Republic of Peru

Ex-Post Evaluation of Japanese ODA Loan Project
"Sierra - Natural Resources Management and Poverty Alleviation Project (III)"

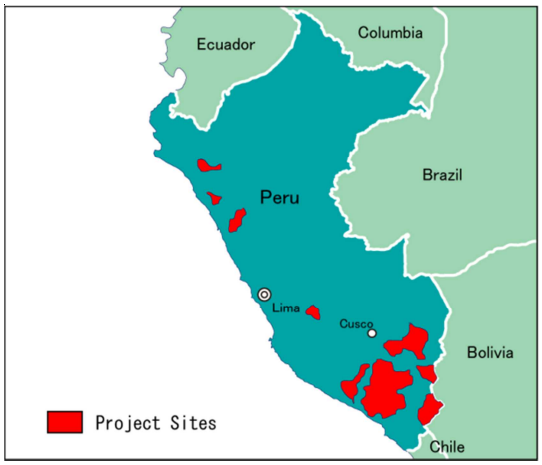
External Evaluator: Hajime Sonoda
Global Group 21 Japan, Inc.

0. Summary

This Project was implemented for the purpose of increasing the agricultural productivity in Peru's Sierra where poverty is prevalent while trying to ensure environmental conservation. This purpose was consistent with the development policies of the Government of Peru and there was an urgent need for this type of project to be implemented in Peru. It also conformed to Japan's ODA policy and its overall relevance was high. Only 84% of the project budget was executed, partly because of the suspended disbursement of the Japanese ODA loan and the output in terms of irrigation facilities did not reach the original target. On the other hand, because of the extension of the loan period to accommodate the longer implementation period than planned, the efficiency of the Project is evaluated to be fair.

In total, some 48,000 households in 1,683 villages benefited from the Project. Some positive impacts have been made on the economic activities and daily lives of the benefited farming households through improved levels of environmental conservation and agricultural productivity. As the achievement rate of the planned target of the Project in terms of the area coverage is estimated to be 70 – 80%, the effectiveness of the Project is judged to be fair. There is some concern regarding future funding for the executing agency and the sustainability of communal fund management as well as tree seedling production by the farmers who benefited from the Project. While, although the maintenance situation of the newly constructed facilities is not perfect, their functions are generally sustained. Based on the above findings, sustainability of the Project is fair. In light of the above, the Project is evaluated to be partially satisfactory.

1. Project Description



Map of the Project Sites

Soil conservation works (Slow formation terrace: Ancash)

1.1 Background

The Sierra in Peru which accounts for 30% of the national land area receives rainfall predominantly in a three month period, making the land vulnerable to landslides, debris flows and loss of the top soil in these months. Over a period of many thousand years, the indigenous people of Peru developed terraces covering some 1 million ha of steep slopes and utilised complex irrigation systems to farm in the Sierra. However, these traditional skills were lost during and after the Spanish rule (1532 - 1821) and many of these terraces were abandoned. In more recent years, the increase of the population resulted in the expansion of farmland by cutting down trees, resulting in a vicious cycle of soil loss, depletion of water resources and declining agricultural productivity. Consequently, farming communities in the Sierra were impoverished and many rural inhabitants who could no longer sustain their lives through agriculture moved to urban areas from the 1950's to the 1980's. In the 1990's, the remaining farmers were engaged in traditional extensive farming in isolated settlements along the steep terrain amidst a harsh natural environment. The productivity was low and poverty was both severe and widespread.[1]

In 1981, the Government of Peru established the Office of the National Programme for Water Resources and Soil Conservation (El Programa Nacional de Manejo de Cuencas Hidrograficas y Conservacion de Suelos: PRONAMACHCS) under the Ministry of Agriculture for the purposes of improving agricultural productivity and conservation of the natural environment in the poverty-stricken Sierra. The PRONAMACHCS was primarily engaged in the promotion of soil conservation through terracing, and, since 1997 with the assistance of the World Bank, the scope of its activities was expanded to invest in soil conservation, small-scale irrigation and reforestation projects as well as to strengthen farmers' organizations and PRONAMACHCS in a comprehensive and intensive manner while encouraging the active participation of local farmers.[2] In November of the same year, the JICA (former OECF) offered an ODA loan of 5,677 million yen, targeting different areas from those of the World Bank, under the Sierra - Natural Resources Management and Poverty Alleviation Project (hereinafter referred as "the Project"). Two years later in 1999, Phase 2 of the Project was implemented, followed by Phase 3 (the subject of this ex-post evaluation) in 2000. Meanwhile, the PRONAMACHCS was integrated in 2008 to the Agricultural Productivity Development Program (Programa de Desarrollo Productivo Agrario Rural; hereinafter referred to as the "AGRORURAL"), a newly established body in the Ministry of Agriculture.

[1] As of 1995, 10.5 million, accounting for nearly half of Peru's population, were classified as poor while two-thirds of the population in the Sierra were classified as poor, half of which were classified as extremely poor (illiteracy rate of more than 40%, school enrolment rate of less than 60%, sewerage coverage of 1 - 17%, water supply coverage of 9 – 56%, infant mortality rate of 111 – 170 in 1,000 and agricultural population rate of 44 – 86%).

[2] In April 1997, the World Bank offered US$ 51 million under the Sierra - Natural Resources Management and Poverty Alleviation Project (P042442). This was an investment project with a consistent project period of five years targeting specified small watersheds and aiming at making local farmers develop the capacity in this period to manage their agricultural production activities by themselves.

1.2 Project Outline

The Project aimed at conserving soil, forests and water resources along with improvement of the agricultural productivity through investment in soil conservation facilities[3], irrigation facilities, reforestation to ensure the productive and sustainable utilisation of natural resources in the Sierra of Peru, thereby contributing to poverty alleviation in the said area.

Approved Loan Amount/ Disbursed Loan Amount	5,588 million yen/ 4,516 million yen
Exchange of Notes/ Loan Agreement	September, 2000/ September, 2000
Terms and Conditions	Main Loans Interest Rate: 1.7% Repayment Period: 25 years Grace Period: 7 years Procurement: General Untied Consulting Service Interest Rate: 0.75% Repayment Period: 40 years Grace Period: 10 years Procurement: Bilateral Tied
Borrower/Executing Agency	AGRORURAL (former PRONAMACHCS) of the Ministry of Agriculture
Final Disbursement	October, 2009
Main Contractor (Over 1 billion yen)	None
Consultant (Over 100 million yen)	Nippon Koei (Japan)
Related Studies	None
Related Projects	Sierra - Natural Resources Management and Poverty Alleviation Project (1997) Sierra - Natural Resources Management and Poverty Alleviation Project (II) (1999)

2. Outline of the Evaluation Study

2.1 External Evaluator

Hajime Sonoda (Global Group 21 Japan, Inc.)

2.2 Duration of Evaluation Study

The ex-post evaluation study for the Project was conducted over the following period.

Duration of the Study : October, 2011 to September, 2012

Duration of the Field Study : 16th November to 18th December, 2011

18th to 25th April, 2012

[3] During the project period, facilities to prevent soil erosion at sloping land and facilities to encourage the efficient infiltration of rainwater into the ground to increase the soil moisture level were constructed among others by local farmers who were to benefit from these facilities. See 3.4.1 for further details.

2.3 Constraints to the Evaluation Study

The target area of the Project covered 13 regions scattered throughout the Sierra of Peru. For this ex-post evaluation, as no information on the project effects generally applicable to all of the project sites was obtained, the overall project effects were inferred based on the case studies (involving site visits and a beneficiary survey involving 256 households in 13 villages) in four small watersheds located in the Ancash and Puno Regions,[4] and interviews with executing agency staff. At the time of project approval, adequate indicators or target values to quantify the project effectiveness (in terms of the environmental conservation effect and productivity improvement effect) were not set. Quantitative judgement was, therefore, attempted by the present evaluation using only the size of the land area where tangible project effects emerged.

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

3.1 Relevance (Rating: ③[6])

3.1.1 Relevance with the Development Plan of Peru

The Second Fujimori Administration (1995 – 2000) at the time of the project appraisal identified poverty alleviation as an issue of the highest priority and aimed at maintaining the social welfare expenditure at least 40% of the annual government budget. The Humala Administration inaugurated in July, 2011 also placed emphasis on poverty alleviation. It plans to increase the level of taxation on the mining sector with a view to allocating tax revenue from this source to the funding of poverty alleviation measures so that economic growth and social development go hand-in-hand.

The medium-term agricultural development plan[7] of Peru identifies three priority targets: increased international competitiveness of Peru's agricultural sector, sustainable utilisation of natural resources and promotion of the use of various inputs and services for agricultural production. It sets out a number of measures along with five policy axes (water resources management, promotion of agri-businesses, improved hygiene control and safety of agricultural products, improved technical skills of producers and management/conservation of forest resources and natural flora). The plan lists the strengthening of irrigation organizations, reforestation and soil conservation as tasks for water resources management in the Sierra. The operating guidelines prepared when the AGRORURAL was established in 2008 did not clearly specify support for the extremely poor and the conservation of natural resources, including soil conservation and reforestation, in its policy menu. However, it is planned that the new guidelines to be adopted after the revision in 2012 by the AGRORURAL will include clear reference to the need for support for the extremely poor and the conservation of natural resources in the revised policy menu.

---

[4] The beneficiary survey involved one workshop which was attended by representatives of the executing agency and benefitting farmers in each small watershed while interviews were conducted with the village head and representative of benefitting farmers. In addition, a household questionnaire survey was conducted with 171 benefitting households and 85 non-benefitting households.

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

[6] ③: High, ② Fair, ① Low

[7] Plan Estategico Multianual del Sector Agricultura 2012 - 2016

The Project, which aimed at improving agricultural productivity in the poverty-stricken Sierra of Peru while attempting to enhance environmental conservation, was consistent with the important policy issue of Peru from the time of its initial appraisal to the time of its ex-post evaluation.

3.1.2 Relevance with the Development Needs of Peru

According to data compiled by the National Institute of Statistics and Information of Peru, the poverty ratio in rural areas of the Sierra fell from 76% in 2004 to 66% in 2009 but was still higher than that of the coastal area (41%) and the Amazon are (57%). Both the income per household in rural areas of the Sierra of some 91% of the national average in 2009 and the agricultural income of some 89% of the national average in 2010 were lower than those of the coastal area and the Amazon area. There are still many inclined areas experiencing continuous soil erosion even today, and the expansion of stock farming has increased the pressure for environmental degradation in some areas. As described in 1.1 – Background, improvement of the agricultural productivity while ensuring environmental conservation is a major challenge for the poverty-stricken Sierra, making the implementation of the present Project highly necessary. The Project was implemented in high priority areas from the viewpoint of poverty alleviation and environmental conservation in those districts classified as below the extremely poor level in the Sierra but not included in the World Bank project or the preceding two yen loan projects.

The overall picture of the Sierra is that while poverty has been decreasing, the local poverty ratio is still high when compared with other parts of Peru. Meanwhile, the level of agricultural income is low and environmental conservation is essential in the Sierra, indicating that there is still a strong development need for projects similar to the present Project.

3.1.3 Relevance with Japan's ODA Policy

Having highly evaluated the reform efforts of the Fujimori Administration to achieve sustainable growth and poverty eradication in the 1990's, Japan actively provided ODA to match the diverse development needs of Peru while keeping the need for the better quality and quantity of ODA in mind. The JICA's Country Assistance Programme for Peru (2000) identified four priority areas for Japanese assistance, i.e. poverty alleviation, social sector assistance, economic infrastructure development and environmental conservation. The Project did, therefore, conform to Japan's ODA policy.

Based on these observations, 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.

Absorption terraces *

Infiltration ditch (Puno)

Slow formation terrace (Puno)

Irrigation channel (Ancash)

Tree nursery (Ancash)

Pine plantation (Ancash)

(*) Taken from the web-sites of AGRORURAL. Others were provided by the Evaluator.

3.2 Effectiveness[8] (Rating: ②)

3.2.1 Quantitative Effects

The Project was implemented for the purpose of conserving the natural environment, including soil, forests and water resources, and improving the agricultural productivity. At the time of the appraisal, the Project was expected to benefit some 48,900 households in 1,060 villages through the achievement of its purpose. In reality, positive effects were produced for some 48,000 households in 1,683 villages as described below.[9] In addition to the data described above, no data that can represent the overall effects of the entire Project has been obtained.

(1) Environmental Conservation Effect

The environmental conservation effect of the Project is expected in an area of some 90,000 ha[10] due to the work outlined below. This figure represents some 93% of the originally planned figure of 97,000 ha[11].

① Construction of soil conservation works at inclined farmland (50,888 ha)

- Slow formation terraces (29,033 ha): Low stone or earth ridges are created on gently sloping land. Utilising the natural phenomenon of the top soil being slowly carried downwards on the slope by runoff water, terraces are eventually formed over a period of 5 – 10 years, substantially reducing the amount of soil loss. When the eroded soil fills up to the top of the ridge after several years, second and third ridges are created on top of the previous ridge to develop flat terraces in the end.
- Adsorption terraces (4,120 ha): These terraces are created on steep slopes with a gradient of 30% or more using narrowly spaced stone walls, etc., substantially reducing the soil loss from such slopes.[12]
- Infiltration ditches (17,735 ha): Flat ditches are dug along the contour lines on gentle or steep slopes to reduce the loss of top soil while encouraging the infiltration of runoff water into the

---

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

9 At the time of the appraisal, no appropriate quantitative indicators were established to quantify the effectiveness of the Project. For the present evaluation, areas in which positive effects have emerged are used for quantitative judgement of the effectiveness.

10 Although it would be necessary to consider the areas of soil conservation works and reforestation added by local farmers since the completion of Project and the total size of the areas where soil conservation works have not been properly maintained, it was practically impossible to accurately estimate the sizes of these areas. These areas are not, therefore, considered in the present evaluation.

11 The size of the planned area is the total of the planned area for soil conservation work (5,300 ha of adsorption terraces, 21,200 ha of slow formation terraces and 31,800 ha of infiltration ditches) and the planned reforestation area (38,690 ha) (see Table 1). For reforestation, only areas of newly created plantations were considered, not considering areas subject to forest management (replanting one year after initial planting, irrigation and other) or forest protection (construction of protective fencing at existing plantations and other).

12 While adsorption terraces offer excellent soil conservation and productivity improvement effects, they are quite expensive to construct and are unsuitable for cultivation using oxen. Because of these drawbacks, their popularity began to wane in the 1990's.

ground to increase the soil moisture and to replenish the groundwater with a view to facilitating the growth of trees and crops at the lower end of the slopes and beyond.[13]

② Reforestation (38,884 ha)

- Small to medium size forests (plantations) were created on common as well as private land. Planting was also conducted along terrace or private land boundaries to create hedges. While many of these newly created plantations are destined to become production forests of such exotic species as eucalyptus and pine, there are some cases of conservation forests being created in water source areas and areas suffering from heavy soil erosion. It has been reported that 38,884 ha of land were planted under the Project. However, this figure includes the converted figure of the number of seedlings planted to create hedges to the area.[14]

(2) Productivity Improvement Effect

The productivity improvement effect of the Project is expected to emerge over an area of some 70,400 ha due to the following reasons. This figure represents some 60% of the originally planned 117,000 ha and is primarily the result of the much lower achievement in construction of irrigation facilities than planned due to the suspended disbursement of the Japanese ODA loan (further details are given in 3.4.2- Inputs)[15].

① Area of farmland where the productivity is expected to improve due to soil conservation works (50,888 ha: It is assumed that the productivity will improve in the entire area where soil conservation works have been newly constructed.)[16]

② Area of farmland where the productivity is expected to improve due to the improvement/introduction of irrigation facilities (19,400 ha: It is assumed that the productivity will improve at 85% of the 22,800 ha due to the new irrigation facilities.)[17]

---

[13] According to a study conducted by the AGRORURAL in 2011, infiltration ditches have the effect of halving the volume of soil loss.

[14] The number of seedlings used for live hedges, etc. is converted to the standard plantation size when the same number of seedlings is planted.

[15] The size of the planned area is the total of the planned area for soil conservation (see Footnote 11) and the subject area for irrigation (22,800 ha). The degree of productivity improvement is not considered here because (i) the relevant target value was not set at the time of appraisal and (ii) actual representative values (baseline data and actual post-project data) for the entire project were unavailable.

[16] Under the Project, benefitting farmers received seeds of improved potato and grass varieties (introduction of improved crops and grass), resulting in a substantial productivity improvement. However, as the target sites were farmland where soil conservation measures had been introduced, the areas planted with improved grass and crops are not included to avoid duplication. It is also necessary to consider the total size of the areas of soil conservation works and reforestation which have been added by local farmers since the completion of the Project and the total size of the areas where soil conservation works have not been properly maintained under normal conditions. However, it was practically impossible to accurately estimate the size of these areas. These areas are not, therefore, considered in the present evaluation.

[17] Based on a study on a similar project of the World Bank, the actual area served by operating irrigation facilities is assumed to be 85% of the planned service area.

Based on the above, the productivity improvement and environmental conservation effects of the Project will emerge over an area of some 160,000ha or 76% of the originally planned some 210,000 ha.

3.2.2 Qualitative Effects

The field visits and surveys conducted in four small watersheds in Puno and Ancash confirmed the following project effects.

- Half of the soil conservation works were constructed on commonly owned farmland while the other half were constructed on private land. Some 15% of private land had new soil conservation works. While 44% of the benefitting farmers found the soil conservation works to be very useful, primarily because of better crop growth due to reduced soil loss and better water retention of the soil, 16% found them to be useful for the same reasons. The soil conservation effect of the new soil conservation works has been maintained at more than 90% of the served areas and the land is utilised for farming or stock raising. Meanwhile, some 30 – 40% of the infiltration ditches constructed on commonly owned farmland have lost part of their function due to insufficient communal maintenance work. The field visits discovered cases where the first stage of a slow formation terrace had been completed to allow cultivation on the terrace, cases where the growth of grass had improved on the land situation below an infiltration ditch and cases where the volume of spring water had become steady.

- 60% of the beneficiaries actually received seed potatoes, etc. of improved varieties and their crop yields have much increased compared to those of conventional varieties. Improved grass has led to an increase of the grass production volume. Together with an increased number and improved breeds of caws (not part of the Project), the production volume of milk has much increased.

- Half of the reforestation was conducted at commonly owned land while the remaining half was conducted at private land. The average reforestation area was some 37 ha per village or some 2 ha per benefitting farmer. 80% of these plantations aim at the development of production forests using such exotic species as eucalyptus and pine (predominantly eucalyptus). Because of the strong demand for timber, etc., eucalyptus is preferred as it can be harvested several times over a period of 20 years through regeneration by sprouting. The positive effect of frost damage prevention as a result of an improved micro-climate was reported. 58% and 17% of the beneficiaries evaluated the reforestation work as “very useful” and “useful” respectively. The number of tree seedlings planted by the beneficiaries of the Project in the last 10 years is four times more than the number of tree seedlings planted by non-beneficiaries and the beneficiaries possess three times more trees today than non-beneficiaries.

- While most of the tree nurseries are still in operation and producing seedlings, their actual production volume has dropped to 50 – 70% of the volume produced in the project period. Since the completion of the Project, the production ratio of local species of which the seeds are easier to obtain has increased.

- As far as the increase and stabilisation of the agricultural productivity and production volume are concerned, an increase and stabilization of the productivity and production volume of the main crops, primarily potatoes, and grass has been observed, presumably due to the reduced level of soil loss and retention of soil moisture by the soil conservation works, frost damage mitigation by planted trees and hedges[18] and introduction of improved varieties.

- Irrigation has greatly contributed to improving the productivity of crops and grass. The use of irrigation water has boosted the productivity increase of potatoes by more than 50%. There are cases where intercropping has become viable. There is also the case of the cultivation of grass using an improved variety.

- Examples of the Project's support for women's enterprise initiatives include the production and marketing of seed potatoes of a certified improved variety and the production and marketing of such dairy products as cheese and yoghurt. Guidance was provided on the culture of cuy and the production of handicrafts but has not yet produced any successful businesses.[19] Thus, the effect to local farmers' income is limited.

The degree of the actual manifestation of these effects varies depending on the natural conditions and other factors in each locality. The findings of the field survey suggest that the expected effects have generally been achieved. The Project involved a model project (micro-watershed management) under which large amounts of inputs in terms of study, training and strengthening of organizations were made in three specified micro-watersheds. These extensive efforts appear to have produced such good results as the formation of project contents which are better suited to the local natural conditions, higher levels of knowledge, skills and motivation among farmers and energetic farmers' organizations.

3.3 Impacts

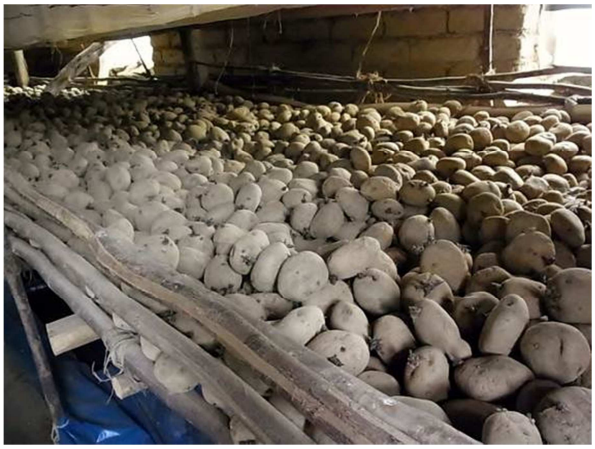
3.3.1 Intended Impacts

(1) Impacts on Poverty Alleviation

The Project was expected to contribute to increased income and poverty alleviation among the benefitting farmers, and reduction of the migration of farmers to urban areas. The findings of the field visit and the household survey indicate the following relevant impacts.

[18] Compared to non-benefitting farmers, benefitting farmers experienced 10 – 20% less frost damage to their potatoes.

[19] Cuy is a type of rodent (guinea pig), the meat of which is eaten in the Andes. The breeding of such rodents is often difficult in Puno because of its unfavourable cold climate. Another example of a less successful attempt was the plant dyeing of alpaca wool as a type of handicraft but the lack of marketing outlets made continued production impossible.



Production and sale of improved seed potatoes (Ancash)

Plant dyed alpaca wool (Puno)

- The agricultural and livestock production volumes have increased and become steady. The contribution of the newly introduced improved varieties is particularly evident. However, agriculture and livestock farming in the Sierra are still subject to various constraints such as insufficient water supply, use of improved varieties and crop diversification, damage by diseases and pests and an unfavourable climate, etc., and the overall situation has not changed much.
- The benefitting farming households have slightly increased their dependence on agriculture and stock farming for their livelihood compared to the non-benefitting farming households. One example is the substantial increase of stock farming in Puno where the benefitting farming households possess more cows of an improved variety.[20]
- The ratio of marketed agricultural products among the benefitting farming households is higher than that of the non-benefitting farming households. The actual figures based on weight are 51% (35% in the case of non-benefitting farming households) for potatoes and 49% (30% in the case of non-benefitting farming households) for barley.
- Reforestation has made it easier for local residents to be self-sufficient in regard to the supply of firewood and timber.
- The understanding of such resources management methods as soil conservation and reforestation and their importance has greatly improved among local residents. Some benefitting farmers have started to construct soil conservation works and to plant seedlings on a self-help basis in order to continue the activities introduced under the Project.
- The soil conservation committee had accumulated experience of joint work, boosting the confidence of local farmers.[21]

[20] It is considered that the Project had indirect contribution to this change through introduction of improved grass and trainings on cattle raising, while the improvement of caw was not made through the Project.

[21] Refer section 3.4.1 Output.

- While the income of the benefitting farmers has increased by 30 – 40% in 10 years, there is no significant difference between the benefitting farmers and non-benefitting farmers in terms of the increase rate.
- No confirmation has been made by the present evaluation of a decline of the population outflow from rural areas to urban areas for seasonal or permanent work.
- The main areas of contribution by the Project as perceived by the beneficiaries are listed below (ratio of beneficiaries acknowledging important contributions).

  - Increase of forest areas and forest trees (73%)
  - Increase of joint work and mutual help among villagers (61%)
  - Enrichment of water regime in general and increase of soil moisture (43%)
  - Decrease of soil erosion (32%)
  - Increased agricultural production (27%)
  - Increased sales to the agricultural market (27%)

There are villages in the Sierra which receive hardly any support from the local government or NGOs and where the AGRORURAL is the only body providing direct support for farmers. The activities under the Project and those by the AGRORURAL are truly significant for these villages. However, as the activities of the AGRORURAl primarily focus on soil conservation, irrigation and reforestation, they only meet part of the diverse needs of local farmers. To enable these farmers to be fully self-reliant, continuous as well as broad support is deemed to be essential, enlisting the collaboration of local governments and other government organizations. The poverty ratio in the Sierra has been showing a declining trend in recent years but no data is available to estimate the degree of contribution by the Project in this regard.[22]

(2) Impacts on Conservation of the Natural Environment

It was expected that the Project contributes to conservation of natural environment in the Sierra through soil conservation and reforestation. The AGRORURAL has been implementing such activities in small watersheds over a period of 20 years, positively contributing to the change of the natural landscape by conserving and increasing vegetation. A field visit to these watersheds revealed such landscapes as a series of reforestation sites (plantations) by the AGRORURAL over the hillsides as well as peak areas (Ancash) and scattered reforestation sites by the AGRORURAL over vast bare hillsides (Puno). In fact, areas where trees were planted in 13 regions targeted by the Project account for 35% of the gross reforestation area from 2001 to 2009.

[22] According to the National Institute of Statistics and Information, the national poverty ratio fell from 49% in 2004 to 35% in 2009. During the same period, the poverty ratio in the Sierra fell from 76% to 66%. This figure, however, was higher than those of the coastal area (41%) and the Amazon (57%). In 2009, some 10 million people were classified as poor in Peru, half of whom lived in the Sierra. No data on trends of poverty ratio by districts targeted by the Project were obtained.

Apart from reforestation work of which the contribution to the conservation of the natural environment is apparent, the benefitting farmers have reported other positive effects of the Project-related activities. These effects include a decline of soil erosion due to soil conservation works and improved conservation of the natural environment due to the retention of water in the soil, in turn resulting from infiltration ditches. However, the case study data indicates that the newly conserved area by the Project is less than 10% of the total area of these watersheds. These figures suggest that the Project produced only limited impacts on the conservation of the natural environment in these small watersheds.

Site not yet planted (Puno)

Planting of eucalyptus on a steep slope (Puno)

3.3.2 Other Impacts

While small warehouses, etc. were constructed to support tree nursery operations, all of the required land was offered by the benefiting farmers free of charge. Due to the fact that the activities under the Project are in small scale and aimed at conserving natural environment, negative impacts on the environment and other negative impacts, such as the forced resettlement of local residents were not observed.

Based on the above results, it is concluded that certain effects on environmental conservation and increased productivity is observed. Their expanse reached some 76% of the planned quantities. As no significant impacts were observed in terms of poverty alleviation and environmental conservation, the overall effectiveness and impacts of the Project are judged to be fair.

3.4 Efficiency (Rating: ②)

3.4.1 Outputs

(1) Target Areas and Target Villages

The initial scope of the Project covered 173 small watersheds in nine regions but was expanded to cover 243 small watersheds in 13 regions because of the following reasons.

- Following the completion of the loan disbursement for the Phase I Project which had been dogged by persistent delays, four target districts of the Phase I Project were added to the Phase III Project so that hitherto unavailable support for these areas could be achieved.

- New small watersheds were added to the existing target regions to rehabilitate damaged irrigation facilities in those areas hit by an earthquake in August, 2007.

(2) Planning and Implementation Processes

Through the work of the extension officers based at local offices of the AGRORURAL, farmers' organizations (such as soil conservation committees, reforestation committees and irrigation committees) are formed in each target village in due course. In many villages, part of the local farmers in the village joins these organizations to become beneficiaries of the Project. The AGRORURAL organizes various types of training for the beneficiaries. The AGRORURAL and farmers' organizations jointly examine the project budget, technical issues and requests of farmers while referring to the results of the resources diagnosis survey conducted by the AGRORURAL. They also prepare an annual project implementation plan. The Project provides materials (tools and materials) required for the construction of various facilities, seeds of improved crops and tree seeds and the farmers provide labour free of charge. Extension officers visit the villages once or twice a week throughout the project period to provide advice and guidance covering the wide contents of the Project.

(3) Outline of Project Outputs

The target figures of the Project plan at the time of appraisal were the result of inference based on the performance of previous phases. As such, they do not necessarily correspond to the actual outputs individually planned to reflect the concrete requests of local farmers in each village[23].

The implementation areas for the construction of terraces for the purposes of soil conservation and reforestation as a component of forest development were determined depending on the labour input of farmers as these activities were voluntarily conducted by the benefitting farmers who used tools and seeds provided by the Executing Agency. The suspension of loan disbursement for 30 months from November, 2003 which was the third year of the Project caused under-spending (84% on a yen base) of the project budget. This suspension created a situation where small-scale irrigation and other components requiring several years of planning and construction could not achieve the planned quantities. Meanwhile, in the case of some components, such as soil conservation and forest development, of which the performance depends on the labour input of farmers, the actual results exceeded the planned quantities. Table 1 compares the planned quantity with the achieved quantity for each type of output.

The main reasons for the discrepancy between the planned and actual figures for various outputs are listed below.

[23] In this comparison, the plan at the time of appraisal is considered to be an original plan. The plans for each village prepared after the commencement of the Project was not obtained.

- Compared to absorption terraces and infiltration ditches, the demands of farmers for slow formation terraces and the introduction of improved grass as well as improved crops were stronger because of (i) the relatively small labour input required by farmers and (ii) better prospects of improved productivity.
- The number of tree nurseries exceeded the planned figure because of villages in additionally targeted areas.
- The production quantity of seedlings far exceeded the planned figure because of a nationwide reforestation campaign which started in 2006.
- Small-scale irrigation was hardly implemented until 2006 because of financial constraints (as described later). Even when the work restarted, the actual performance was far below the planned level because of the necessity for fresh surveys, time constraints and other reasons. Half of the budget earmarked for this component was actually used for the rehabilitation of irrigation facilities in disaster-hit areas because of its urgency.
- Of the small-scale irrigation components, pressurised irrigation (with sprinklers) was introduced at many more sites than planned because its high water utilisation efficiency led to a strong demand for this system by farmers.
- Several types of equipment were additionally provided, including PCs and related equipment to improve the work efficiency of the Executing Agency and various instruments to improve the quality of the Project at the village level.

Participatory planting operations (Ancash, photos provides by AGRORURAL)

Table 1 Main Project Outputs (Original and Actual)

Components	Original	Actual	Remarks
Soil conservation • Absorption terraces • Slow formation terraces • Infiltration ditches • Installation of improved grass • Installation of improved crops	77,118 ha 5,300 ha 21,200 ha 31,800 ha 12,190 ha 6,628 ha	83,501 ha 4,120 ha 29,033 ha 17,735 ha 17,424 ha 15,189 ha	• Terraces: See 3.2.1(1) and Footnotes 12. Planting is often conducted along the contours of terraces for the purpose of ground reinforcement, frost protection and/or wind breaking. • Infiltration ditches: See 3.2.1(1) and Footnote 13. • Installation of improved grass and improved crops: Improved varieties of potatoes, maize, grass and others are introduced at farmland where terraces and/or infiltration ditches have been newly constructed with a view to improving both the vegetation and productivity.
Small-scale irrigation • Construction/improvement of irrigation channels • Pressurized irrigation (sprinklers) • Construction/improvement of reservoirs • Multi-purpose water supply • Small-scale dams • Special irrigation structures	 628 km 9 sites 264 sites 131 sites 24 sites 102 sites	 264 km 60 sites 28 sites 31 sites 0 sites 0 sites	• Irrigation channels: Gravity irrigation is conducted using some 40 cm wide concrete channels. • Pressurized irrigation (sprinklers): Water is conducted to farmland through pipes for irrigation using mobile sprinklers. The water utilisation efficiency of this system is higher than reliance on irrigation channels. • Multi-purpose water supply facilities: These are designed to distribute water for irrigation, household use and animals.
Forestry development • Tree nurseries • Production of forest tree seedlings • Plantations • Forest management • Forest protection	 120 sites 38,700,000 38,690 ha 8,200 ha 1,500 ha	 404 sites 72,100,000 38,884 ha 9,189 ha 6,389 ha	• Tree nurseries: Seedlings of local species as well as such exotic species as eucalyptus and pine are produced at village nurseries according to the climate and soil of each locality. • Plantations: Small to medium size plantations (mostly production forests) are created on public and private land along with the planting of terrace hedging. • Forest management and forest protection: See Footnote 11.
Small-scale watershed management	1 site	3 sites	• Many inputs are made in the form of studies, training and strengthening of organizations in small watersheds.
Small warehouse	530 sites	253 sites	• These warehouses are used to store seed potatoes and other agricultural inputs in an appropriate manner and are jointly managed by farmers.
Greenhouses	1,060 sites	399 sites	• These are designed to produce vegetables, etc. and are jointly managed by farmers.
Support for enterprise initiative	220 cases	312 cases	• Support is provided for farmers' groups which plan to start businesses involving processed dairy products, culture of trout, beekeeping and others.
Procurement of vehicles and other equipment	4x4 vehicles, motorbikes, etc.	Addition of PCs and various instruments	• 4x4 vehicles, motorbikes, PCs, peripheral equipment, instruments for water / soil analysis and other measuring instruments
Consulting services	Project management, technical assistance, auditing	Project management, technical assistance, auditing	• Project management and technical assistance by international consultants, auditing by local firms

3.4.2 Inputs

3.4.2.1 Project Cost

The actual spending of the Project was 6,287 million yen which was 84% of the originally planned cost of 7,449 million yen. The principal reason for this low project spending was the reduction of outputs despite the addition of new target areas and extension of the loan disbursement deadline because of the slow progress of the Project caused by the various reasons explained in 3.4.2.2 below[24]. Given the decrease of the outputs, the overall size of the project cost is judged to be reasonable.

Table 2 Project Cost (Original and Actual)

Item	Original (Unit: million yen)			Actual (Unit: million yen)				Total
				Type of Currency		Funding Source		
	Foreign Currency	Local Currency	Total	Foreign Currency	Local Currency	Yen Loan	Gov. of Peru	
Investment in Rural Development	0	5,030	5,030	3,889	1,878	4,093	1,678	5,767
Vehicles and Equipment	176	0	176	135	73	166	42	208
Consulting Services	140	30	170	225	7	253	59	312
Contingency	9	261	270	-	-	-	-	-
Administration Cost, etc.	0	960	960	-	-	-	-	-
Taxes	0	843	843	-	-	-	-	-
Grand Total	325	7,124	7,449	4,249	2,038	4,513	1,775	6,287

Notes: The actual figure for each component includes the management cost and taxes.

Foreign exchange rates: (At the time of appraisal) 1 N.Sol = 34.0 yen

(At the time ex-post evaluation) 1 N.Sol = 34.7 yen

Sources: Reference materials used for appraisal and the Project Completion Report

3.4.2.2 Project Period

The implementation period of the Project was 110 months from September, 2000 (signing of the loan agreement) to October, 2009, 143% of the originally planned period. The loan disbursement deadline was extended due to a substantial delay of project implementation, in turn caused by the reasons listed below.

- To maintain the balance of Peru's macroeconomy, the Ministry of Economy and Finance restricted external borrowing and the size of the domestic contribution to aid projects, resulting in a decline of domestic expenditure for public sector investment projects, including the Project.

[24] While the AGRORURAL intended to spend all of the remaining loan by the end of the extended disbursement period (October, 2009), the actual amount requested for disbursement in 2009 was below the planned amount, partly because it took a long time for AGRORURAL staff to become used to the new disbursement request procedure (see Footnote 26) and partly because much time was used for the preparation and approval of reports on expenditure, influence by frequent personnel reshuffling at local offices.

- Confusion caused by the possible merger of the PRONAMACHCS with another government body (Social Development and Compensation Fund: FONCODES)[25] as stipulated by government policy led to the temporary suspension of the execution of the FY 2003 budget for the Project.

- Following the comment made by the external auditor appointed for FY 2002 through FY 2004 that it was not possible to confirm the appropriateness of expenditure for the Project[26], disbursement of the yen loan was suspended for the soil conservation, irrigation and reforestation (plantation) components for 32 months from October, 2003 to May, 2006. There were several causes which are believed to have led to the suspension of loan disbursement. Firstly, the individual participation of as many as 1,380 farmers' organizations in the procurement procedure created a huge volume of project supervisory work for local offices of the executing agency. Secondly, the Phase I Project and Phase II Project, both of which required similar project supervisory work, were implemented simultaneously but separately. Thirdly, the frequent transfer of staff members and cuts of the budget and manpower significantly dented the implementation capacity of the executing agency since 2001.[27]

- The suspension of loan disbursement by the JBIC meant that the activities promised to farmers could not be implemented for a period of more than two years, damaging the relationship of trust between the PRONAMACHCS/AGRORURAL and farmers. In turn, this damaged relationship had an adverse impact on the implementation of soil conservation and planting activities in which the participation of farmers was crucial.

The Project included a consultancy service designed to assist the planned activities and management of the project budget. According to the AGRORURAL, the consultancy service at the early stage of the Project was not effective in solving problems which led to the suspension of loan

[25] The FONCODES was established in 1991 for the purpose of poverty alleviation and has since been engaged in the development of sanitation and economic infrastructure in the Amazon and Sierra.

[26] The audit report for FY 2002 pointed out that there were many cases where proper reports and evidence of Project-related expenditure were not submitted by local offices of the PRONAMCHCS to the head office. Recommencement of loan disbursement was eventually recommenced after the implementation of measures designed to prevent the recurrence of such malpractice. These measures included review of the accounting management rules, increase of the staff strength, improvement of the monitoring system and implementation of suitable training by the PRONAMACHCS. The JICA demanded the acceptance of the new disbursement request procedure as one of the conditions for the restart of loan disbursement. To be more precise, a request for disbursement from May, 2006 onwards must be based on the actual amount of investment executed and certified by a report on expenditure for every expenditure made. Previously, the transfer of funds from the head office of the PRONAMACHCS to a local office was considered to constitute the execution of actual investment and disbursement for an amount equivalent to the transferred funds could be requested.

[27] After the change of the government in 2001, many senior staff members left the PRONAMACHCS. Their replacements often lacked suitable experience or capability while the transfer of the work was not necessarily sufficiently conducted. Many front-line extension officers were also replaced. Having subsequently experienced much confusion surrounding the issue of a merger between the PRONAMACHCS and another government body, the Ministry of Agriculture and the Ministry of Economy and Finance rapidly reduced the budget allocation for the PRONAMACHCS of which the performance had declined. At the same time, the manpower level of the PRONAMACHCS was reduced and its local offices were integrated. As a result, the budget amount for each local office of the PRONAMACHCS was halved.

disbursement.[28] After the recommencement of loan disbursement, the consultancy service was much more effective. One example is the clear presentation of concrete measures to improve project supervision together with on-site guidance.

As explained above, the actual project implementation period far exceeded the original plan and was disproportionate to the decrease of outputs and other aspects of the Project.

3.4.3 EIRR (Economic Internal Rate of Return)

At the time of appraisal, the EIRR of the Project was estimated to be 13% based on the assumption that the benefit of the Project would be increased income for benefitting farmers through increased agricultural production and reforestation. Recalculation of the Project's EIRR was not conducted as part of the present ex-post evaluation because of the unclear details of the basis for calculation at the time of appraisal and the lack of actual representative data for productivity improvement and production increase under the Project.

Based on the above, the efficiency of the Project is evaluated to be fair because of the much longer project period than planned even though the project cost was within the planned cost.

3.5 Sustainability (Rating:②)

3.5.1 Structural Aspects of Operation and Maintenance

The facilities for soil conservation, reforestation and irrigation are transferred to farmers for their collective or individual operation and maintenance. Tree nurseries are operated by the conservation committee of individual villages while irrigation facilities are operated by their respective irrigation committees. In the case of soil conservation works and plantations, their operation and maintenance are conducted by individual farmers as well as jointly by communities. In principle, irrigation facilities are maintained by the benefitting farmers. When the necessary repair work is judged to be beyond the financial and technical capabilities of farmers, financial assistance is requested from the local government or another suitable body.

After the transfer of facilities to farmers, local offices of the AGRORURAL dispatch extension officers to check the operating conditions of the facilities every week or so. If necessary, these officers provide technical assistance. At some villages, local offices of the AGRORURAL have been continually providing seeds and plastic bags for seedling production within their budget. As described later, however, the substantial budgetary cuts at the AGRORURAL in recent years have led to the termination of such assistance for remote villages originally targeted by the Project and villages where the farmers have been found to be not very proactive. Extension officers may visit these villages once every one or two months, but they only provide advice as there is no budget for material assistance. The field survey discovered villages where the number of participating farmers and level of activities declined after the termination of the physical and technical assistance by the AGRORURAL.

[28] The terms of reference for the consultancy service did not include the assignment of an expert on financial management.

To compensate for the shortage of resources for various development activities, the AGRORURAL has been actively trying to establish a meaningful cooperative relationship with local public bodies (at the regional, district and municipal levels). These local public bodies provide manpower, tree seeds and others in agreement with the AGRORURAL. Such agreements for cooperation were signed by 17 regions, 20 districts and 376 municipalities in 2009 and by four regions, 20 districts and 385 municipalities in 2010.

3.5.2 Technical Aspects of Operation and Maintenance

The routine maintenance of the soil conservation works, plantations and small-scale irrigation facilities constructed under the Project does not require advanced technical skills. The beneficiary survey revealed that the benefitting farmers and farmers' organizations responsible for the maintenance work generally understand the necessity for maintenance and the maintenance methods due to their training and participation in the Project. The same survey found a strong request by farmers for training on fertiliser application and the marketing of agricultural products in Ancash and fertiliser application and the production of improved grass in Puno, though the subject matter is not directly related to the operation and maintenance of the facilities constructed under the Project.

While the AGRORURAL has steadily built up its technical capability through a series of activities in the Sierra over many years, some of its capability has been lost due to the outflow of experienced personnel following the change of the government in 2001. Despite this setback, the AGRORURAL has been continuing its efforts to develop its capability through the training of extension officers and other activities.

3.5.3 Financial Aspects of Operation and Maintenance

Since the transfer of the new facilities to farmers, the AGRORURAL has not provided any special funding for these facilities. Therefore, farmers have been operating and maintaining these facilities through their individual and/or collective efforts. Meanwhile, the AGRORURAL has continued project activities in some target villages and has been funding primarily the production of tree seedlings.

When funding is required for the repair of irrigation facilities, the cost is charged to the benefitting farmers if necessary. If the cost is beyond the financial capability of these farmers, a request for external assistance is made to a local public body, etc. As far as the findings of the field survey are concerned, there are no cases of an acute funding shortage even though the collection of repair funds is hardly a regular practice.

The AGRORURAL provided guidance for the establishment of a communal fund (revolving fund) called FONCAPCO[29] using seeds (seed potatoes, etc.) supplied under a component (introduction of improved crops) of the Project. Not many villages are found to have been operating this fund effectively. In fact, the fund has disappeared in many villages, presumably because of the loss of seed

[29] Members of FONCAPCO borrow improved seeds as a capital and repay them after the harvest.

potatoes due to cold weather and/or the failed succession of operation following the departure of the person responsible for the fund. According to the AGRORURAL, the repayment ratio in 2006 was 64%. The beneficiary survey found that the cultivation area using an improved variety remains at 40% of the entire area for grass and some 30% for potatoes.

The production of forest tree seedlings requires the purchase of seeds, plastic bags and other materials unless seeds or coppice shoots are obtained from adult trees. At some villages which still receive assistance from the AGRORURAL or villages which can receive the assistance of a local public body, etc., the production of seedlings continues for some local species as the farmers can collect the seeds, etc. on their own initiative.[30] At those villages where the beneficiary survey was conducted, the current production volume of seedlings has dropped to approximately half of the volume during the project period and the ratio of local species has increased.

According to the AGRORURAL, its budget has substantially declined since FY 2009 when the Project was completed. This is in line with the general decline of budget allocation for central government ministries, including the Ministry of Agriculture, as a result of the on-going decentralisation policy. The operating guidelines of the AGRORURAL at the time of its establishment in 2008 emphasised the marketing of agricultural products, processing of agricultural products and strengthening of the international competitiveness of Peruvian agriculture but did not clearly state support for the poor and the conservation of natural resources by means of soil conservation and reforestation in the policy menu, resulting in little budget allocation for follow-up activities for the Project.[31] However, the revised operating guidelines to be introduced in FY 2012 are scheduled to include clear reference to the need for support for the extremely poor farmers and also for the conservation of natural resources, suggesting the restoration of balanced budget allocation to support the said activities.

Table 3 Actual Budget Execution by the AGRORURAL

(Unit: million N.Sol)

FY	Amount Allocated	Amount Executed	Extermal Assistance in the Amount Executed
2009	301.9	270.7	71.1
2010	186.1	142.1	29.7
2011	163.5	92.7*	23.5*

*Amount executed up to 8th November, 2011.

Source: AGRORURAL

[30] In the case of some local species, seedlings are produced from either collected seeds or cuttings. While there are villages where seeds are collected from adult trees of pine (exotic species), no reproduction is taking place in this way with eucalyptus trees planting under the Project as they have not yet reached the age of producing seeds.

[31] According to former PRONAMACHCS staff members who now work for the AGRORURAL and other sources, the lack of opportunities for senior technical staff of the PRONAMACHCS to be involved in the process of formulating the operating guidelines for the AGRORURAL is a remote cause of the unbalanced budget allocation.

3.5.4 Current Status of Operation and Maintenance

The findings of the case studies indicate that even though the maintenance situation of the new facilities is not perfect, these facilities are generally performing their intended functions. The beneficiary survey found that some 95% of the soil conservation works on private land and some 85% of those on common land are functioning and that almost all of this land is used for farming. No loss of the soil conservation function has been observed with most of the soil conservation works.

The maintenance of soil conservation works is the responsibility of farmers but this requires much labour (and time). As farmers tend to give priority to other activities directly linked to production or the earning of cash, the maintenance of soil conservation works appears not to be sufficiently conducted. The maintenance of infiltration ditches located on distant common land in particular appears to have been neglected because of the need for large communal input. Meanwhile, some wealthier farmers have continued to create slow formation terraces using their newly acquired knowledge, skills and agricultural tools under the Project.

No specific problems have been observed regarding the maintenance of the newly planted seedlings. In the case of planting on pasture land, the seedlings are often protected by stone walls to prevent damage by feeding animals. While the thinning has not taken place at eucalyptus plantations after coppicing, this lack of thinning does not pose a serious problem as long as the aim is to produce timber (supporting material for construction works) and firewood.

No major problems are observed in regard to the maintenance of irrigation facilities within the scope of the field survey.[32]

3.5.5 Sustainability Summary

While a cooperative relationship is being established between the AGRORURAL and local public bodies, there is slight concern regarding the institutional aspect because of the limited manpower and budget of the AGRORURAL. Because of the substantial decline of the budget allocation for the AGRORURAL in recent years, weak performance of FONCAPCO (for the continued use of improved varieties) and the declining production volume of forest tree seedlings, there is also a slight concern on financial aspects.

Based on the above, the sustainability of the Project effect is judged to be fair because some problems have been observed in terms of structural and financial aspects.

4. Conclusion, Recommendations and Lessons Learned

4.1 Conclusion

This Project was implemented for the purpose of increasing the agricultural productivity in Peru's Sierra where poverty is prevalent while trying to ensure environmental conservation. This purpose was consistent with the development policies of the Government of Peru and there was an urgent need for

[32] An ex-post evaluation study on a similar project by the World Bank indicated that the operating ratio of irrigation facilities is around 85%.

this type of project to be implemented in Peru. It also conformed to Japan's ODA policy and its overall relevance was high. Only 84% of the project budget was executed, partly because of the suspended disbursement of the Japanese ODA loan and the output in terms of irrigation facilities did not reach the original target. On the other hand, because of the extension of the loan period to accommodate the longer implementation period than planned, the efficiency of the Project is evaluated to be fair.

In total, some 48,000 households in 1,683 villages benefited from the Project. Some positive impacts have been made on the economic activities and daily lives of the benefited farming households through improved levels of environmental conservation and agricultural productivity. As the achievement rate of the planned target of the Project in terms of the area coverage is estimated to be 70 – 80%, the effectiveness of the Project is judged to be fair. There is some concern regarding future funding for the executing agency and the sustainability of communal fund management as well as tree seedling production by the farmers who benefited from the Project. While, although the maintenance situation of the newly constructed facilities is not perfect, their functions are generally sustained. Based on the above findings, sustainability of the Project is fair. In light of the above, the Project is evaluated to be partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations to AGRORURAL

- Given the importance of providing assistance for villages in the Sierra and the usefulness of the know-how accumulated by AGRORURAL staff through experience at the former PRONAMACHCS over many years, it is essential that the AGRORURAL further clarify the policy menu designed to assist villages in the Sierra together with the allocation of the necessary budget.

- At present, the AGRORURAL has hardly any data which allows it to verify and present the impacts of its own projects implemented in the Sierra. The AGRORURAL should make more efforts regarding systematic collection of data on project effects, ex-post evaluation and basic research so that effective public investment projects in the Sierra can continue.

- Against the background of increasing budget allocation for local governments in line with the decentralisation policy, it will be necessary for the AGRORURAL to shift its emphasis from the implementation of investment projects to technical assistance for local governments. It is highly desirable for the AGRORURAL to start the examination of new approaches, such as the preparation of educational and training materials for the heads, senior staff and ordinary staff members of local governments and the gathering and compilation of vital data (including ex-post evaluations) which is essential for the preparation of the said materials.

4.2.2 Recommendations to JICA

There is no specific recommendation to JICA in connection with the ex-post evaluation of the Sierra - Natural Resources Management and Poverty Alleviation Project (III)

4.3 Lessons Learned

- The suspension of loan disbursement can significantly affect the implementation and effects of a project in some cases. In case of the Project, although the judgement to suspend the disbursement was appropriate, the suspension significantly affected the Project as it considerably delayed the construction of irrigation facilities and badly dented the willingness of local residents to participate in the Project. To avoid the occurrence of such suspension, it is essential to take the necessary measures, including careful examination of the supervisory system of the project implementing body and contents of the consulting service, as early as the project planning stage. Even if the suspension of loan disbursement is inevitable for one reason or another, maximum efforts must be made to minimise the negative impacts of such suspension. These may include close discussion with concerned parties including the executing agency and also consideration to the possibility of additional support for a prompt solution of problems which have led to the suspension of loan disbursement.

- In the case of the present Project, after the integration of the initial executing agency to the AGRORURAL, the policy menu developed by the former PRONAMACHCS was dismantled, resulting in the drastic curtailment of both the manpower and budget. In turn, this adversely affected the sustainability of the Project. When the integration of an executing agency with another body is planned, due consideration must be given to maintaining the continuity and consistency of policies while listening to the opinions of technical staff of the executing agency prior to and after such integration.

Comparison Between the Original Plan and the Actual Results

Item	Components	Original Plan	Actual Results
Outputs	(1) Soil Conservation		
	• Absorption terraces	5,300 ha	4,120 ha
	• Slow formation terraces	21,200 ha	29,033 ha
	• Infiltration ditches	31,800 ha	17,735 ha
	• Installation of improved grass	12,190 ha	17,424 ha
	• Installation of improved crops	6,628 ha	15,189 ha
	(2) Small-Scale Irrigation		
	• Construction/Improvement of Irrigation Channels	628 km 124 sites	264 km 0 site
	• Special irrigation structures	9 sites	60 sites
	• Pressurized irrigation	264 sites	28 sites
	• Construction/Improvement of Reservoirs	131 sites	31 sites
	• Multi-Purpose Water Supply	24 sites	0
	• Small-Scale Dams		
	(3) Forestry development		
	• Nursery for Forest Trees	120 sites	404 sites
	• Production of Forest Tree Seedlings	38,700,000	72,100,000
	• Plantations	438,690 ha	38,884 ha
	• Forest Management	8,200 ha	9,189 ha
	• Forest Protection	1,500 ha	6,379 ha
	(4) Small-Scale Watershed Management	1 site	3 sites
	(5) Small Warehouses for Agricultural Inputs	530 sites	253 sites
	(6) Greenhouses	1,060 sited	399 sites
	(7) Support for Enterprise Initiative	220 cases	312 cases
	(8) Procurement of Vehicles, AV Equipment and Information Communication Equipment		PCs and various instruments were added
	(9) Natural Resources Studies		
	• Micro-watershed Studies	173 studies	0 study
	• Communal Agrarian Plan	1,060 plans	1,395 plans
	(10) Workshop/Training to Strengthen Rural Organizations		
	• Workshop/Training to Strengthen the Organization of the Project Executing Agency	119 times	83 times
	• Workshop/training of rural organizations	339 times	234 times
	- Enterprise Development	564 times	956 times
	- Formation of Micro-watershed Committees	645 times	1,984 times
	- Rural Extension		
	(11) Consulting Service		
	• Project Supervision		
	• Audit		
Project Period		September,2000 to January, 2007 (77months)	September, 2000 to October, 2009 (110 months)
Project Cost	• Japanese ODA Loan Portion	5,588 million yen	4,513 million yen
	• Executing Agency	1,861 million yen	1,775 million yen
	• Total	7,449 million yen	6,287 million yen
	Exchange Rate	S/. 1 = 34.0 yen (as of July 1998)	S/. 1 = 34.7 yen (average between September, 1999 to September 2006)