, when considering the implementing agency at the planning stage of projects aimed at developing implementation

systems, it is important to center the organization whose role and function will allow full utilization of the technical results generated by the project.

(3) Consideration of regional characteristics and the mobility characteristics of the parties involved in the project

Northern La Paz, which is the target area of PANLAP, is an Amazonian region located in a lowland area isolated from the highland city of La Paz geographically, environmentally, and culturally. Because of the lack of specialist human resources within the region, there were many cases in which technicians engaged in the project at the implementing agency were recruited from other places, such as La Paz City. As a result, there were misunderstandings due to unfamiliarity of local practices by the employed technicians and early retirements due to problems within their families. In addition, the main activities of the project were carried out in indigenous Takana communities. Some representatives of the implementing agencies referred to the possibility that the lifestyle and social characteristics of the Takana impacted the results of PANLAP. For example, it was pointed out that for the Takana people, who were mainly engaged in traditional livelihoods such as hunting, fishing, and mobile agriculture, irrigated rice cultivation based on joint work in paddy fields is an entirely new technology and method, and it is necessary to consider the possibility that it will take a long time for them to accept these practices.

In light of these factors, it is especially important to consider the geographical conditions of the region and social and cultural factors of the local residents who will become the producers, including their lifestyles, historical customs, manners, and temperaments, in addition to the technical suitability of the crops to be promoted and the land to be targeted when planning implementation system development projects. This is especially true for projects targeting specific areas, such as CR2 and PANLAP. It is also important to reflect these factors in the approach to developing the system. Furthermore, when employing non-local project personnel, such as engineers, it is advisable to pay attention to characteristics such as their compatibility with the local community and the outlook for domestic mobility associated with employment during the implementation phase of the project.