

**Ex-Post Project Evaluation 2012: Package IV-5  
(Bolivia, Paraguay)**

**December 2013**

**JAPAN INTERNATIONAL COOPERATION AGENCY**

**KRI INTERNATIONAL CORP.**

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## **Preface**

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

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

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

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

December 2013  
Toshitsugu Uwasawa  
Vice President  
Japan International Cooperation Agency (JICA)

## **Disclaimer**

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Republic of Paraguay

Ex-Post Evaluation of Japanese Technical Cooperation Project

“The Technological Center on Agriculture in the Republic of Paraguay (CETAPAR)  
Phase II Project”

External Evaluator: Masafumi Ikeno, KRI International Corp.

## **0. Summary**

This project was implemented with the objective of strengthening the functions and enhancing the operation and management system for agricultural technology in order to facilitate self-reliant operations development by the Technological Center on Agriculture in Paraguay (CETAPAR).

Promotion of agriculture in the eastern region of Paraguay through the dissemination of sustainable technology matches the development policies in Paraguay aimed at promoting the development of agricultural communities by strengthening competitiveness, and the ODA policy of Japan which has a primary focus on regional economic development centered around agriculture and enabling farmers of Japanese descent (Nikkei) to put down stable roots, and therefore has a high level of relevance.

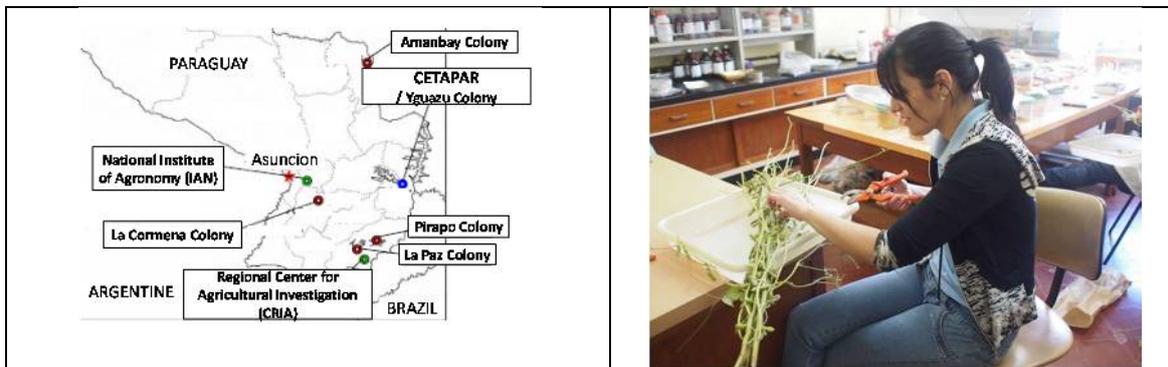
Implementation of this project achieved the prescribed objectives of strengthening the functions of CETAPAR related to agricultural technology and development of an operation and management system. In regard to the overall goal, technology dissemination by CETAPAR contributed to the dissemination of agricultural technology in the eastern region of Paraguay, and it was confirmed that this helped stabilize agricultural production by Nikkei farmers as well as Paraguayan farmers as a whole, and helped boost production capabilities. Therefore, the project had a high level of effectiveness and impact.

The elements input for manifestation of the output were appropriate, and the period of cooperation was within the plan, but the provision of equipment and facilities with the aim of enabling the organization to make a profit after the transfer of operation and management resulted in the amount of cooperation funds actually expended substantially exceeding the planned amount. Therefore, efficiency was fair.

There were no problems with the institutional aspect in related policy, counterpart system, and sustainability of the technology. The financial status of CETAPAR was not good due to investments made with the goal of self-reliant profitability by the third year after the transfer of operation, but improvements in operations are proceeding as a result of the manifestation of investment effects and reorganization of the implementation system. Therefore, the sustainability is fair.

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

## 1. Project Description



(Project Location)

(Agricultural Engineer in Laboratory)

### 1.1 Background

The Technological Center on Agriculture in Paraguay (Centro Tecnológico Agropecuario en el Paraguay: CETAPAR) is located in the Yguazu Nikkei Colony in Alto Paraná Department which is the grain growing region in the eastern part of the Republic of Paraguay (hereinafter referred to as “Paraguay”). CETAPAR integrated demonstration farms in Nikkei colonies that were established in the 1950s, and has provided support over many years by disseminating farming technology to Nikkei farmers as a research and experiment station that has been directly managed by the Japan International Cooperation Agency (hereinafter referred to as “JICA”) since 1962.

Efforts have been made to stabilize farming by Nikkei farmers during the 50 years since they immigrated, and as of the beginning of the 21<sup>st</sup> century, these activities have contributed to the development of agricultural technology for Nikkei farmers, as well as for research institutes under the jurisdiction of the Ministry of Agriculture and Livestock in Paraguay and other Paraguayan farmers. Based on this track record, after discussions with related organizations in Paraguay, JICA made the decision to transfer operation and management of CETAPAR to Nikkei cooperatives in order to facilitate sustainable growth of agriculture in the eastern region of Paraguay and stimulate regional development.

Upon receiving the results of these discussions, JICA reached an agreement with related organizations in Paraguay to implement the Project on “Technological Center on Agriculture in Paraguay (CETAPAR)” from fiscal 2001 to fiscal 2009 with the objective of human resource development at CETAPAR and developing a system of organization that will enable the smooth transfer of operation and management from JICA to Nikkei cooperatives.

The first phase of this technical cooperation project was implemented from fiscal 2001 to fiscal 2004, and the second phase of this technical cooperation project was implemented

from fiscal 2005 to fiscal 2009. In particular, in the second phase which was the subject of this evaluation, actions were implemented with the objective of developing a system for the operation and management of CETAPAR and nurturing of personnel in order to facilitate self-reliant operation of CETAPAR after transfer of operation from JICA to Nikkei cooperatives.

## 1.2 Project Outline

Overall Goal		Sustainable agricultural techniques are disseminated in the eastern region of Paraguay.
Project Objective		CETAPAR is prepared as foundation of the core center for agricultural development in the eastern region of Paraguay.
Output(s)	Output 1	Sustainable and appropriate techniques of upland crops cultivation will be established for eastern region of Paraguay.
	Output 2	The technical services on stable agricultural production are implemented.
	Output 3	The Center which can provide tests and analyses is registered as a certificated institution.
	Output 4	The management structure to implement new CETAPAR after the transferring is prepared.
Inputs		<p>Japan Side</p> <ol style="list-style-type: none"> <li>1. Total of 10 experts dispatched (5 long-term experts, 5 short-term experts)</li> <li>2. Total of 4 trainees accepted</li> <li>3. Total of 3 persons trained in third country</li> <li>4. Provision of equipment: 74.3 million yen</li> <li>5. Land (Located in Yguazu Colon, Main facility: 115 ha, Branch facility: 56 ha)</li> <li>6. Facilities: Main building, garage, research wing, greenhouse, seed silo, dormitory, etc.</li> <li>7. Project personnel: Fiscal 2005: 16 persons, Fiscal 2006: 16 persons, Fiscal 2007: 13 persons, Fiscal 2008: 13 persons, Fiscal 2009: 10 persons</li> <li>8. Field work expenses: 392.11 million yen</li> </ol> <p>Paraguay Side</p> <ol style="list-style-type: none"> <li>1. Counterpart allocation</li> <li>2. Project expenses: 3.47226 billion guaraní (Covered by Central Nikkei Cooperative)</li> </ol>

	3. Provided special exemption for dispatched experts and equipment that they brought
Total cost	647.32 million yen
Period of Cooperation	April 2005 – March 2010
Implementing Agency	Direction of Agricultural Extension/ Ministry of Agriculture and Livestock, Central Nikkei Cooperative/Nikkei cooperatives, National Institute of Agronomy (Instituto Agronómico Nacional: IAN), Regional Center for Agricultural Investigation (Centro Regional de Investigación Agrícola: CRIA)
Cooperation Agency in Japan	Ministry of Agriculture, Forestry and Fisheries
Related Projects	<p>JICA Technical Cooperation</p> <ul style="list-style-type: none"> <li>• “The Project for the Improvement of Vegetable Production Techniques for Small Scale Farmers in Paraguay” (1997 – 2002)</li> <li>• “The Research Project on Soybean Production in Paraguay” (1997 – 2002)</li> <li>• “Project of the Technological Center on Agriculture in the Republic of Paraguay (CETAPAR) (Phase 1)” (2001 – 2004)</li> <li>• “Identification of Soybean Germoplasm with Resistance to the Soybean Cyst Nematode: FENIX” (2005 – 2008)</li> <li>• “Project of Reinforcing Small Scale Farm Co-ops in the Southeast of Paraguay” (2007 – 2010)</li> </ul> <p>Other International Agencies, Aid Agencies, etc.</p> <ul style="list-style-type: none"> <li>• “Comprehensive Studies on the Development of Sustainable Soybean Production Technology in South America” by Japan International Research Center for Agricultural Sciences (JIRCAS) (February 1998 – Continuing as of 2013)</li> <li>• “Technical Support for Improvement of Dairy Skills in Eastern Edge Upland Farming Area in Paraguay (PROMELE)” by Obihiro University of Agriculture and Veterinary Medicine (JICA Partnership Program (Partner Type): June 2011 – Five years)</li> </ul>

### 1.3 Outline of the Terminal Evaluation

#### 1.3.1 Achievement of Overall Goal

Regarding the overall goal of “Sustainable agricultural techniques are disseminated

in the eastern region of Paraguay.”, the evaluation was made that while the increasing usage of CETAPAR can be expected to contribute to the achievement of the overall goal, and there is an upward trend for productivity of the main farm products, there still remains the possibility of decreased output due to the impact of natural disasters.

### 1.3.2 Achievement of Project Objective

Regarding the project objective of “CETAPAR is prepared as foundation of the core center for agricultural development in the eastern region of Paraguay.”, the evaluation was made that the framework for the CETAPAR implementation system had been determined as of the terminal evaluation, and it can be expected to serve as a base of dissemination of agricultural technology to Nikkei cooperatives as well as other persons involved in agriculture in Paraguay, but specific operational rules and procedures need to be formulated.

### 1.3.3 Recommendations

The following two proposals were made during the ex-post evaluation.

#### (1) Self-reliant growth of CETAPAR after transfer

Efforts should be made to strengthen the self-reliant growth of CETAPAR to become financially viable after the transfer of operations, as well as continue to flexibly respond to the needs in the eastern region of Paraguay by providing support for technological development, nurturing of human resources, technology dissemination and regional/social contributions, and in turn establish a solid position as an organization that makes a contribution to the region as a whole.

#### (2) Approach to maintaining and upgrading technology

Due to the fact that it is difficult to secure useful personnel again after they have left, it is important to implement measures to retain personnel to which technology has been transferred, and to have an ongoing human resource development program in order to maintain and upgrade the level technology that has been established, and to promote coordination of efforts with related organizations.

## **2. Outline of the Evaluation Study**

### **2.1 External Evaluator**

Masafumi Ikeno (KRI International Corp.)

### **2.2 Duration of Evaluation Study**

The following survey was conducted for this ex-post evaluation.

Study Period: December 2012 – December 2013

Field Study: March 9 – March 26, 2013, May 27 – June 4, 2013

### **3. Results of the Evaluation (Overall Rating: B<sup>1</sup>)**

#### **3.1 Relevance (Rating: ③<sup>2</sup>)**

##### 3.1.1 Relevance with the Development Plan of Paraguay

When the project started at the beginning of the 21<sup>st</sup> century, the Paraguay government had a national policy of positioning “Economic development through the strengthening of competitiveness” as a priority issue. During and after the period of project cooperation, “Boosting Agricultural Productivity” and “Upgrading Technical Services” were positioned as priority issues in the “2009 – 2018 Strategic Framework for Agriculture” in order to promote agriculture.

There was no change in the importance of the development policy of Paraguay from the start to the end of the project, with promotion of agriculture always being positioned as a priority issue. Accordingly, the judgment can be made that the promotion of agriculture with the objective of facilitating the dissemination of sustainable agricultural technology implemented under this project matches the Paraguayan side development policy needs.

##### 3.1.2 Relevance with the Development Needs of Paraguay

The government of Paraguay positioned the promotion of agriculture in the eastern region of Paraguay where grain is grown as an important issue. In addition, the promotion of agriculture which is a major industry in the eastern region of Paraguay contributes to improving the livelihood of farmers in this region. Above all, for Nikkei farmers who are striving to establish a system that facilitates the self-reliant growth of agriculture after reaching the stage where farm operation has stabilized, there have been strong requests for the functions of CETAPAR to be strengthened for which operation and management will be fully transferred from JICA in 2010.

Under these circumstances, the judgment can be made that the farming technology and dissemination of farming information provided by CETAPAR which have been the goals of this project contributed to the promotion of agriculture in the eastern region of Paraguay, and matched the development needs of Paraguay.

##### 3.1.3 Relevance with Japan’s ODA Policy

“Strengthening the economic competitiveness to adapt to the age of competition inside and outside the Mercosur region” which was stipulated in the Country Assistance

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<sup>1</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

<sup>2</sup> ③: High, ② Fair, ① Low

Plan for Paraguay from Japan has been a priority area in Japan's ODA policy for Paraguay. In addition, support was implemented as part of the project to stabilize and solidify the livelihood of Nikkei immigrants.

Consequently, the judgment can be made that this project matches Japan's ODA policy.

This project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

### **3.2 Effectiveness and Impact <sup>3</sup> (Rating: ③)**

#### **3.2.1 Project Outputs<sup>4</sup>**

##### **3.2.1.1 Project Output**

- (1) Output 1 "Sustainable and appropriate techniques of upland crops cultivation will be established for eastern region of Paraguay."

As shown by the activity track record outlined below, implementation of this project can be judged to have developed/demonstrated techniques of upland crops cultivation suited to the characteristics of each area in the eastern region of Paraguay.

- There are differences in the cultivation environments in the five regions where the respective Nikkei cooperatives are located (soil characteristics, cultivated breeds, agro-meteorological conditions, etc.), making it difficult for farmers in the other four regions where the Nikkei cooperatives are located to utilize all technology developed/demonstrated in the Yguazu Colony where CETAPAR is located. However, technology/information that can be utilized taking the agricultural environment (weather, soil characteristics, cultivated crops, breeds, etc.) and operation environment (cultivation scale, costs, amount that can be invested, etc.) into consideration is being used by farms.
- No-till farming has been a cultivation technology that was established in the Yguazu Colony by the JICA migration project since before this project was started, and the demonstration/dissemination activities conducted during this project have spread throughout Paraguay. According to the Federation of Production Cooperatives (FECOPROD) that integrates 33 cooperatives in Paraguay, no-till farming has been adopted by over 90% of farms.
- According to a survey of recipients (Conducted in March 2013: 100 randomly selected

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<sup>3</sup> Sub-rating for Effectiveness is to be put with consideration of Impact.

<sup>4</sup> During evaluation of this project, the effectiveness is judged by the level of achievement when the project ends, but for convenience purposes, information on items after the project ends may also be described.

Paraguayan farmers in region surrounding Yguazu), opportunities for agricultural training are available in Paraguay to a certain extent, and Paraguayan farmers have a high amount of desire to enhance their farming technology. Under these circumstances, two thirds or more of farmers in the Yguazu region are utilizing the farming technology and farming information received from CETAPAR or Nikkei cooperatives.

Table 1 Beneficiary survey in Region Surrounding CETAPAR

(a) Desire to Boost Level of Agricultural Technology	(b) Opportunities to Receive Training in Agriculture	(c) Utilization of CETAPAR/Nikkei Cooperative Technology
1. High (88%)	1. Adequate (41%)	1. Use extensively (68%)
2. Low (11%)	2. Minimal (41%)	2. Use a portion (26%)
3. Not Needed (1%)	3. Almost none (18%)	3. Hardly use at all (3%)
		4. Do not know (3%)

Source: Beneficiary survey conducted in March 2013 (Questionnaire of 100 farmers in areas surrounding CETAPAR)

(2) Output 2 “The technical services on stable agricultural production are implemented.”

As shown by the activity track record outlined below, implementation of this project can be judged to have enabled the provision of farm support services to facilitate stable agricultural production in the eastern region of Paraguay.

- Regional traveling instruction in line with the regional characteristics of each Nikkei cooperative and needs of farmers was periodically implemented as part of the farm support services. Traveling instruction was suspended after the end of the project due to inadequate funds and personnel, but a service system has been created under which CETAPAR engineers can respond to inquiries from Nikkei farms made by mobile phone or e-mail.

Table 2 Times Regional Traveling Instruction Implemented

Nikkei Cooperative	2005	2006	2007	2008	2009
Yguazu	5	9	13	9	7
Pirapo	3	12	10	9	6
Amambay	2	1	4	-	1
La Paz	3	11	10	9	6
Colmena / Asunsena	1	3	3	4	3
Total	14	36	40	31	23

Source: CETAPAR

- Agricultural technology workshops were conducted periodically in accordance with the production characteristics and needs of farmers in each Nikkei cooperative as one farm support service.

In the period after the project ended, workshops have been held twice a year (summer crop and winter crop) on an ongoing basis at the CETAPAR facility. Basically, the system consists of the engineers/extension workers coming to workshops at CETAPAR,

and these individuals relaying the knowledge they have acquired to the members of each cooperative. Work on rotation of agriculture and livestock has been handed over to the PROMELE project (JICA Partnership Program (Partner Type)). Work on growing of vegetables and fruit has been suspended due to insufficient CETAPAR funds/personnel, but high expectations have been voiced for the resumption of the workshops by the Colmena/Asunsena Nikkei Cooperative and small-scale horticultural farms which mainly grow vegetables and fruit.

Table 3 Workshop Items and Participation Results for Each Nikkei Cooperative

Nikkei Cooperative	Summer Crop	Winter Crop	Vegetables	Agriculture/ Livestock Rotation
Yguazu	○	○	-	○
Pirapo	○	△	-	△
Amambay	○	△	-	○
La Paz	○	○	-	-
Colmena / Asunsena	-	-	○	-

Note: ○: 30% or higher participation, △: 25% participation, X: 20% or lower participation, -: Not applicable

Source: Project Completion Report

- Opportunities/various means such as regional traveling instruction, workshops, provision of services, test result reports, publications by each Nikkei cooperative and the internet were utilized during the project and are being utilized after the end of the project to periodically provide farming technology/farming information acquired by CETAPAR to the members of the respective Nikkei cooperatives.

In addition, the trend for mobile phones and e-mail to be utilized as the dissemination means to relay the information has been increasing in recent years. Thus, technology/information originating at CETAPAR that is disseminated to Nikkei cooperative members such as application of fertilizer and soil improvement based on soil diagnosis/analysis is being put into practice by many Nikkei cooperative members (usage ratio of soil diagnosis service among Nikkei cooperative members during the project period reached approximately 90%).

- As part of CETAPAR project activities, organizations related to the Ministry of Agriculture and Livestock, producer's associations and other organizations in the area surrounding CETAPAR periodically held technical training for small-scale farms. In addition, Paraguayan technology extension workers and small-scale farmers visited CETAPAR on a daily basis to receive the technical instruction as appropriate.

After the project ended, the dissemination activities were reduced due to insufficient CETAPAR budget/personnel, and technology dissemination activities for small-scale farms in the surrounding region have been suspended.

Table 4 Workshops Held for Paraguayan Farmers

Fiscal Year	No. of Workshops
2005	4
2006	4
2007	8
2008	4
2009	4

Source: Project Completion Report

- (3) Output 3 “The Center which can provide tests and analyses is registered as a certificated institution.”

As shown by the activity track record outlined below, under the system that was created by the end of this project, CETAPAR was certified as an officially certified organization that can provide various services before/after the transfer of operation/management, and this has contributed to the expansion of the service business which is the core of operations that earn a profit. Therefore, the judgment can be made that CETAPAR has the capability as an officially certified organization to perform testing/analysis, and been registered as such.

- By the end of the project, CETAPAR acquired official certification in the seed testing, fertilizer component analysis, breed registration testing, crop disease and pest testing and insecticide effect testing fields.

The level of technology acquired during this project was further upgraded by technical follow-up by JICA senior volunteers and other efforts after the project ended, resulting in the acquisition of official certification for agricultural chemical component analysis, soybean seed recombinant gene mix rate testing and virus testing.

- As a result of the transfer of the appropriate technology to multiple engineers deployed for each type of testing/analysis work, a technology system was created under which various types of official certification can be acquired.

While some of the engineers that were trained during the project period left after the project ended, new engineers have been hired, and the technological level as an officially certified organization is being maintained.

- During the project period, the preparatory committee of Nikkei-CETAPAR Foundation served a central role in the preparation of the operation and management plan related to certification work, as well as in the preparation of work implementation manuals related to seed testing, fertilizer component analysis, breed registration testing, crop disease and pest testing and insecticide effect testing, creating a system that clearly indicated the procedure for the implementation of certification work.

In addition, revision and modification have continuously been performed after the

project ended, and plans have been made for work implementation manuals to be newly prepared for agricultural chemical component analysis, soybean seed recombinant gene mix rate testing, seed virus testing and other such fields.

- (4) Output 4 “The management structure to implement new CETAPAR after the transferring is prepared.”

As shown by the activity track record outlined below, with the cooperation of the preparatory committee of Nikkei-CETAPAR Foundation, CETAPAR for the most part created a work implementation system for operation and management with the goal of self-reliant profitability after the transfer of operation, but the judgment can be made that a more detailed review of the profitability plan than completed during the project period should be conducted.

- The preparatory committee of Nikkei-CETAPAR Foundation played a central role until the end of the project in the formulation of profitability plans and annual plans related to seed production, analysis work and certification work. The CETAPAR Foundation has continued to formulate these plans every year after the project ended.

In addition, with respect to strengthening of cooperation with other cooperatives in Paraguay which was proposed in the above plan, following a period of observer status, the decision was made to have a federation of three cooperatives (consisting of the Central Nikkei Cooperative, FECOPROD (Federation of Production Cooperatives) and UNICOOP) jointly perform operation and management of CETAPAR. During the ex-post evaluation, the articles of incorporation, plans and other document were changed, and work is proceeding on the preparation of an implementation system under the new framework. Furthermore, in regard to seed production which was positioned as one of the profit making businesses for the organization after the transfer of operation, the judgment was made that it was not possible for operations to be profitable when services are only provided to Nikkei farms (difficulty in securing seed sales channels, high cost of seed silo operation, etc.) during the three years of experience after the transfer of operation, and seed production has been implemented for both Nikkei farms and Paraguayan farmers from April 2013 under the new framework.

- With respect to engineers for certified fields other than described above, there was a temporary backlog in work due to the resignation of some seed production engineers, but the required personnel have been secured by hiring personnel after this, and work has been implemented after that without any problems.
- During the project period, the preparatory committee of Nikkei-CETAPAR Foundation played a central role in the preparation of the operation and management plan for

operation after transfer, as well as in the preparation of work implementation manuals related to seed production and soil analysis, creating a system that clearly indicated the procedure for the implementation of work after the transfer of operation.

In addition, revisions and other changes have been made continuously after the project ended, and work is proceeding for feed analysis under the PROMELE project.

### 3.2.1.2 Achievement of Project Objectives

Upgrading of facilities/equipment at CETAPAR, development/demonstration of faming technology and nurturing of human resources were completed by the end of the project, the operation/management and technology dissemination systems for CETAPAR after transfer were formulated, achieving for the most part the project objective of “CETAPAR is prepared as foundation of the core center for agricultural development in the eastern region of Paraguay”.

#### (1) Recognition

Indicator 1: “CETAPAR is recognized as an agriculture promotion organization in the eastern region of Paraguay.”

As the only agricultural testing organization in Paraguay that is capable of providing impartial high-quality services, it is widely recognized as an agriculture promotion organization in Paraguay that is promoting project activities by concluding mutual cooperation agreements with related official organizations in Paraguay (National Service for Plant and Seed Quality and Health (SENAVE), School of Agricultural Sciences at the National University of Asuncion, etc.) and related organizations (Chamber of Producers and Exporters of Cereals and Oilseeds (CAPECO), etc.), implementing testing on consignment by persons involved in agriculture, acquiring various types of official certification, implementing various analysis/testing work, and implementing small farm support activities.

Indicator 2: “Effectiveness of CETAPAR after transfer is recognized by 50% or more of Nikkei cooperative members.”

During this project, activities tailored to CETAPAR operation were started in the second year after the project commenced. In addition to concerned personnel at CETAPAR, the participation of the members of the respective Nikkei cooperatives was obtained, and the effectiveness of these activities was widely recognized in the operation plan presented at the respective Nikkei cooperative general meetings that were held in February 2010 before the project ended as a result of transfer preparation work that was performed, and the approval of CETAPAR was obtained after the transfer

of operation.

## (2) Functionality

Indicator 1: “25% or more Nikkei cooperative members use some type of CETAPAR service.”

Farms that used only soil analysis service exceeded 88% as of the evaluation at the end of the project.

Indicator 2: “Number of Times Technical Services Provided to Farms Other Than Nikkei Cooperative Members”

By the time the project ended, CETAPAR had provided service to farms other than Nikkei farms for analysis work a total of 6,196 times.

Table 5 Times Service Provided to Farms Other Than Nikkei Farms

Analysis Item	By Time Project Ended (From Latter 2007)
Soil Analysis	2,268
Fertilizer Component Analysis	1,478
Seed Testing	1,256
Lime Analysis	12
Feed Analysis	574
Disease Diagnosis	225
Protein Content	66
Root Nodule Bacterium	15
Total	6,196

Source: CETAPAR

## (3) Institutional Arrangements

Indicator 1: “Operational rules and procedures after transfer”

Operational rules and procedures for after the transfer of operation were drafted as part of the activities conducted during this project, and when the transfer application was submitted to JICA in May 2008, a basic operation and project plan proposal for after the transfer of operation was submitted to JICA at the same time. The “preparatory committee of Nikkei-CETAPAR Foundation” was started up in June 2008 to take over these activities, and began concrete preparation of specific proposed operational rules and procedures to facilitate self-reliant operation and management based on the organization making a profit. Although the operational rules and procedures had not been formulated by the time the project ended, work is proceeding on the formulation of operational rules and procedures since the project ended/after transfer of operation.

In addition, in consideration of the strengthening of cooperation with other cooperatives in Paraguay which was proposed in the above plan, following a period of

three years of observer status, operation and management was transferred to joint operation by a federation in April 2013 that included the FECOPROD and UNICOOP cooperative federations in Paraguay, and the operational rules and procedures are being revised.

Indicator 2: “Operation and management plan (organization diagram, personnel positioning, budget)”

The preparatory committee of Nikkei-CETAPAR Foundation served a central role in the formulation of an operation and management plan. An annual operation plan has been formulated every year after the transfer of operation, and approval of the plan is obtained at the annual general meeting.

Indicator 3: “Above indicators approved by organization to which operation has been transferred”

Approval for ongoing CETAPAR business was obtained from the Nikkei cooperatives at the respective annual general meetings of the Nikkei cooperatives in February 2010.

As stated above, the expected effects resulting from implementation of this project for the most part achieved the level of objectives by the time the project ended, and contributed to achievement of the project objectives. Therefore, the project can be judged to have had a high level of effectiveness as of the time the project ended.

### 3.2.2 Impact

#### 3.2.2.1 Achievement of Overall Goal

Overall Goal: “Sustainable agricultural techniques are disseminated in the eastern region of Paraguay.”

- (1) Indicator 1 “Productivity of main agricultural and livestock products is consistently maintained in the eastern region of Paraguay at or higher than the base year level of 2010.”

Limited to the three years after the project ended, due to the fact that there was a drop in yields due to droughts and other abnormal weather, it is difficult to compare the transition using 2010 as the base year, but compared to productivity before the project (Data from Ministry of Agriculture and Livestock), it was confirmed that soybean yield per unit area which is a core agricultural product in eastern region of Paraguay increased from 2,020 kg/hectare in 2004 to 2,962 kg/hectare in 2011. In particular, no-till farming technology for soybeans which has been developed/promoted by

CETAPAR / Nikkei cooperatives has been accepted by farms throughout Paraguay, and has been recognized among people involved in agriculture in Paraguay as having made a large contribution to increasing soybean productivity.

#### 3.2.2.2 Manifestation of Effects After Project Ended

Due to the limitation that CETAPAR is not an organization that serves the role of an official testing station in the eastern region of Paraguay after the end of the project/transfer of operation, CETAPAR itself does not have a system for the dissemination of technology throughout the eastern region of Paraguay.

However, the test result reports, technical manuals and other farming technology/farming information originating from CETAPAR is being disseminated throughout the eastern region of Paraguay. In addition, various services such as soil/agricultural chemical analysis that are being selectively expanded by CETAPAR through persons involved in agriculture from which work is consigned, and CETAPAR testing results/agricultural technology are being indirectly disseminated to farms in the eastern region of Paraguay which are their customers.

The main effects of business are being manifested as described below.

##### (1) Technical Instruction as High-Quality Officially Certified Organization

The level of technology acquired during the project has been further upgraded by technical follow-up by JICA senior volunteers and other efforts after the project ended, resulting in the acquisition of official certification for agricultural chemical component analysis, soybean seed recombinant gene mix rate testing and virus testing. According to persons involved in agriculture in Paraguay, CETAPAR is recognized as a certified organization with a high level of trust that performs certification with one of the highest levels of accuracy out of the various certification organizations in Paraguay. Thus, sustainable growth as an officially certified organization has been widely recognized by persons involved in agriculture in Paraguay, and the number of times service is being provided to persons involved in agriculture in Paraguay is increasing.

Simultaneously, persons involved in agriculture in Paraguay that have subcontracted analysis services to CETAPAR are receiving instruction on farming technology such as application of fertilizer and pesticide application based on the certification results in addition to receiving certification services from CETAPAR. In other words, persons involved in agriculture are receiving the advice on the appropriate agricultural technology in accordance with the individual farming environment and putting it into practice on farms as a result of the services provided by CETAPAR.

Table 6 Number of Times Service Provided to Paraguayan Farmers

Analysis Item	Until Project Ended (Total Number in 2-1/2 Years from Latter 2007)	After Project Ended (Total Number of Times Service Provided, Including Nikkei Farms)	
		Fiscal 2011	Fiscal 2012
Soil Analysis	2,268	2,905	1,664
Fertilizer Component Analysis	1,478	497	565
Seed Testing	1,256	2,449	2,192
Lime Analysis	12	58	62
Feed Analysis	574	64	31
Disease Diagnosis	225	228	184
Protein Content	66	447	230
Root Nodule Bacterium	15	486	597
<b>Total</b>	<b>6,196</b>	<b>7,134</b>	<b>5,525</b>

Note: According to CETAPAR, due to the fact that the details of service provision results in each fiscal year until the project ended and service provision results for Nikkei farms / Paraguayan farms respectively are not known, the following inferences were made.

- When the service provision results until the project ended were simply annualized, service provision results for Paraguayan farms amounted to a yearly average of 2,478 times.
- According to CETAPAR, due to the fact that the ratio of service provision results to Paraguayan farmers in fiscal 2011 and fiscal 2012 exceeded a majority of the total number of times service was provided, the service provision results for Paraguayan farms amounted to a minimum yearly average of over 3,567 times (fiscal 2011) and over 2,763 times (fiscal 2012).
- Therefore, the inference can be made that service provision results to Paraguayan farmers increased after the project ended.

Source: CETAPAR

## (2) Growth of Agriculture through Analysis Services

During the project period, as an official testing station, CETAPAR implemented activities to promote growth of agriculture such as traveling instruction and model farm fields, with the objective of boosting the technological level of specific farm groups, with a focus on Nikkei farms.

On the other hand, after the project ended, during the process of transitioning to an operations system where there is a focus on analysis service to facilitate self-reliant profitability of CETAPAR which became a private sector company, a portion of the dissemination techniques established in the project were continued, and an approach was implemented where there is a focus on the dissemination of agricultural technology through the provision of analysis services as an officially certified organization.

Although there has been this type of changeover, as stated above, the number of persons involved in agriculture that are receiving instruction on agricultural technology from CETAPAR through the provision of high quality analysis serves as an officially certified organization is increasing, and it continues to contribute to the

growth of agriculture in Paraguay.

### (3) Dissemination to Paraguayan Farmers

According to the results of the recipient survey (of 100 farmers in area surrounding CETAPAR) that was conducted in March 2013 as part of this ex-post evaluation, while Paraguayan farmers in the area surrounding CETAPAR have an extremely high level of desire to boost their level of agricultural technology, the majority of farmers do not have access to an agricultural technology dissemination system that consists of training and other activities.

Due to these circumstances, 90 percent of more of the farmers in the area surrounding CETAPAR utilize farming technology and farming information received from CETAPAR or Nikkei cooperatives. Furthermore, they have high expectations that CETAPAR will hold an increased number of seminars and other such events to provide more opportunities to learn agricultural technology.

Table 7 Beneficiary survey in Region Surrounding CETAPAR

(a) Desire to Boost Level of Agricultural Technology	(b) Opportunities to Receive Training in Agriculture	(c) Utilization of CETAPAR / Nikkei Cooperative Technology
1. High (88%)	1. Adequate (41%)	1. Use extensively (68%)
2. Low (11%)	2. Minimal (41%)	2. Use a portion (26%)
3. Not Needed (1%)	3. Almost none (18%)	3. Hardly use at all (3%)
		4. Do not know (3%)
(d) Future Expectations for CETAPAR		
1. None in particular	(2%)	
2. Do not know	(1%)	
3. More seminars and other events	(74%)	
4. Increase amount of information provided	(5%)	
5. Increase services provided	(18%)	
6. Other	(0%)	

Source: Beneficiary survey conducted in March 2013 (Questionnaire of 100 Paraguayan farmers randomly selected in areas surrounding CETAPAR)

Thus, the dissemination of agricultural technology by CETAPAR helped maintain stable production volume of the main grains in the eastern region of Paraguay, and the joint operation and management system with two cooperative federations in Paraguay which was implemented from April 2013 is starting to result in further direct and indirect dissemination to these cooperative members and farmers in the surrounding areas.

#### 3.2.2.3 Other Impacts

##### (1) Growth of Agriculture through Training

During implementation of this project, and after the project ended/operation was

transferred, CETAPAR which is located in Alto Paraná Department has accepted students from the schools of agriculture at universities inside and outside the department for help in preparation of their dissertation, as well as persons from Nikkei cooperatives, successor members and other persons for training. This has resulted in increased recognition of CETAPAR, and dissemination of the technology and information that is available from CETAPAR by the trainees to farms inside and outside Alto Paraná Department.

## (2) Negative Impact

This project has not had a negative impact on the natural environment, cause resettlement of residents or any problems involved with site acquisition during the project period or after the project ended.

As stated above, CETAPAR was prepared as foundation of the core center for agricultural development in the eastern region of Paraguay, which was set as the project objective. In addition, it was verified that sustainable agricultural techniques were disseminated in the eastern region of Paraguay, which was the overall goal. This project has largely achieved its objectives, therefore its effectiveness and impact is high.

### 3.3 Efficiency (Rating: ②)

#### 3.3.1 Inputs

Inputs	Plan	Results (At End of Project)
(1) Experts	<ul style="list-style-type: none"> <li>• Long term experts: 2</li> <li>• Short term experts: 2-3 per every year</li> </ul>	<ul style="list-style-type: none"> <li>• Long term experts: 5</li> <li>• Short term experts: 5</li> </ul>
(2) Trainees Received	1-3 trainees every year	<ul style="list-style-type: none"> <li>• Total: 4 trainees</li> </ul>
(3) Third-Country Training Programs	1-3 trainees every year	<ul style="list-style-type: none"> <li>• Total: 4 trainees</li> </ul>
(4) Provision of Equipment	3 million yen/year (Total 15 million yen)	63.98 million yen
Total Project Cost	Unknown	Total: 647.32 million yen
Total Local Cost	None	Total 3.4 billion guaraní

#### 3.3.1.1 Elements of Inputs

##### (1) Japan side input

##### 1) Dispatch of experts

The number of long term experts was increased by one in accordance with progress of the project, but this did not represent a problem in particular for project operation and management. The quality of the long term experts and timing were nearly

appropriate.

Dispatch of short term experts was also performed in an effective manner.

2) Acceptance of trainees

The content, period and timing for training in Japan and third country training were appropriate, and the results of training were utilized in work after training, making this an effective input. Due to these effects, one trainee more than planned was added for each type of training.

3) Provision of equipment

The types of equipment, quantity, quality and timing of provision were appropriate, and for the most part the equipment was effectively utilized for project activities, contributing to the obtaining of approval as a certified organization for soil diagnosis, pesticides and other matters. Furthermore, due to the fact that facilities/equipment needed to be updated/new equipment procured in order to obtain approval as a certified organization, such as gas chromatograph related equipment for agricultural chemical component analysis and equipment for a produced seed silo, the actual cost of the equipment exceeded the budget allocated in the plan.

In addition, transfer of facilities and equipment from JICA to CETAPAR when the project ended was conducted in a smooth manner. However, the seed production facilities did not meet the planned profitability projections. Therefore, the usage methods in fiscal 2013 and after are being reviewed under the new CETAPAR system.

(2) Paraguay Side Input

1) Counterpart allocation

The respective Nikkei cooperatives deployed an appropriate number and quality of counterparts during the project period, and these counterparts made a large contribution to project activities designed to provide the necessary capabilities after the transfer of operation after the project ended, as well as to project operation and management.

2) Covering of local costs

The Central Nikkei Cooperative and respective Nikkei cooperatives made investments to cover expenses not covered by the plan, making a large contribution to project activities designed to provide the necessary capabilities after the transfer of operation after the project ended, as well as to project operation and management.

#### 3.3.1.2 Project Cost

The actual cooperation sum was 647.32 million yen with respect to a planned cooperation sum of 400 million yen, significantly exceeding the planned amount (162% of planned amount).

The reason that the actual cooperation sum exceeded the planned cooperation sum for the project consisted of increased expenses for the provision of equipment and construction of facilities with the goal of facilitating operation and management based on self-reliant profitability after the transfer of operation.

#### 3.3.1.3 Period of Cooperation

The actual cooperation period was 60 months with respect to planned cooperation period of 60 months (100% of plan).

As stated above, while this project was completed within the planned period, the cooperation sum exceeded the planned sum. Therefore, efficiency of the project was fair.

### **3.4 Sustainability (Rating: ②)**

#### 3.4.1 Related Policy towards the Project

The agricultural policy of the Paraguay government did not change while this project was being planned, during the project period and at the time of the ex-post evaluation. The government continues to consider promoting the expansion of agricultural production in the eastern region which is the breadbasket of Paraguay an important issue.

On the other hand, according to Nikkei cooperatives and members of other agricultural cooperatives in Paraguay, while an official agricultural technology dissemination system and certified organizations exist in Paraguay, the level of trust in the technology and analysis results is not high among Nikkei farmers and Paraguayan farmers.

Under this type of policy system, the effects of the dissemination of farming technology/farming information and the project implemented by CETAPAR will boost sustainability. In addition, people have even high expectations for the important role that CETAPAR serves as a semi-official agricultural technology dissemination organization and certified organization.

#### 3.4.2 Institutional and Operational Aspects of the Implementing Agency

Based on the implementation system that was planned/developed during this project, operation and management of CETAPAR was formally transferred to the CETAPAR Foundation that was established/is supervised by the Central Nikkei Cooperative from JICA in April 2010. CETAPAR has been operated and managed under the CETAPAR Foundation for three years since the transfer, and operation and management of the

CETAPAR Foundation was transferred from independent management by the Central Nikkei Cooperative to joint operation and management by three cooperative federations in April 2013, including the FECOPROD and UNICOOP cooperative federations in Paraguay. This change in the organization structure is expected to strengthen operation and management by increasing the sources and amount of funds, increase revenue from subcontracted services by increasing the number of members, strengthen cooperation with agricultural related organizations in Paraguay, and bring about other benefits. In addition, expectations for CETAPAR from cooperative federations in Paraguay consist of the provision of highly reliable agricultural services and strengthening of dissemination services. Due to the increase in the opportunities for Paraguayan farms other than Nikkei farms to receive CETAPAR services as a result of this change in the operation and management structure, it is expected that this will increase the productivity of farms in Paraguay in the future, and contribute to an improvement in the income level of farms.

As of June 2013, CETAPAR had 22 formal employees, consisting of one station manager, two assistant managers, four clerical staff, one person in the technology/project division, six staff in the laboratory, six staff working at the farm and two staff in charge of PROMELE issues (There were 19 staff when the project ended). Although some of the staff that were trained during this project quit after the project ended, new technical staff with the appropriate technical skills have been hired, maintaining the implementation system for testing/service work without any problems. However, the cost of personnel expenses for work that does not generate revenue is high, making it an issue that should be reviewed in the future.

As stated above, efforts are proceeding to keep and expand staff under a suitable operation and management system. Therefore, the judgment can be made that the sustainability of the counterpart implementation system is high.

### 3.4.3 Technical Aspects of the Implementing Agency

In regard to effectiveness, various service works centered around soil/agricultural chemical analysis that were nurtured during this project are continuing to be provided after the project ended, as described in the output section. Some of the engineers that were nurtured during the project quit (salaries/other treatment conditions that were pointed out at the time of ex-post evaluation after the transfer of operation were improved, but the poaching of personnel/changing of jobs by talented agricultural engineers in Paraguay is common and is not limited to CETAPAR), which led to a period when there was a backlog in subcontracting services such as soil analysis, but the hiring of new personnel and other measures have enabled the same level of services to be provided as during the project. Acquisition/renewal of certification by an external certification organization has secured a

certain technological level as a certified organization.

The ability to provide high quality subcontracting services and technological level are recognized by Nikkei farms, as well as agricultural research institutes, agricultural administration agencies, agricultural equipment companies, farmers and other persons involved in agriculture in the eastern region of Paraguay. Simultaneously, in order to maintain and upgrade its technological level, equipment is being updated/maintained, experts are being sent after the project ended from Brazil, Argentina and other neighboring countries, and CETAPAR engineers are undergoing unscheduled overseas training etc. on an ongoing basis.

As stated above, the judgment can be made that CETAPAR is adequately using the technology that was transferred during project implementation. Therefore, the technical sustainability is high.

#### 3.4.4 Financial Aspects of the Implementing Agency

The important investigative research that has been accumulated over many years and significant social contribution to regional society made by the Nikkei immigrants are being utilized to perform operation and management as a private sector company with the objective of self-reliant profitability, although there remain some issues as a testing organization that make it difficult to become profitable after the transfer of operation.

According to CETAPAR/the Central Nikkei Cooperative, the balance of income and expenditures for three years after the transfer of operation consisted of 23.37 million guaraní in income (approximately 60.41 million yen) and 30.48 million guaraní in expenditures (approximately 78.79 million yen), resulting in a negative balance of 7.11 million guaraní (approximately 18.38 million yen). Operations have been in the red for the following main reasons, but investments/contributions by the Central Nikkei Cooperative and Nikkei cooperatives have been made to compensate for the loss.

- Continuing expenditures for work as a testing organization that does not generate income, such as basic investigative research.
- Investments for updating/procurement of facilities/equipment/machines in preparation for self-reliant profitability.
- Reduced income due to bad year for seed production as a result of a drought.
- Decrease in actual income compared to expected income due to temporary suspension of work that generates revenue when engineers in charge were absent/while equipment was being repaired.

On the other hand, after the transition from independent operation and management of CETAPAR by the Central Nikkei Cooperative to joint operation and management by three cooperative federations that started in April 2013, a review has commenced of a more

detailed implementation system for the future/operation and management system and other such details. Implementation of the following main measures has provided a path to securing income, establishing a structure where the organization will achieve self-reliant profitability.

- Under the new management framework of three cooperative federations, the Nikkei cooperatives as well as two farming cooperative federations in Paraguay have each expressed their intention to make investments for the updating/new procurement of facilities/equipment in order to boost the level of service to each of their members (the decision has been made that each of the farming cooperative federations will invest approximately 3 million yen in fiscal 2013, for a total of approximately 9 million yen that is to be used as operating capital). As an accounting measure for starting operation under the new framework, the Central Nikkei Cooperative will cover the entire loss of approximately 18 million yen that was accrued during the three years after the transfer of operation, and plans call for the investment of approximately 9 million being made this fiscal year under the new framework to be used as operating capital to conduct business.
- Reduction in expenditures by choosing to suspend work by divisions that do not generate revenue.
- In order to ensure profitability, plans call for implementation of updating of old equipment in laboratory which is main source of income generating work, and procurement of multiple equipment units/other such measures to enable work volume to be expanded in fiscal 2013 (Increase in related members under the new framework is expected to increase volume of subcontracting service requests).

Table 8 Status of CETAPAR Support Cooperatives (As of June 2013)

Cooperative Federation	Central Nikkei Cooperative	FECOPROD	UNICOOP
No. of Cooperatives	5 cooperatives	33 cooperatives	8 cooperatives
No. of Members	Approx. 400	Approx. 22,000	Approx. 2,000

Source: Respective cooperative federations

Thus, while CETAPAR had problems in terms of its financial status during the three years after the transfer of operation when the project ended, the cumulative debt has been settled in 2013, and investments have been made in preparation for activities conducted by three cooperative federations in fiscal 2013 and after. However, the organization is still at the stage that its financial status has been improved for the time being, and the actual achievement of self-reliant profitability under the new framework will depend on how the organization is managed.

Thus, due to the financial issues that confront the organization, therefore sustainability of the project effect is fair.

## **4. Conclusion, Lessons Learned and Recommendations**

### **4.1 Conclusion**

This project was implemented with the objective of strengthening the functions and enhancing the operation and management system for agricultural technology in order to facilitate self-reliant operations development by the Technological Center on Agriculture in Paraguay (CETAPAR).

Promotion of agriculture in the eastern region of Paraguay through the dissemination of sustainable technology matches the development policies in Paraguay aimed at promoting the development of agricultural communities by strengthening competitiveness, and the ODA policy of Japan which has a primary focus on regional economic development centered around agriculture and enabling farmers of Japanese descent (Nikkei) to put down stable roots, and therefore has a high level of relevance.

Implementation of this project achieved the prescribed objectives of strengthening the functions of CETAPAR related to agricultural technology and development of an operation and management system. In regard to the overall goal, technology dissemination by CETAPAR contributed to the dissemination of agricultural technology in the eastern region of Paraguay, and it was confirmed that this helped stabilize agricultural production by Nikkei farmers as well as Paraguayan farmers as a whole, and helped boost production capabilities. Therefore, the project had a high level of effectiveness and impact.

The elements input for manifestation of the output were appropriate, and the period of cooperation was within the plan, but the provision of equipment and facilities with the aim of enabling the organization to make a profit after the transfer of operation and management resulted in the amount of cooperation funds actually expended substantially exceeding the planned amount. Therefore, efficiency was fair.

There were no problems with the institutional aspect in related policy, counterpart system, and sustainability of the technology. The financial status of CETAPAR was not good due to investments made with the goal of self-reliant profitability by the third year after the transfer of operation, but improvements in operations are proceeding as a result of the manifestation of investment effects and reorganization of the implementation system. Therefore, the sustainability is fair.

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

### **4.2 Recommendations**

#### **4.2.1 Recommendations to the Executing Agency**

(1) Handling of short-term issues

- Starting in April 2013, operation and management of CETAPAR was transferred from the Central Nikkei Cooperative to joint operation and management by three cooperative federations, including two cooperative federations in Paraguay. It is hoped that the experience gained during the project period and three years after the transfer of operation will be used to establish a new framework for sound operation and management. In addition, since it is expected that the organization will be able to establish closer relations with Paraguayan farmers by coordinating efforts with the cooperative federations in Paraguay, it is hoped that CETAPAR will be able to further contribute to the overall goal of this project of the sustainable dissemination of agricultural technology in the eastern region of Paraguay.

Furthermore, in preparation for establishment of a system that enables this, due to the fact that there are problems in particular with the self-reliant profitability of the organization, measures to make a plan for the improvement of operations should be deliberated and implemented at the earliest point possible.

(2) Handling of mid- to long-term issues

- In order to enable the stable expansion of the various services provided by CETAPAR that are the core of revenue generation, the various certifications acquired by CETAPAR need to be renewed, and certification needs to be obtained in new fields (Export Food Standard for the United States and Europe, etc.). In order to achieve renewal of certification and acquisition of certification in new fields in the future, it will be necessary to update equipment that has been used before and during the project and procure new types of equipment. Therefore, equipment updating/procurement plans need to be deliberated.
- In order for CETAPAR to continue to maintain a high level of trust from external clients (Nikkei cooperatives/farms, organizations involved in agriculture in Paraguay, companies involved in agriculture, etc.) that it has acquired over many years, the securing/nurturing of human resources that can provide high quality services are indispensable. In Paraguay where the poaching of talented personnel/changing of jobs by talented agricultural engineers is normal, it is important to provide good employment conditions and opportunities for enhancing their technical capabilities. The support/expenses needed for securing/human resource development should be incorporated in the new framework that started in April 2013.
- Regarding testing work in the vegetable/fruit fields, traveling instruction, workshops and other such training opportunities that were suspended due to lack of funds/personnel after the transfer of operation, Nikkei cooperatives (in particular, Colmena/Asunsena cooperative) and small-scale Paraguayan farms in region

surrounding Yguazu and other areas have voiced high hopes for these activities to be reinstated, and it is hoped that they will be recommenced from the perspective that one of the objectives of the project was to have the organization serve the role as a base for the promotion of agriculture.

#### 4.2.2 Recommendations to JICA

##### (1) Handling of short-term issues

- Based on the technology that was transferred during the project, CETAPAR has enhanced the level of trust from external parties as an organization that is certified in various fields, but the opportunities for personnel to increase their level of technology have been limited after the transfer of operation. It is hoped that supplemental support will be provided to increase opportunities to enhance the level of technology that are not available in Paraguay, and in particular dispatch of experts (including experts from third countries) in new up and coming certification fields for which external certification is required (Export Food Standard for the United States and Europe, etc.), training in Japan, and other areas will be performed.

##### (2) Handling of mid- to long-term issues

- In the territorial approach<sup>5</sup>, the small-farm self-reliant support program and other such agriculture promotion programs/projects which are being implemented by the JICA Paraguay Office together with the government of Paraguay, it is hoped that the high level of farming technology/farming information of CETAPAR and experience accumulated over many years in the eastern region will be utilized to contribute to the overall goal of this project of boosting agricultural production in the eastern region of Paraguay.

#### 4.3 Lessons Learned

Before this project started, CETAPAR had the base of being directly operated by JICA for a period of over 40 years as an agricultural testing station that provided support for the promotion of agriculture for Nikkei farmers in the eastern region of Paraguay. This technical cooperation project was aimed to formulate a system enabling self-reliant growth of CETAPAR with a view to the full transfer of operations from JICA that was scheduled

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<sup>5</sup> In order to correct the problems of poverty and disparities in income, the government of Paraguay is proceeding with a conversion from a sectoral (vertical) top-down development approach to a regional unit development approach, and in accordance with this policy, has designated development target “territories” that are thought to have a high level of commonality from four perspectives: policy/system, economy/production, society/culture and environment. While focusing on each territory, it is providing support with the objective of creating an implementation system with a new farming village development approach that is suited to the “territorial approach” being implemented across sectors in accordance with the respective development needs and priority.

ten years after the project started, based on the accumulated technologies and existing organization.

Thus, for a project with a counterpart implementation organization for which it is expected to be difficult to secure financial support from the government, related organization or other source after the project ends, in addition to the transfer of technology in specialized fields, it is important to clearly position one output of the project as establishment of a self-reliant organization structure, including in terms of implementation capacity, dissemination process and financial soundness after the project ends. Furthermore, the formulation of an income structure that heightens sustainability and/or business plan is important for the creation of a self-reliant organization structure after the project ends.