Republic of Paraguay

Agricultural Sector Strengthening Project II (PG-P14)

External Evaluator: Hideyuki Takagi,
Ernst & Young Sustainability Co., Ltd.

0. Summary

The objective of this project was to strengthen the overall competitiveness of one of the key economic sectors in Paraguay, the agriculture and livestock farming sector, by implementing various assistance programs to small- and medium-scale farms in line with the country's agricultural and livestock farming promotion policy, thereby contributing to the sustained growth of the national economy and improving the standard of living of many small-scale farmers who belong to the low-income bracket. This project has been highly relevant with the country's development policy and development needs, as well as Japan's ODA policy. The project outputs that were originally contemplated were modified in the course of the implementation of the project because the project structure was found to be too complex to be realizable. In this report, the project effectiveness and impacts are evaluated after an analysis of the background and process of the modifications and on the basis of the finalized project outputs. In terms of effectiveness, certain positive outputs have been obtained in the sub-projects, agricultural extension and granting of capital investment funds. In addition, the infrastructure sub-projects that were enlarged in scale in accordance with the local needs have benefitted a wide array of beneficiaries in the project region. As for impacts, whilst the original project objective was the strengthening of agriculture and livestock farming sector, a greater project impact was obtained with respect to the standard of living of rural farming communities through the infrastructure sub-projects. With all these facts taken into consideration, the project effectiveness and impacts are considered to be fair. The project efficiency is also adjudged fair because the project period significantly exceeded the plan even though the project cost was within the plan. The sustainability is considered to be fair because some problems are observed in the continuity of the model farm sub-project, the maintenance and repair of roads and the non-performing loans of small-scale farms. In light of the above, this project is evaluated to be partially satisfactory.

1. Project Description

(Project location: Paraguay country map)

(A small-scale farmer with his cassava harvest enjoys increased productivity that was brought about by the model farm sub-project)

1.1 Background

Paraguay is a landlocked country on the South American Continent and its major industry is agriculture and livestock farming. Today, more than 80 percent of its exports still depend on the agriculture and livestock farming sector. Accordingly, the sector is regarded as the major place of work by the people. Over 30 percent of the entire working population is engaged in this sector. However, most of the agriculture and livestock farming population is engaged in small-scale farming[1] in rural communities and many of the farms are small family farms that grow only what they need to consume. What little cash they earn from the sale of some cash crops or from wage labor is expended to pay for farm machinery, supplies, seeds and other farm inputs and to cover the education of children and medical care. They belong to the low-income class of the society. Typically, they use family labor to cultivate 3 – 4 hectares of land a year, a size that is cultivable using family labor. They depend on the traditional farm technique of rain-fed cultivation, only growing crops that do not require irrigation. Their harvests and production efficiency are both low. The widening income disparities between these numerous small-scale farms and the medium- to large-scale farms have long been a major social issue. In addition, Paraguay's entry into the Mercosur (1991) that promotes trade liberalization within the region, it was feared, would unleash a large influx of inexpensive agricultural products into the country, destroy the life of small-scale farmers and push them jobless off the land and into the cities. Entry into the common market also makes it necessary to enhance the competitiveness of medium-scale farms through financial support so as to enable them to continue exporting agricultural products to a more liberalized market.

To address the situation, the Paraguayan Ministry of Agriculture and Livestock (MAG) developed an assistance policy package setting out the assistance bodies and assistance measures directed to each of the two farm groups, small-scale and medium-scale. The measures for small-scale farms included: agricultural extension, small-scale infrastructure improvements and improved access to funding, all designed to help the farmers to stay on their farms and continue farming on a sustainable basis. For the medium-scale farms, the financial support that was launched under the Agricultural Sector Strengthening Project (I) and extended through the National Development Bank (BNF) was continued and the emphasis was also placed on the support for the livestock farming industry that had not been eligible for loans in the framework of this Project (I). This project under evaluation was implemented as a follow-up to the country's policy of agriculture and livestock farming promotion and was aimed at helping the entire agriculture and livestock farming sector develop in a well-balanced manner.

[1] The categorization is by the area of farmland owned. Small-scale means up to 20 ha. Medium-scale means from 20 ha up to 300 ha. Large-scale means over 300 ha. Most small-scale farms are family-owned and the average farm size is several hectares (about 40% of all farming units own no more than 5 ha each). In fact, farmland ownership is not clear in many cases. The area size of 20 ha was the unit used at the time of land redistribution under rural reforms.

1.2 Project Outline

The objective of this project is to strengthen the overall international competitiveness of one of the key economic sectors in Paraguay, the agriculture and livestock farming sector, by implementing various assistance programs to small- and medium-scale farms (production platform strengthening, small-scale infrastructure improvements and agricultural loans to farmers), thereby contributing to the sustained growth of the national economy and improving the standard of living of many small-scale farmers who belong to the low-income bracket.

Loan Approved Amount / Disbursed Amount	JPY 15.525 million / JPY 13.824 million
Exchange of Notes Date / Agreement Signing Date	December 1997 / August 1998
Terms and Conditions	Interest Rate: 2.7% (Consulting Services 2.3%) Repayment Period: 25 years (Grace Period: 7 years) Conditions for Procurement: General Untied
Borrower / Executing Agencies	Government of the Republic of Paraguay / Ministry of Agriculture and Livestock (MAG), National Development Bank (BNF)
Final Disbursement Date	February 2010
Main Constructor	—
Main Consultant	PACIFIC CONSULTANTS CO. LTD. / NIPPON KOEI / OC Ingenieros Consultores SRL / Cialpa S. A.
Related Studies (Feasibility Study) etc.	Special Assistance for Project Implementation (SAPI)
Related Projects	・ Agricultural Sector Strengthening Project (Phase I of this Project), ・ Dispatching a Financial Advisor to Agricultural Credit Agency (CAH), ・ Project for improvement of agricultural extension and small financing systems for rural development based on the territorial approach (supplemental project to Japan's ODA Loan)

2. Outline of the Evaluation Study

2.1 External Evaluator

Hideyuki TAKAGI (Ernst & Young Sustainability Co., Ltd.)

2.2 Duration of Evaluation Study

Duration of the study: October 2011 – December 2012

Field study: January 21 – 30, 2012 and April 21 – May 7, 2012

3. Results of the Evaluation (Overall Rating: C[2])

3.1 Relevance (Rating: ③[3])

3.1.1 Relevance with the Development Policy of Paraguay

(Relevance with the National Development Policy)

A focus on the development of agriculture and livestock farming has constantly been a priority agenda item in the national development plans of Paraguay. At the time of this ex-post evaluation, agricultural reform is listed as a cornerstone of the agriculture and livestock farming policy in the Economic and Social Strategy Plan 2008 – 2013, which is focused on an economic agenda, the Public Policy Plan for Social Development 2010 – 2020 which is focused on a social agenda, and the national campaign "Paraguay for All Men and Women (*Paraguay para Todos y Todas*)." In addition, assistance to small-scale farms is identified as a priority item in the fight against poverty and efforts are underway to raise the standard of living of all the people to reduce income disparities.

(Relevance with the Sector Development Policy)

At the time of project planning, enhancement of the international competitiveness of the small- and medium-scale farms in the agriculture and livestock farming sector was considered an impending challenge since international trade was to be liberalized as a result of Paraguay's entry into Mercosur. The MAG, the executing agency, drew up a Small-scale Farm Strengthening Plan to raise the income level of small-scale farm households and the Second Farm Loan Plan for the benefit of medium-scale farms, and used these plans to improve the strengths of the two farm groups. The Small-scale Farm Strengthening Plan included an assistance program consisting of agricultural extension, small-scale infrastructure improvements and improved access to farm funding, all intended to help small-scale farmers to stay on their farms and continue farming on a sustainable basis. In the Second Farm Loan Plan, the financial support that was launched under the Agricultural Sector Strengthening Project (I) and extended through the National Development Bank (BNF) was continued and the emphasis was also placed on the support for the livestock farming industry, which had not been eligible for loans in the framework of the Project (I). The

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

[3] ③: High, ②: Fair, ①: Low

MAG's Agriculture Strengthening Plan in effect at the time of this ex-post evaluation continues to be directed to the objective of assisting small- and medium-scale farms and prioritizes increased productivity, enhanced international competitiveness in both price and quality and job creation through assistance to small-scale family farms in the agriculture and livestock farming sector. Currently, Technical Assistance Project related to ODA loans named "Project for Improvement in Agricultural Extension and Microfinance System for Rural Development Based on Territorial Approach" (2011-2013) is underway. Under this Technical Assistance project, the model farm project is continued and enlarged from the village-level of the past to the local government level and the linkage of the model farm sub-project to the microfinance program is reinforced.

3.1.2 Relevance with the Development Needs of Paraguay

This project was implemented with the objective of helping solve the problems of Paraguay's agriculture and livestock farming sector by extending assistance to its small- and medium-scale farms simultaneously and thus promoting the entire sector in a balanced manner. At the time of the ex-post evaluation, the agriculture and livestock farming sector remained a major industrial sector of the country, accounting for 20% of the GDP and 85% of exports. Meanwhile, the economic disparity between large and small farms still remains a major social issue; the per capita GDP of large-scale farms amounts to the equivalent of 12,000 US dollars whilst that of small-scale farms that account for 80% of the farm population is equivalent to a mere 360 U.S. dollars. There is an additional development challenge for Paraguay's agriculture and livestock farming industry, which is that its geographical situation as a landlocked country makes the cost of logistics high and poses a disadvantage in international competition.

3.1.3 Relevance with Japan's ODA Policy

Japan's country assistance policy for Paraguay includes the agriculture and livestock farming sector, a basic industry in that country, as one of the priority areas for assistance. In addition, Japan has extended financial assistance, technical cooperation and other forms of assistance to Paraguay's agriculture and livestock farming sector, reflecting the historically good relations with the country and the presence of Japanese immigrants and their descendents among the population.

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

3.2 Effectiveness[4] (Rating: ②)

The program of assistance for small-scale farmers was intended to ensure financial backing to commercial farming supported by improved farm technology by promoting agricultural extension

[4] The evaluation results of the project impacts are incorporated into the Effectiveness rating.

through a model farm scheme and infrastructure improvements, coupled with financial grants. The program of assistance for medium-scale farms was designed to help raise the productivity to enhance international competitiveness in light of the entry to Mercosur. The project outputs that had been originally contemplated were modified in the course of project implementation. In this report, the project effectiveness is evaluated after an analysis of the background and process of the modification and on the basis of the finalized project outputs.

3.2.1 Quantitative Effects (Operational and Effect Indicators)

< Program of Assistance for Small-Scale Farmers >

1) Strengthening of production platform and improvement of small infrastructure

(1) Agricultural Extension (Sub-project of Model Farms)

The model farms sub-project was implemented with the objective of transferring technology to sections of farmland owned by the model farms in order to extend the farm technology to the other small-scale farms in the community.[5] The model farms were chosen through interviews with small-scale farmers in the community and in accordance with selection criteria that included the size of the farmland owned and the willingness to participate in the program. By the end of the project, a model farm was designated and the sub-project implemented in each of 166 farm communities in 14 departments in the eastern part of the country. The crops used for the model farm sub-project were basically those that the small-scale farms had grown traditionally because they were small-scale and did not have any surplus cash. In most of the model farms, green manure[6] and other soil conservation and restoration techniques were employed because soil degradation of the farmland was a serious problem in many parts of the country.

Model farms that received the technology transfer and the materials and equipment did see their productivity, efficiency and profitability improved, owing to the introduction of green manure, soil restoration, direct sowing, crop rotation and other techniques. Most small-scale farms were growing maize, cassava and poroto beans using traditional methods mainly for self-consumption. They also grew cotton or some other cash crops. The results of the beneficiary survey[7] show that a large majority of the sampled farms gave affirmative answers to the question on productivity increases (90% of the 20 sampled model farms responded “Greatly improved,” 5% “Improved,” and another 5% “Not changed” while 84% of the 57 sampled farms in the project communities responded “Greatly improved,” 14% “Improved,” and 2% “Not changed”). Table 1 “Productivity

[5] Farmer groups organized by the DEAg as recipients of the technology transfer. The minimum membership was 10. On average each group had 15 members.

[6] A fertilization technique wherein some grown plants are directly tilled into the soil to be allowed to decompose. In this project, leguminous plants were mainly used because they are effective particularly in supplying nitrogen to the soil. In addition to nitrification of the soil, they serve to prevent soil erosion caused by heavy rain during the fallow period and they are toppled to serve as soil cover (mulch).

[7] Conducted in February-March 2012. Questions were asked about the effects and sustainability of the sub-projects. A total of 120 responses were obtained.

increases due to the model farm sub-project" shows a comparison of the per hectare production before the project implementation and at the time of the ex-post evaluation in terms of crops that are mainly produced in the farms. Crops traditionally grown for self-consumption have begun to find their ways to markets in Paraguay; an increasing number of farms grow these crops in larger quantities for outside sale. Cotton is a traditional cash crop in Paraguay, but the decline in the market price in recent years is forcing the growers to switch to other crops. The observed no increase in productivity may reflect the decline in the number of cotton farms and the harvest.

Table 1. Productivity increases due to the model farm sub-project (Unit: kg/ha)

	Before project execution (a)	At project completion	At ex-post evaluation (b)	Change ((b-a) / a)
Model farms:				
Maize	721	2,009	2,259	+213%
Cassava	9,105	9,430	12,267	+35%
Poroto beans	409	767	856	+109%
Cotton	888	800	700	-21%
Farms in the project communities:				
Maize	796	2,047	1,971	+148%
Cassava	7,675	10,160	10,195	+33%
Poroto beans	381	432	524	+38%
Cotton	1,123	1,070	1,053	-6%

Source: Beneficiary survey (number of samples: 20 model farms and 57 farms in communities)

(Green manure-covered pre-planting field)

(Vegetable field after technology transfer)

(2) Improvement of Rural Roads

The improvement of rural roads has left positive impacts on vehicular traffic and the amount of farm products transported has increased. In more specific terms, the beneficiary survey revealed that buyers have come to visit farm villages more frequently than before and transportation using large vehicles has been made possible. Most residents living near the improved roads responded that the road improvements made a positive contribution to their commercial farming (84% of the

25 sampled farms responded that their agricultural production and product transportation had "Greatly improved," 4% "Improved," 8% "Not changed," and 4% "Not applicable"). According to the Ministry of Public Works and Communications (MOPC), the project effects are recognized in terms of the increased traffic with an estimated number of beneficiaries in the project region of over 240,000 residents, even though no specific surveys have been conducted on the physical distribution of agricultural produce.

(3) Supply of Drinking Water

The installation of water supply facilities has improved the access to drinking water. According to the National Environmental Sanitation Service (SENASA) of the Ministry of Public Health and Social Welfare, 14,200 households had a drinking water supply system installed in their houses. The beneficiary survey showed that most respondents used the drinking water not just for domestic uses, but also for cattle and gardens and used it very frequently (90% of the 40 farms sampled responded "Use very often," 5% "Use," and another 5% "Not use much").

2) Agricultural Loans to Small-Scale Farmers

The agricultural loans extended to small-scale farmers by CAH under this project were intended to enable farmers to achieve self-supported growth through a combination of technical assistance and access to funding. However, the loans were mostly made available to the relatively well-off farmers because many of the truly small-scale farmers failed to meet the loan conditions (annual income of at least 10 million guarani - about 200,000 yen, evidence of land ownership, no records of non-performance, etc.). Loans to farms in the communities covered by the model farm sub-project accounted for only 8% of the total loans. The intended synergistic effects with the technical assistance are considered to be low.

(Vegetables field with equipment installed using a loan at a thriving suburban farm
Left: Sprinkler irrigation; Right: Plastic greenhouse for tomato growing)

According to CAH, some farmers who used the loan to invest in a tractor, planter, harvester, truck or other farm equipment enjoyed improved productivity, even though no detailed surveys have been conducted on the productivity or efficiency of the borrowers. However, the loan extended to

each farm household is no more than 50 million guarani (about one million yen), which in many cases was used as working capital. It is difficult to believe that the CAH loan played a major role in stimulating capital investment. According to the beneficiary survey, 79% of the 19 sampled farms replied the productivity "Increased greatly" because of the use of the loan, 5% "Increased," and 10% "Not changed." Only 25% of the 20 model farms and 7% of the 57 project community farms sampled in the beneficiary survey received CAH loans.

While there have been positive effects to a certain extent, with the loans to small-scale farms the CAH is experiencing a problem of non-performance. Farms that have a repayment problem are believed to be suffering from economic hardship. The non-performing loan problem is due not only to the financial difficulty of the farms; it derives also from the softening of the borrowing conditions to provide small-scale farms with easier access to credit as well as the less-than-perfect credit management on the part of CAH. Small-scale farms tend to fall behind in their repayments, particularly when they are hit by drought. Phenomena like this that are unique to farm loans make commercial farming difficult and place a burden on CAH to manage credit properly. With a view to helping solve these problems and addressing CAH's overall non-performing loan problem, JICA has initiated an expert dispatch program to help CAH improve its financial base.

< Program of Assistance for Medium-Scale Farmers >

The loans to medium-scale farms were mostly used to finance capital investment for the production of cereals, an export item. According to BNF, farms producing cereals, which account for a large percentage of the borrowers, enjoy generally high profitability and sound management, even though no detailed surveys have been made on their productivity or efficiency. Our beneficiary survey on the program of assistance or medium-scale farmers was only conducted on a limited scale due to the BNF's strict policy on the disclosure of customer information. The two farms from which responses were obtained both replied that their productivity had "Improved greatly" through the use of the loan.

3.2.2 Qualitative Effects

< Program of Assistance for Small-Scale Farmers >

1) Strengthening of production platform and improvement of small infrastructure

(1) Agricultural Extension (Sub-project of Model Farms)

Replies received in our beneficiary survey, as summarized in Table 2, show that most farms recognized improved production capacity as a result of the technology transfer through the model farm sub-projects. This is considered to correspond to the improved productivity of the self-consumption crops mentioned in 3.2.1 "Quantitative Effects" above. Meanwhile, the effects on crop diversification were relatively small, partly because the marginal and small-scale farms still depend on the cultivation of self-consumption crops. Ninety-percent of the respondents answered

affirmatively to the question about the project effects on their standard of living.

Table 2. Qualitative Effects of the Model Farm Sub-project

	Model farms (# of samples: 20 farm households)		Farms in the project communities (# of samples: 57 farm households)	
Production capacity improvement	Greatly improved	90.0%	Greatly improved	84.2%
	Improved	10.0%	Improved	14.0%
	Not changed	0%	Not changed	1.8%
Variety of crops (diversification)	Greatly increased	60.0%	Greatly increased	50.8%
	Increased	15.0%	Increased	24.6%
	Not changed	25.0%	Not changed	24.6%
Standard of living	Greatly improved	70.0%	Greatly improved	79.0%
	Improved	20.0%	Improved	14.0%
	Not changed	10.0%	Not changed	7.0%

Source: Beneficiary survey (Number of samples: 20 model farms and 57 farms in communities)

(2) Improvement of Rural Roads

Rural farms found it extremely difficult and at times impossible to gain access to the cities or have their harvest transported to markets due to the road conditions, especially during the rainy season. Gravel- or stone-paved rural roads were made available under this project and the farmers can now ship their agricultural produce even in bad weather.

3.3 Impact

3.3.1 Achievement of the intended Impacts

< Program of Assistance for Small-Scale Farmers >

At the project planning stage, stabilization of the employment situation was intended through the maintenance and improvement of income to be achieved through assistance for sustained commercial farming on small-scale farms. The continued widening of the income gap between urban Paraguayans and rural farm communities stands in the way of preventing immigration into the cities. The younger generation living on marginal farms continues to move to the cities to work, and many of the parents interviewed in the beneficiary survey said: "We want the children to first go to school and then work in the cities." The country's average unemployment rate[8] hardly changed before the project implementation (5.8% in 1998) and at the time of ex-post evaluation (5.6% in 2011). Whilst positive effects have been observed to a certain extent in the sub-projects of Agricultural Extension, Infrastructure Improvements and Loans as described above, the originally intended project impact of "improvement in the commercial farming activity of small-scale farms" was much less than had been planned because the model farm sub-project was reduced

[8] Source: IMF World Economic Outlook Database. The unemployment rate peaked at 10% in 2002 and is on a declining trend.

considerably in scope. In light of all of the above, it cannot be said that the project made a positive contribution to employment stabilization in rural farm communities.

MAG continues to promote assistance to rural marginal farms through a Technical Assistance project related to ODA loans to raise their future potential and stabilize the youth employment situation. The Ministry regards the increasing demand for cassava and other self-consumption crops as a positive indication, and is implementing a "One village, One crop" campaign and other agriculture promotion measures. MAG says that most of the rural marginal farms live with little basic infrastructure, and that improvement of the infrastructure and living conditions is essential, in addition to the efforts mentioned above, to prevent the outflow of young people into the cities. From a longer-term perspective, furthermore, the problems in the distribution system of farm products and land ownership of marginal and small-scale farms need to be addressed. The farm products market in Paraguay is heavily concentrated in the capital of Asuncion. Road systems from rural farming areas are underdeveloped and the products that marginal and small-scale farms produce are denied access to the market. Many marginal and small-scale farms also do not possess documentation of their land ownership. Although the resolution of this problem is considered to be extremely difficult, uncertainty about the title to land poses a serious impediment to the procurement of funds and to the efforts to have young people stay on the farm and till the land.

< Program of Assistance for Medium-Scale Farmers >

The project plan envisaged the expansion of exports through the increased production of major agricultural and livestock products. As will be later discussed in 3.4.1 "Outputs," the BNF loans were mostly used to finance capital investment for the mechanization of soybeans[9] and other cereals that are internationally competitive major export items. Accordingly, it is fair to state that the project did make a positive contribution to a certain extent to the increased production and export of cereals. However, the impact on export expansion is considered to be smaller in scale than originally planned because the total funding for the loans in this project component was reduced considerably from the planned amount: 8,193 million yen to 1,925 million yen.

3.3.2 Other Positive and Negative Impacts (Benefits to the communities and surrounding areas, environmental impacts, relocation of villagers, land acquisition, etc.)

No particular impacts on the natural environment, either positive or negative, were observed as a result of this project. With respect to potential negative impacts on the environment, an environmental assessment was made prior to project implementation of the drinking water for cattle and the flora and landscape of the wetlands in the planned road construction zone. Waterways, bridges and other structures were planned and designed so as not to have adverse

[9] Paraguay is the No.4 exporter of soybeans in the world. They are produced by large agricultural corporations.

impacts. A hydro-geological study was also carried out prior to the construction of farm water canals in terms of the subterranean water level, wetlands, the landscape, chemical contaminants, etc., so as to achieve harmony with the environment. There have been no problems of land acquisition and resettlement.

(Other Positive Impacts)

The small-scale infrastructure project has made a positive contribution in a wide variety of ways as described below to the improved standard of living of the residents in the project area and the neighboring communities.

(1) Improvement of Rural Roads

Improvements to rural roads have contributed not only to the efficient distribution of agricultural produce, but also improved access to hospitals, schools and other basic public services, thus providing a better infrastructure for rural life in general. Our beneficiary survey revealed that all respondents living by the improved roads answered affirmatively to the question about their standard of living (96% of the 25 farms surveyed responded “Greatly improved” and the remaining 4% “Improved). Of particular note is the betterment of bridges that solved the problems associated with the traditional wooden bridges being washed away during the rainy season and the resulting cut-off of traffic. Other responses included: now the bus runs even in the rain; the new bridge ensures safe passage: more tourists are coming (a comment heard at a touristic location); more jobs have been created.

(An improved rural road)

(Left: Old wooden bridge, Right: New concrete bridge)

(2) Supply of Drinking Water

The installation of water supply facilities has improved the infrastructure of rural life in terms of a reduction in waterborne infectious diseases and parasites and other hygienic improvements due to the easier access to safe drinking water. The beneficiary survey revealed that most residents held the view that the provision of drinking water supply systems improved the hygienic conditions (95% of the 40 farms sampled responded "Greatly improved," 2.5% "Improved," and 2.5% "Not applicable"). All the residents surveyed agreed that their standard of living became better (97.5% of the same 40 farms sampled replied "Greatly improved" and the remaining 2.5% "Improved").

(A water supply tank installed in the community)

(Negative impacts)

According to the MOPC, large vehicles have come to use the gravel-paved roads more frequently and cars run faster than before, causing more traffic accidents. The ministry is working to improve traffic signs and driver education.

In summary, the effectiveness of the project was evaluated on the basis of the finalized planned outputs. The evaluation found that certain positive outputs had been obtained from the sub-projects. The infrastructure improvement sub-projects that were expanded in scope with a view to meeting the local needs had indeed benefitted a wide array of beneficiaries in the region. However, the loan grant program for small-scale farms is faced with the problem of non-performing loans and the farms that borrowed the loans are not necessarily better off than before. These are negative elements in the effectiveness evaluation. With respect to project impacts, the initially intended primary impact was strengthened agriculture and livestock farming sector. In reality, the raised standard of living of rural farming communities due to the improvement of infrastructure was the relatively stronger impact of the project. With all of the foregoing considered, this project has somewhat achieved its objectives, and therefore its effectiveness and impacts are considered to be fair.

3.4 Efficiency (Rating: ②)

3.4.1 Outputs

3.4.1.1 Modification of Outputs

The initially contemplated outputs of this project were modified roughly in three ways: (1) expansion of the small-scale infrastructure improvement sub-project and the granting of farm loans to small-scale farms, (2) reduction in the scope of the agricultural extension to small-scale farms and the granting of farm loans to medium-scale farms, and (3) exclusion from the project scope of assistance for organizations of small-scale farms and the granting of farm loans to farmers organizations. The output of this project was generally generated in accordance with each project component as modified. However, problems did occur in the course of project implementation because there was not sufficient coordination and cooperation among the organizations and agencies involved. Before the model farms were selected, project locations for road improvements and water supply systems installation were determined from the viewpoint of the greater need for infrastructure. In addition to the farm roads in the agricultural community where the model farms were located, regional roads connecting villages with the national highway were made a part of the project. With respect to water supply, efforts to quickly improve farm production were made on the basis of the widely-practiced conventional technique of rain-fed cultivation by marginal farms; installation/improvement of irrigation systems was excluded from the project and only the drinking water system improvements, which had a higher priority, were implemented. Thus, the synergistic effects among the project components were less than expected since some of the components did not match the model farm sub-project areas.

3.4.1.2 Background of the Modification of Outputs

The output modifications were made mostly on two occasions. The loan disbursement deadline was extended in December 2005 for four more years and the occasion was used to realign the complex project composition and reduce the project size in order to improve the project feasibility. In February 2007, the sub-projects “Model Farm and Small-Scale Infrastructure Improvements” and “Small-Scale Farm Loans” were also expanded.

December 2005 modifications: The work progress was only 22% with six months left until the originally planned completion date. In order to increase the project feasibility, the following modifications were made:

(1) Reduction of the model farm and small-scale infrastructure improvements sub-projects ((i) 120 model farms rather than 750 would receive materials and equipment, (ii) A total of 230 kilometers of roads rather than 400 kilometers would be improved, (iii) 85 locations rather than 140 would receive drinking water supply systems);
(2) Elimination of the farm loan program to farmer organizations through the Farmers Development Fund (FDC);

(3) Reduction of the farm loan program to medium-scale farms through BNF (With a cumulative total commitment of 2 billion yen, no new loans would be allowed until the financial conditions recovered);
(4) Strengthening of commercial farming training through enhanced consulting services.

In conjunction with these modifications, a Presidential Decree was promulgated to prevent further project delays, setting out measures to the effect that: (a) a project execution unit is newly created, and (b) this project is given high priority status and the local currency budget is to be allocated preferentially.

February 2007 modifications: The model farm sub-project and the small-scale infrastructure improvement sub-project were about to gain momentum. Accordingly, the project size of these components was re-expanded and the L/A allocations were realigned as follows:
(1) The number of model farms was increased to 166;
(2) The small-scale infrastructure improvements were re-expanded ((i) The total length of road improvements was increased to 406.93 kilometers, (2) The number of locations for the water supply systems installation was increased to 166);
(3) The L/A allocation to small-scale farm loans was increased to 5,828 million yen.

With the modifications described above, the L/A allocations were fixed and the project composition finalized in February 2009. For a comparison of the initially planned project composition and the actual, please refer to Table "Comparison of the Original and Actual Scope of the Project" that appears at the end of this document.

3.4.1.3 Results of the Outputs

< Program of Assistance for Small-Scale Farmers >

1) Strengthening of production platform and improvement of small infrastructure

(1) Agricultural Extension (Sub-project of Model Farms)

A total of 166 model farm communities were chosen, to which technical assistance and materials and equipment were provided.

Figure 1. Locations of the model farms

Source: JICA in-file data

The technical assistance covered topics including subsistence crops, cash crops, subsistence vegetables, commercial livestock farming and management, conservation and restoration of the soil. The techniques introduced for these purposes included: use of improved seeds, use of chemical fertilizers, pest control with agricultural chemicals, combined use of green manure and direct seed planting, organic agriculture, crop diversification, livestock hygiene, fertilization by agricultural lime, fertilization by organic fertilizers and crop rotation. The major equipment granted included: farm tools, green manure rippers, direct seed planters, maize threshers, sprayers, silos and lime applicators. The major materials included: improved seeds, chemical fertilizers, agrochemicals and green manure seeds.

(2) Assistance for organizations of farmers

The planned assistance for organizations of farmers was excluded from the project scope on account of its poor feasibility. According to MAG, some of the communities involved in the project are promoting joint efforts in securing sales outlets and saving transportation costs outside the scope of the project.

(3) Improvement of Rural Roads

In addition to the originally-planned roads inside the model farm communities and the farm roads for the adjacent farmlands, some heavily-travelled rural roads were improved under the project.

The total road length was 406.93 km in 24 sections. Gravel pavement was the norm, but a stone pavement technique was applied to the mounted parts, slopes and other spots requiring reinforcement. As was mentioned earlier, the roads to be improved were selected out in the course of project execution even before the model farms were chosen. At some locations, therefore, no matching exists between the two sub-projects.

(4) Supply of Drinking Water

Drinking water supply systems (intake water wells, elevated tanks, piping, etc.) were constructed on the model farms and some other communities. Although irrigation systems were included in the original project plan, they were not constructed because the model farms were marginal rain-fed farms growing the kind of crops that do not require irrigation and because there was an overriding need for drinking water.

Figure 2. Road improvement sites

Source: JICA in-file data

Figure 3. Drinking water systems sites

Source: JICA in-file data

2) Granting of capital investment funds to small-scale farms

Farm loans to finance the purchase of farm machinery, tools, materials and seeds are available to marginal farms in amounts equivalent to some tens of thousands to a hundred thousand yen a year per farm. Some farms near cities or with more sophisticated farming techniques are engaged in commercial farming growing vegetables and other high-profit crops with hired workers, even though the land they own may be small (less than 20 hectares). Such small-scale farms are eligible for farm loans in amounts equivalent to some hundred thousand to one million yen to cover vegetable farm irrigation or greenhouse construction in the case of agricultural farms and the

purchase of calves in the case of livestock farms. According to CAH, the proportion of loans is about 50:50 for agriculture and livestock farming.

Table 3. Breakdown of the CAH sub-loans (as of June 30, 2011)

	Accounts	Loan amount	
		(Unit: million guarani)	(Unit: million yen)*
First loan	12,100	234,635	4,685
Second loan	7,500	110,967	2,083
Total	19,580	345,602	6,768

Source: JICA in-file data

* Converted according to the exchange rate used in JICA in-file data for the First loan and the monthly average of exchange rates for the Second loan

3) Granting of capital investment funds to farmers organizations

This was excluded from the final project composition because there is already similar funding available from the International Fund for Agricultural Development (IFAD) and the timing coincided with the restructuring of the public funding organizations concerned.

<Program of Assistance for Medium-Scale Farmers>

Capital investment loans mainly for the mechanization of cereal production (soybean, maize, wheat and other export items) are available to all medium-scale farmers in Paraguay in amounts equivalent to some millions to some tens of millions of yen. The first loan was used to fund 656 agricultural loans, 225 livestock farming loans and 3 food processing loans. In terms of the loan amount, agriculture accounts for 73.7% (52,324 million guarani). Loans for livestock farming (purchase of calves, machinery and equipment, etc.) are not as much with 23.7% (16,819 million guarani) including both capital investment and working capital. The use of these loans has not been as active as was envisaged in the original plan.

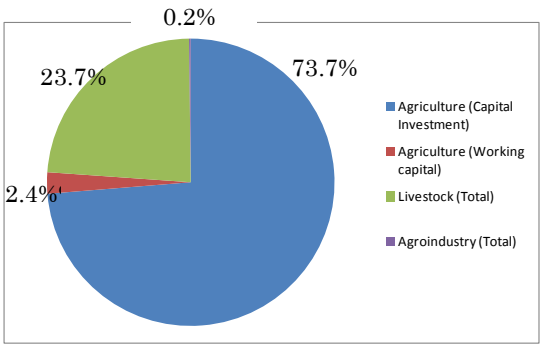

Figure 4. Breakdown of BNF financing (for the first loan)

Source: BNF document

Table 4. Breakdown of the BNF sub-loan (as of June 30, 2011)

	Accounts	Loan amount	
		(Unit: million guarani)	(Unit: million yen)*
First loan	884	70,976	1,925
Second loan	55	7,743	145
Total	939	78,719	2,070

Source: JICA in-file data

* Converted according to the exchange rate used in JICA in-file data for the First loan and the annual average of exchange rates for the Second loan

3.4.2 Inputs

3.4.2.1 Project Costs

The actual project cost of 16,153 million yen was within the plan (98%) of 16,480 million yen. The actual local currency portion of the project cost increased to 682,732 million guarani (233%) from the plan of 292,940 million guarani. In yen terms, the local currency portion was 14,213 million yen or 87% of the planned 16,244 million yen. This is due to the dramatic drop in the value of the Paraguayan guarani against the Japanese yen (1 guarani was ca.0.06 yen at the time of project examination but the simple average during the loan period was 1 guarani = ca.0.02 yen.)

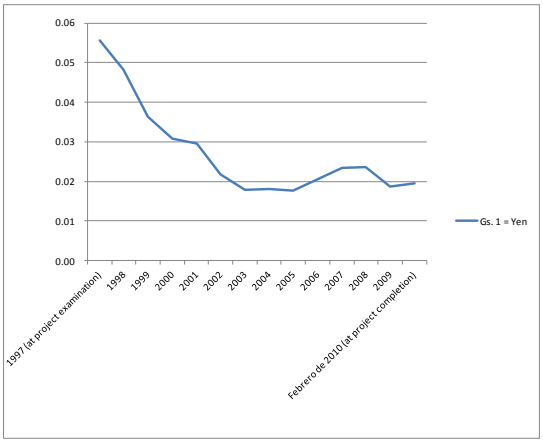

Figure 5. Exchange rate of the guarani against the yen

Source: OANDA "Historical Exchange Rates"

As was described in the section "Outputs," the project composition was modified and the project cost after modification of the outputs was re-planned following a re-allocation of the ODA loan L/A amount. The original project planned (before the modification of the project composition), the finalized L/A allocation and the actual project cost are compared in the table below, itemized by project components.

Table 5. Comparison of the planned and actual project costs

(Unit: million yen)

	Plan			L/A allocation (Final)	Actual			Difference
	ODA loan	Paraguay Gov't	Total (a)		ODA loan	Paraguay Gov't	Total (b)	(b - a)
Small-scale farm assistance								
1) Production platform strengthening and small-scale infrastructure improvements	2,414	522	2,936	6,660	5,105	2,483	7,588	4,652
2) Granting of farm loans for small-scale farms	3,468		3,468	4,735	4,686		4,686	1,218
3) Granting of farm loans to farmers organizations	998		998	0	0		0	-998
Sub-total	6,880	522	7,402	11,395	9,791		12,274	4,872
Medium-scale farm assistance (granting of farm loans)	8,193		8,193	2,000	1,925		1,925	-6,268
Consulting	236		236	1,979	1,940		1,940	1,704
Contingency	2169	433	649	151	14		14	-635
Total	15,525	955	16,480	15,525	13,670	2,483	16,153	-327

Source: Project examination documents, JICA in-file data

3.4.2.2 Project Period

The actual project period of 132 months (February 1999 to February 2010) far exceeded the plan of 72 months (February 1999 to February 2005) (183% of the planned period). As was mentioned earlier, the progress had been a mere 22% when the project period was extended. At that point in time, hardly any progress was observed in the agricultural extension, road improvements and drinking water supply. Due to the slow progress in project execution, the deadline for disbursement was extended twice (in 2005 and 2009) as detailed in Table 6. In conjunction with the agreed extension of the project period, a Project Management Unit (*La Unidade de Gerenciamiento del Proyecto* – UGP) was created within the MAG reporting directly to the Minister and a Presidential Decree dated December 27, 2004 was promulgated, providing for preferential allocation of the

local currency budget to the project. After these efforts, the project was implemented generally as re-scheduled.

Table 6. Yearly progress of the execution of the sub-projects (loan amounts unit: million guarani)

year	Agricultural extension	Road improvements	Drinking water supply	Small-scale farm loans	Medium-scale farm loans
	(2003-2009)	(2008-2010)	(2007-2010)	(2002- /incl. Second loan)	(2000- /incl. Second loan)
1999 Feb	L/A in force (project start)				
2000					15,807
2001					20,430
2002				12,215	18,319
2003	15			27,731	10,094
2004	5			34,821	360
2005	Disbursement deadline extended (for 4 years to February 2009)				
	20			37,362	2,151
2006	21			30,323	415
2007	59		26 locations	28,932	38
2008	46	212.7 km	53 locations	59,438	3,362
2009	Disbursement deadline re-extended (for 1 year to February 2010)				
	Technical verification of 35 of the above model farms	156.45 km	82 locations	46,824	6,969
2010		37.78 km	5 locations	51,229	628
2011 June				16,727	146
Total	166 model farms	406.93 km	166 locations	345,602	78,719

Source: JICA in-file data

The major causes of the delay include the following:

(1) The project consisted of multiple project components and involved multiple implementing agencies (five components to be implemented by six agencies). There was no strong leading body that could perform overall supervision and coordination.

(2) Preparatory tasks took a much longer time, as exemplified by the completion of the operation manual for the small-scale infrastructure improvements as late as in December 2002.

(3) At an early stage of the project, budgetary constraints on the part of MAG prevented full appropriation of the local currency funds required for the implementation of the production platform strengthening. This also affected the small-scale infrastructure improvement sup-project.

In addition to the above, the following problems, though unrelated to each other, prevented smooth execution of the project in the implementation stage:

- Changes in the project plans due to changes in the MAG ministers
- Sites for rural road improvements and drinking water supply were selected before the model farms were selected. It was difficult and time-consuming to find suitable candidate communities for model farms at the already-decided project sites.
- The long process of tender and procurement for the small-scale infrastructure improvement and construction work caused delays and suspensions during the rainy season.
- MOPC chose to use national public tender rather than international tender on the grounds that the latter would require more complicated procedures. But the application of the JICA guidelines on national public tender particularly on the maximum value allowed for a contract resulted in as many as 48 separate contracts for the construction work for 400 kilometers, which made it very difficult to manage the work.
- The procedures and change-over that became necessary as a result of the change in consultants added an extra burden.
- Initially there was no JBIC office in Paraguay and a long time was required for procurement and other services. The merger with JICA made it possible for the JICA local office to handle the ODA loan tasks and the communication in project management has become smooth.

As discussed above, this project experienced modifications of the planned outputs in the course of project execution, and the originally intended impacts were not necessarily obtained. However, the project with its final composition as was agreed between the two governments in consideration of the project feasibility was duly realized. Although the project cost was within the plan as modified, the project period was significantly exceeded, and therefore the efficiency of the project is fair.

3.5 Sustainability (Rating: ②)

3.5.1 Structural Aspects of Operation and Maintenance

< Program of Assistance for Small-Scale Farmers >

1) Strengthening of production platform and improvement of small infrastructure

(1) Agricultural Extension (Sub-project of Model Farms)

The model farm sub-project is operated by the Agrarian Extension Bureau (*La Dirección de Extensión Agraria* – DEAg) of MAG. As of this writing, DEAg continues to provide technical assistance to about ten of the model farms, based on the cooperative framework with UGP in the

monitoring of the model farms and Technical Assistance Project related to ODA loans. For the model farms other than these ten farms, assistance continued in the form of telephone consultations to help solve problems. Thus, the follow-up technical assistance by DEAg to the model farms is rather limited in scale. This is partly due to the fact that the extension service officials of DEAg are currently engaged in the MAG's Food Production Promotion Program; a more fundamental issue is the rather weak strength of DEAg as a public service entity.

Because of budgetary constraints, a high percentage of DEAg's field officials engaged in assistance to small-scale farms are contract employees. When their contract term expires, the technical assistance to the farms that they were in charge of also ends. Continuity of the assistance is a serious problem. Similarly, the use of outside resources in the course of the project execution has left the adverse after-effect of deterring sustainability in the post-project period. The SAPI (Special Assistance for Project Implementation) that was made for this project between October 2005 and February 2006 pointed out the problem of insufficient capacity for technical assistance and, following its recommendation which is to strengthen the implementation system, 30 consultants were newly retained. As a result, effective technical assistance was extended in the project implementation stage, but with the project completion, these highly qualified personnel left the scene and the project was faced with the problem of uncertain continuity about the system of assistance to the model farms. DEAg in recent years is hiring new recruits to increase its extension staff. There are indeed more officials now but most of them lack the actual technical background. Capacity development is required to enable them to render effective agricultural extension services to the farmers.

(2) Improvement of Rural Roads

According to an explanation by MOPC, the ministry in Asuncion is responsible for the overall supervision of the project and its regional offices responsible for the project area look after the maintenance and repair of the roads that were improved by the project. In reality, neither integrated maintenance practice nor monitoring of the work done by regional offices is carried out by the ministry in Asuncion. Regional offices, in turn, are occupied with responses to emergency situations because most of the rural roads are unpaved and impassability is almost a daily event. The repair of unpaved roads has higher priority in the work schedule than the maintenance of already improved roads. The regional offices simply lack the human resources required to carry out scheduled maintenance of the roads that have been improved by the project.

(3) Supply of Drinking Water

The drinking water supply systems installed by the project are operated and maintained by the Sanitation Committee that is created in every community of the project area. Key committee members include: chair, vice-chair, secretary, treasurer and facilities manager. SENASA conducts

annual monitoring of the operation and maintenance of the communities.

2) Granting of capital investment funds to small-scale farms

A Project Implementation Unit has been formed within CAH, which continues to manage a revolving fund. The Project Implementation Unit consists of teams for: “Monitoring and Management”, “Accounting and Finance”, and “Agricultural Planning.”

< Program of Assistance for Medium-Scale Farmers >

BNF had experienced financial difficulties and was restructured in 2003. Recovery of its competitive strength was pursued by down-sizing of its operations and the introduction of private financial institution knowhow. Three divisions formerly known as Agriculture, Development and Commerce were regrouped into one Operation Division and this project component is handled by the Loan Committee created within the Operation Division. The revolving fund is managed today by the streamlined organization.

3.5.2 Technical Aspects of Operation and Maintenance

< Program of Assistance for Small-Scale Farmers >

1) Strengthening of production platform and improvement of small infrastructure

(1) Agricultural Extension (Sub-project of Model Farms)

DEAg is currently conducting a monitoring survey of the sampled model farms with regard to agricultural extension continuity, capital investment, credit access and other aspects. However, as discussed earlier with respect to its organizational strength, the dominant proportion of contract employees involved resulted in poor continuity in assistance and the less-than-sufficient technical background of the newly-recruited officials poses a technical challenge to DEAg’s effort to continue providing technical assistance to small-scale farms

(2) Improvement of Rural Roads

The roads improved by the project are either gravel- or stone-paved. The gravel pavement requires continuous maintenance work with a frequency of, say, once every six months. For such maintenance of the gravel pavement, four motor graders (road leveling machines), three trucks, two 30,000-liter fuel tankers, six 10,000-liter water tankers, twenty 6-cubic meter dump trucks, nine backhoes (hydraulic shovels), four tamping rollers, seven power shovels and three excavators (hydraulic shovels) were granted under the project. The machinery and equipment have been distributed to the regional MOPC offices in the project areas. In reality, they are used more often for the repair of unpaved roads requiring more urgent attention than for the paved roads completed under the project. According to MOPC, there are no problems regarding the technical capacity of the employees of the regional offices to maintenance the roads.

(3) Supply of Drinking Water

With respect to the operation and maintenance of the drinking water supply facilities granted under the project, SENASA provided the local Sanitation Committees in the project communities with full consulting on the operation, maintenance, tariff management, etc., within the framework of the project. This continues to function effectively. Any problems with the drinking water supply system that are too difficult for the Sanitation Committee to address by itself are communicated to SENASA, which provides technical support for the problems. An interview with one of such Sanitation Committees revealed that SENASA's technical support was highly appreciated. It is thus believed that SENASA's technical level is sufficient to ensure effective maintenance of the facilities.

2) Granting of capital investment funds to small-scale farms

CAH had no experience of handling funds as large as the ODA loans and had to amend its operations manual. However, insufficient credit management by CAH was one of the reasons for the non-performing loan problem, in addition to the circumstances peculiar to farm loans and the softening of the loan terms that was allowed after the project start. A representative of CAH admitted that better preparations should have been done for the project implementation in terms of capacity building on the one hand for CAH officials in providing financial services and, on the other, for the borrower farms in the fundamental skills of drawing up realistic repayment schedules and keeping books. Based on these experiences, CAH is now addressing the non-performing loan problem through the rescheduling of loans for borrower farms and the payment of debt collection bonuses to its employees.

In Paraguay, even now, only about 18% of farms have access to credit. CAH is trying to improve the situation by softening the loan terms with a view to providing as many small-scale farms as possible with modest amounts of loans. As a result, the annual income, land ownership and other loan prerequisites that hardly any small-scale farms were able to meet have been softened. The maximum loan amount per farm has been brought down from US$40,000 to Gs.50 million (ca. one million yen). The maximum repayment period has been shortened from 7 years to 4 years because inexperienced farmers find it difficult to draw up realistic repayment schedules.

< Program of Assistance for Medium-Scale Farmers >

BNF monitors the borrower farms through periodic visits by technical experts. According to BNF, the monitoring survey has found no particular problems.

3.5.3 Financial Aspects of Operation and Maintenance

< Program of Assistance for Small-Scale Farmers >

1) Strengthening of production platform and improvement of small infrastructure

(1) Agricultural Extension (Sub-project of Model Farms)

Currently, model farms are monitored to the extent the MAG budget for this is available. The budget for model farm monitoring was secured while the project was in progress. But in 2011 after the completion of the project, the budget is only sufficient to cover about ten farms, since MAG must allocate funds to Technical Assistance Project related to ODA loans.

Table 7. MAG budget for the project (last 3 years)

Year	Budgeted amount*1		Major uses
	(Unit: million guarani)	(Unit: million yen)*2	
2009	1,256	24	Monitor 166 model farms; technically verify 35 model farms
2010	1,160	21	Monitor, technically assist and train 66 model farms
2011	1,363	26	Farm community development through Technical Assistance Project related to ODA loans; improve small-scale farm access to credit (6 pilot territories, 10 model farms)

Source: MAG

*1 Includes budget for monitoring of all project components under MAG's jurisdiction

*2 Annual average exchange rates: 2009 (¥1 = Gs.53.24), 2010 (¥1 = Gs.54.28), 2011 (¥1 = Gs.52.61)

(2) Improvement of Rural Roads

As was mentioned in the section referring to the organizational and technical aspects, the regional offices of MOPC are occupied with emergency repairs, which use up a large portion of the financial resources available to them. According to an MOPC regional office, maintenance work on unpaved roads is carried out in addition to such emergency repairs, to the extent there is the budget available to cover the fuel costs of the earthmoving machinery. Thus, there is hardly any budget left for the maintenance and repair of the roads that were improved under this project, and no scheduled maintenance is possible. According to MOPC, a road maintenance program will be implemented under MOPC supervision in four departments of the country using an Inter-American Development Bank loan and also outsourcing of the road maintenance work to the private-sector is under consideration. The roads improved by this project will be partly covered by these programs.

(3) Supply of Drinking Water

The operation and maintenance costs of the drinking water supply system are covered by the fees that the Sanitation Committees collect from the users. The fees vary slightly from one community to another, but most are within the range of 10,000 - 15,000 guarani (ca.200 – 300 yen) per month per household.

2) Granting of capital investment funds to small-scale farms

As of June-end 2011, about 22% of the CAH sub-loans under the project were overdue and about 70% of them were non-performing loans with delays of over two years. To address this and other non-performing loan problems of CAH, JICA has dispatched a financial expert to help CAH improve its capacity to tackle the non-performing loan problems, and they provide assistance to solve these issues.

Table 8. Overdue problem of CAH sub-loans (As of June 30, 2011)

Delay period	Cases	Amounts overdue	
		(Unit: million guarani)	(Unit: million yen)*
Less than 3 months	159	3,416	69
3 – 6 months	148	266	5
Over 6 months – 1 year	651	926	19
Over 1 year – 2 years	1,797	3,789	76
Over 2 years	6,449	18,216	368
Total	9,204	26,613	537

Source: CAH

* Converted according to the exchange rate prevailing on June 30, 2011 (¥1 = Gs.49.52)

< Program of Assistance for Medium-Scale Farmers >

The ex-post evaluation for the Phase I of this project expressed a concern over the financial situation of BNF (before its restructuring). As was discussed in the section concerning "Organization," the Bank was reorganized in 2003 and efforts have been continuing to improve the financial soundness. As a result, the non-performing loan ratio in BNF's total credit improved considerably from approximately 60% prior to the restructuring to about 1.3% in 2012. BNF enjoys sound financial conditions as the indices in the table below show. According to BNF, there are no non-performing loans in the outstanding sub-loans.

Table 9. BNF financial indices (2009 - 2010)

Index	2009	2010
Liquidity ratio	108%	108%
Non-performing loan ratio	2.28%	2.09%
Profitability:		
Return on assets (ROA)	2.24%	2.25%
Return on equity (ROE)	27.56%	21.68
Net income (million guarani)	55,675	56,069
Net income (million yen)*	1,046	1,033

Source: BNF

* Annual average exchange rates: 2009 (¥1 = Gs.53.24), 2010 (¥1 = Gs.54.28)

3.5.4 Current Status of Operation and Maintenance

< Program of Assistance for Small-Scale Farmers >

1) Strengthening of production platform and improvement of small infrastructure

(1) Agricultural Extension (Sub-project of Model Farms)

As was reviewed in "3.2 Effectiveness," many farms in the model farm sub-project communities continue to practice the techniques introduced under the project. According to UGP, the model farms understand the effectiveness of the transferred farming techniques, and most farms continue to apply the soil tilling and green manure techniques, in particular. A survey of DEAg local agencies showed that an average of 14 farm households in the eleven project communities continued to practice the techniques. This is a very high percentage, given that an average of 15 farm households in each community participated in the project. Meanwhile, marginal farms find it difficult to finance the initial investment required for the introduced techniques (purchase of improved seeds, agricultural lime, chemical fertilizers, agricultural chemicals, etc.). In conjunction with the aforesaid problem of access to credit, this remains a challenge for the further extension of the techniques to nearby farms.

(2) Improvement of Rural Roads

The gravel pavement that was mainly specified for the road improvement under the project requires periodic maintenance work such as gravel refilling and post-rainy season damage repairs in order to keep the roads in good condition. However, such maintenance work has not been done to the fullest extent due to the human and budgetary resources problems of the MOPC regional offices. Our site visit revealed that some gravel-paved roads had ruts from heavy trucks. In rural areas large trucks carry firewood, which is the major source of fuel, and agricultural products. Roads where these trucks run even during periods of long rainfall get rutted. The beneficiary survey showed that, perhaps because the roads were relatively new, many respondents felt that the road conditions were good so far. Of the 25 households surveyed, 8 (32%) replied the road conditions were "Very good," 11 (44%) "Good," 5 (20%) "Bad" and 1 (4%) "Not applicable."

(3) Supply of Drinking Water

According to SENASA data, all the drinking water supply facilities are in operation and 18 of the 166 systems were experiencing insufficiency in the quantity of well water. Our site visit confirmed that all systems were operating free of trouble almost without exception (one intake water well suffered occasional turbidity). The beneficiary survey conducted in relation to the Sanitation Committee in four communities found that all agreed their drinking water supply systems were either "Very good" or "Good" (50% each).

2) Granting of capital investment funds to small-scale farms

While non-performing loans remain a problem as mentioned earlier, the revolving fund is utilized

actively. CAH is actively engaged in the utilization and management of the Second Loan by, for example, entering into a strategic alliance with a juice processing company and extending capital investment loans to fruit growing farmers.

Table 10. CAH revolving fund (As of June 30, 2011)

Item	Amount (Gs. millions)
ODA loan disbursement	234,635
Recovery of the principal of the First Loan	202,022
Recovery of the principal of the Second Loan	22,276
Total Revenue	**458,933**
Loans based on the First Loan	234,635
Loans based on the Second Loan	110,967
Repayment of the ODA loan principal	37,882
Total Expenditures	**383,484**
Balance	**75,449**

Source: CAH

CAH has cooperated with MAG again in Technical Assistance Project related to ODA loans and has developed eight financial products[10] directed towards marginal and small-scale farmers. CAH is also working to improve the access of marginal farmers to credit. It developed on its own a community based microfinance scheme called "*Banca Comunal*" (Community Bank) and conducted a trial in 2012. A *Banca Comunal* will lend an amount equivalent to some tens of thousands of yen per year to a farm and the loan is accompanied by technical assistance and education on the basics of borrowing and repaying.

<Program of Assistance for Medium-Scale Farmers>

The revolving fund has been managed successfully. In recent years, private-sector farm loans have become available at relatively low interest rates and this has slowed down the growth of the lending. Accordingly, BNF is considering lowering the lending rates. The fund has been made available in particular for the mechanization of sugar cane harvesting and other investments in agricultural equipment.

[10] (1) Family farms, (2) Marketing funds, (3) Fruit growing, (4) Cassava growing, (5) Initial investment fund for handcrafts, (6) Commercialization of agriculture, livestock farming and small-scale food processing, (7) Livestock farming, and (8) MAG-CAH joint evaluation program for family farm loans

Table 11. BNF revolving fund (As of June 30, 2011)

Item	Gs. Million
ODA loan disbursement	70,976
Recovery of the principal of the First Loan	68,622
Recovery of the principal of the Second Loan	4,148
Total Revenues	**143,746**
Loans based on the First Loan	70,976
Loans based on the Second Loan	7,743
Repayment of the ODA loan principal	38,103
Total Expenditures	**116,822**
Balance	**26,924**

Source: BNF

Some problems have been observed in terms of the sustainability of the model farm sub-project by MAG, road maintenance and repair by MOPC and non-performing loans at CAH. There are ongoing continued efforts by JICA on the issues involving MAG and CAH. However, unless proper maintenance is carried out on a periodic basis, the roads that have been improved by the project will deteriorate in quality and may become unusable. Therefore, the sustainability of the project effect is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of this project was to strengthen the overall competitiveness of one of the key economic sectors in Paraguay, the agriculture and livestock farming sector, by implementing various assistance programs to small- and medium-scale farms in line with the country's agricultural and livestock farming promotion policy, thereby contributing to sustained growth of the national economy and improving the standard of living of many small-scale farmers who belong to the low-income bracket. This project has been highly relevant with the country's development policy, development needs, as well as Japan's ODA policy. The project outputs that were originally contemplated were modified in the course of the implementation of the project since the project structure was found to be too complex to be realizable. In this report, the project effectiveness and impacts are evaluated after an analysis of the background and process of the modifications and on the basis of the finalized project outputs. In terms of effectiveness, certain positive outputs have been obtained in the sub-projects, agricultural extension and granting of capital investment funds. In addition, the infrastructure sub-projects that were enlarged in scale in accordance with the local needs have benefitted a wide array of beneficiaries in the project region. As for impacts, whilst the original project objective was the strengthening of the

agriculture and livestock farming sector, a greater project impact was obtained with respect to the standard of living of rural farming communities through the infrastructure sub-projects. With all these facts taken into consideration, the project effectiveness and impacts are considered to be fair. The project efficiency is adjudged fair since the project period significantly exceeded the plan even though the project cost was within the plan. The sustainability is considered to be fair because some problems are observed in the continuity of the model farms, the maintenance and repair of roads and the non-performing loans of small-scale farms. In light of the above, this project is evaluated to be partially satisfactory.

4.2 Recommendations

Recommendations as described below are submitted as a result of discussions with the concerned parties with respect to future efforts directed towards sustained development of the project effects.

4.2.1 Recommendations to the Executing Agencies

1. Institutional improvements for future assistance to marginal and small-scale farms

With a view to increasing the effects and sustainability of this project, a Technical Assistance project related to ODA loans called "Project for Improvement in Agricultural Extension and Microfinance System for Rural Development Based on Territorial Approach" is in progress with MAG and CAH as counterparts. The following points should be addressed for the future development of the Technical Assistance project:

- Statutory backing for the "territorial approach" and its positioning as MAG policy
- Further inter-ministerial and central-local governments cooperation for the promotion of the "territorial approach"
- Further collaboration between MAG and CAH to improve the access of marginal farmers to credit

2. Capacity development of DEAg extension officials

DEAg has hired new employees to enhance its extension personnel. However, many of them lack the necessary technical background and do not possess the required capacity to render technical assistance to the farmers. Human resources development programs are considered to be needed, including the planning of technical training programs and training by the counterpart extension officials to spread the technologies transferred by the project.

4.2.2 Recommendations to JICA

1. Cooperation for the improvement of access to credit for marginal farms

The community based microfinance scheme called *Banca Comunal* that CAH has developed independently and is conducting as a trial service is in line with one of the objectives pursued by the project, namely, improvement of access to credit availability for marginal farms. Positive

effects can be expected and this new scheme may be viewed as supplementary to the project. CAH has expressed an interest in receiving assistance regarding the aspects listed below. JICA's continued assistance would not only facilitate the *Banca Comunal* effort, but also reinforce the effectiveness of the project.

- Capacity development of CAH officials who will be managing the microfinance
- Organizational management of the borrower communities and improvement of their sustainability in terms of financing schemes and fund management
- Development of medium- to long-term financing for marginal farms after they "graduate" from the microfinance level

4.3 Lessons Learned

Lessons learned from the execution of the project are summarized as below as a result of discussions with the concerned parties.

1. Construction of an adequate project execution structure

The project was an integrated large-scale project designed to address a variety of problems in the agriculture and livestock farming sector. It was the first inter-ministerial project for the Paraguayan government. But the rather weak project execution structure at the early stage led to difficulties in the necessary coordination among the parties involved and forced the project to suffer delays and partial modifications of the project composition. It should be admitted that the partial modifications precluded realization of the "benefits to be achieved through the integrated nature of the project" which was the main focus of the project, to the extent as had been originally intended. It should be pointed out, however, that a Project Management Unit (UGP) was created and other improvements were made in conjunction with the extension of the project period and thereafter the project (as modified) was implemented generally as planned. One lesson learned from the foregoing is that it is very important to "construct from the very start a project execution structure adequate enough to pursue the project approach successfully."

2. Use of external resources with attention to autonomous development

In the execution of the model farm sub-project component, 30 external consultants were retained to make up for the deficiency in the human resources pool of DEAg agricultural extension service employees to render technical assistance to small-scale farms. This resulted in effective technical assistance during the project implementation phase, but with the project completion, the problem of the limited availability of highly-skilled officials reemerged, posing major concern over the continuity and sustainability of DEAg's technical assistance and follow-up monitoring. The lesson learned from this experience is that when external resources are to be used, a scheme should be devised to ensure that the project will eventually continue to develop and evolve in a self-reliant manner. By way of a specific example, inexperienced extension employees may be required to accompany retained external experts to the site to be trained on-the-job. Such a scheme would contribute to keeping the transferred

technology within the DEAg organization even after the project is over.

3. Verification and provision of technical assistance to the host country agency handling the two-step loan

As a prerequisite to the project launch, revision of the operation manuals of CAH was made with the recognition that it would be necessary for the efficient operation of fund management and lending in the two-step loan framework. But CAH simply lacked experience in handling such a huge amount of funds as the ODA loan. The agency was unfamiliar with the phenomena unique to agricultural loans, softened the loan terms and was not fully capable of credit management. For these reasons, the problem of non-performing loans emerged. Based on this experience, it was mentioned that, as prerequisites to the project implementation, CAH should have had a higher capacity for financial operations and the borrower farmers should have had basic knowledge of repayment plan preparation and bookkeeping. The lesson learned is that in the formation and designing of future projects, technical assistance such as that described above for two-step loan handling agencies should be considered.

4. Definition of loan schemes consonant with the project objectives

The loans to small-scale farms under this project were initially of rather tight conditions in light of the operational capacity of the CAH. As a result, many of the marginal farms envisaged in the model farm sub-project failed to qualify for a loan and the project could not reach out to the originally intended beneficiaries. More specifically, few marginal farms were able to meet the loan conditions of: a minimum annual income of ten million guarani (ca. 200,000 yen), clear evidence of land ownership, and a clean record of loan performance. Most of the CAH loan users were thus relatively well-to-do farms and large-scale farms. The fact that the small-scale farm loans under this project failed to reach out to the originally intended beneficiaries suggests that the lending conditions should have been soft enough for marginal farmers to satisfy them. The lesson learned is that, while attention must be paid to good credit management to prevent the occurrence of non-performing loans, necessary technical assistance should be rendered in light of the front-line realities, and the lending conditions should be adjusted to such adequate levels so as to help achieve the project objectives.

[End of text]

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
(1) Project Outputs	<Small-scale farm assistance project> 1) Production platform strengthening and small-scale infrastructure improvement (1)Agricultural extension ・Model farms: 750 households (2) Farmers organization assistance ・New farmers organizations: 90 (3) Road improvement ・Farm road improvement: total 400 kilometers (4) Drinking water supply system improvement ・Irrigation and drinking water supply: 140 locations 2) Granting of capital investment funds to small-scale farms ・Total credit line: 3,468 million yen 3) Granting of capital investment funds to farmers organizations ・Total credit line: 998 million yen	<Small-scale farm assistance project > 1) Production platform strengthening and small-scale infrastructure improvement (1) Agricultural extension ・Model farms: 166 households (2) Farmers organization assistance ・Dropped from the project (3) Road improvement ・Farm roads and rural roads improved: total 407 kilometers (4) Drinking water supply system improvement ・Drinking water supply: 166 locations 2) Granting of capital investment funds to small-scale farms ・Total amount loaned: 4,686 million yen 3) Granting of capital investment funds to farmers organizations ・Dropped from the project
	<Medium-scale farm assistance project > ・Total credit line: 8,193 million yen	<Medium-scale farm assistance project > ・Total amount loaned: 1,925 million yen
(2) Project period	February 5, 1999 – February 5, 2005 (72 months)	February 5, 1999 – February 5, 2010 (132 months)
(3) Project cost Amount paid in Foreign currency Amount paid in Local currency Total Japanese ODA loan portion Exchange rate	 236 million yen 16,244 million yen (292,940 million guarani) 16,480million yen 15,525 million yen 1 guarani＝0.055 yen (As of January 1997)	 1,940 million yen 14,213 million yen (682,732 million guarani) 16,153 million yen 13,670 million yen* 1 guarani＝0.02 yen (Arithmetic average of the lending period, February 1999 to February 2010) *Unused amount of the loaned amount: 154 million yen