

2.3.2 Improvement of Agricultural Productivity

(1) Area of Anticipated Improvement of Productivity (Yield per Unit Area)

The actual area (approximately 50,500 ha) covered by soil conservation by means of terracing and infiltration ditches was 106% of the planned area and the actual area (approximately 19,000 ha) covered through the introduction of improved grass/crops was 103% of the planned area at the time of appraisal. However, as explained in the section on sustainability, there is a possibility that some 15% of slow formation terraces have not been properly maintained. In consideration of the possible low sustainability of the communal fund linked to the introduction of improved crops (refer 2.5.3 (1)), the project's effect on productivity improvement is unlikely to have the level of sustainability anticipated at the time of appraisal.

The newly irrigated area under the small-scale irrigation component and area where the existing irrigation facilities were improved are estimated to be some 4,000 ha and some 19,000 ha respectively. Assuming an operating rate of these facilities of 85%¹⁵, the actual irrigated area is approximately 19,600 ha in total, consisting of 3,400 ha of new areas and 16,200 ha of existing areas. This is equivalent to slightly less than 60% of the planned area at the time of appraisal.

Based on the above, increase in agricultural productivity is expected to have been achieved at some 70,000 ha of farmland as a result of the Project.¹⁶ This is equivalent to some 80% of the plan at the time of appraisal.

(2) Mechanism and Effects of Productivity Improvement

According to the findings of the beneficiary survey, improved agricultural productivity and increased agricultural production are believed to have been achieved under the Project due to the following mechanism.¹⁷ However, it must be noted that quantitative data representing the effects of the entire Project could not be collected.

(1) Increased Productivity and Stable Production of Potatoes and Other Main Crops

- Both the absorption terraces and slow formation terraces have had the effect of controlling the decline of productivity due to erosion. In one village, slow formation terraces have increased the productivity of a native potato variety by some 10% while shortening the fallow period from the traditional 7 - 8 years to six years. The soil conservation effect of slow formation terraces is believed to emerge over a relatively long period of 5 - 10 years in accordance with the formation of the terraces.
- The hedges along terraces have had such effects as the mitigation of frost damage to crops, retaining of soil moisture and soil improvement by organic fertiliser (leaves of some species). While agricultural production in the Andean highlands is unstable because of vulnerability to frost damage, many farmers reported that the hedges have changed the micro-climate, reducing the risk of frost damage.

¹⁵ Based on a similar project of the World Bank.

¹⁶ The area of improved crops and grass are not included in this figure as they overlap with the soil conservation area.

¹⁷ A household survey involving group interviews and the use of a questionnaire was conducted in 10 villages in Cuzco and Cajamarca Provinces (total of 267 samples).

- The introduction of improved potato varieties directly resulted in a significant increase of productivity. The productivity of the new variety was reported to be double that of the native variety.¹⁸
- Installation of irrigation led to a significant increase in productivity. Potato production increased by more than 60% due to the availability of irrigated water, and it became possible to interplant crops.

(2) Increased productivity of stock farming

- The increased soil moisture made possible by the infiltration ditches has facilitated the growth of grass to double the height in some cases as reported in the beneficiary survey. There has been a highly noticeable increase of grass production as a result of the introduction of improved grass varieties. There is a confirmed case of the height of grass increasing from 2 - 3 cm before the Project to 50 cm after the Project due to the construction of a rainwater infiltration ditch and the introduction of improved grass.
- The increased production of grass in combination with the improvement of cattle species has resulted in the increased production of milk and cattle.¹⁹ In Cuzco Province, there is a confirmed case of cows in the subject villages of the Project now producing double the amount of milk compared to cows in villages not assisted by the Project. There are also cases of a quadrupled amount of milk produced daily per cow and of more than a threefold increase of the sales price of cattle due to better quality of beef.

(3) New Products

- Soil conservation, live hedges and irrigation have made it possible to grow new vegetables and crops on some farmland. Plantation of trees has resulted in the production of firewood and timber, and mushrooms are now picked in some pine forests.

2.3.3 Strengthening of Farmers' Organizations

The Project was planned and implemented with the participation of the farmers. Emphasis was placed on the strengthening of the capacity of farmers' organizations through training and on-field guidance to enhance the effects and sustainability of the Project. Many of the newly formed farmers' organizations, such as soil conservation committees, reforestation committees and irrigation committees have accumulated vital experiences through the Project and are now confident of the continuation and further development of joint work in the coming years.

On the other hand, the following issues regarding farmer participation and the strengthening of farmers' organizations have been identified through (i) a series of interviews with engineers and field engineers of the local AGRORURAL offices and leaders of farmers' organizations and (ii) the beneficiary survey.

- Although farmers participated in the planning process, studies to collect information natural resources were inadequate.. There were instances where the requests of farmers did not coincide

¹⁸ The cultivation of the improved variety introduced under the Project was supposed to be maintained by the communal fund run by local farmers. However, many such banks appear to have disappeared and the sustainability of this effect is questionable (a more detailed explanation is given in the section on sustainability).

¹⁹ Some farmers have improved their cattle by cross-breeding the indigenous breed with an improved breed on the advice of the extension workers working for the Project.

with the budget or the planned outputs were higher than the farmers' request. As the capacity of the field engineers was not uniform, there were cases where the field engineers failed to provide appropriate advice. Because of the reasons described above, some cases of sub-optimal investment have been observed.

- The training of the benefited farmers cannot be described as sufficient. Some 10 - 20% of those farmers responding to the questionnaire stated that they had no or hardly any training nor guidance. Most of the training sessions actually provided for farmers featured the construction of infiltration ditches and terraces and reforestation and not many sessions dealt with such topics as farming, organizational management, enterprise initiative and marketing. There was a tendency for the experience and ability of the field engineers conducting the training and advice to be concentrated in conservation techniques. Some 80% of the benefited farmers replied that the contents of the training and guidance were useful.
- The committee members of farmers' organizations are mostly men at present. Meanwhile, women are the main force in stock farming and do not leave their villages for long periods of time. Women therefore can presumably play an important role if they take up senior positions.
- Some cases were seen where impact of the Project is limited to members of the benefited farmers' organizations and the extension of such impact to other farmers in the same villages was limited. This is probably because of the absence of efforts at the time of project commencement to establish a relationship to promote collaboration between farmers' organizations and the village administration and also the fact that many beneficiaries did not have enough trust to the Project due to the suspension of input caused by various reasons.

2.3.4 Economic Analysis

At the time of appraisal, economic analysis was conducted using the increased income due to increased agricultural production and reforestation as the benefit and a reference EIRR (Economic Internal Rate of Return) of 13% was obtained. Recalculation was not conducted in the ex-post evaluation because of the lack of actual data on the productivity and production increase that could represent the entire Project.

2.3.5 Overall Evaluation of Effectiveness

At the time of appraisal, such effects as the conservation of soil and forests, increase of the agricultural productivity and increase of the agricultural production were expected to take place in some 900 villages under the Project. In reality, however, up to 1,380 villages benefited from the Project and the project benefits lasted for more than three years in 1,000 villages.

The findings of the field survey suggest that the investment under the Project generally achieved the expected effects. Although quantitative data is scarce, the achievement ratio of the targets adopted at the time of appraisal is now believed to be somewhere between 70% and 90%. Given the fact that the actual financial input was 60% of the planned amount (in terms of local currency), the project effects could have substantially exceeded the planned effects at the time of appraisal if financial input had been made as planned through the smooth execution of the Project. In view of the fact that spending of only half of the original budget resulted in a lower achievement level compared to full spending of the budget, evaluation of the effectiveness of the Project as medium (rating: b) is judged to be appropriate.

2.4 Impacts

2.4.1 Impacts on Environmental Conservation

The Project is inferred to have made an important contribution to the conservation of the soil, forest and water resources in the targeted villages. However, as the Project was implemented targeting only some selected villages among those villages in the same small basins, its impact on soil and forest conservation throughout the micro-watershed was rather partial. In addition, the targeted villages were selected based on the degree of poverty, population size and willingness of the villagers for participation instead of priority in terms of environmental conservation; therefore the targeted villages of the Project did not necessarily correspond to the priority areas for environmental conservation.

In the case of the Jabon Mayu micro-watershed (Cuzco) where the beneficiary survey was conducted, the Project was implemented in eight out of 16 villages in the basin. While the reforestation area under the Project was more than nine times the forest area in 1995, the area where soil conservation measures were employed under the Project was only 4% of the total area of farmland and pasture, clearly indicating that the impact of the Project was restricted to parts of the targeted micro-watershed.

Table 3 Impact on Environmental Conservation in Jabon Mayu Small Basin (Cuzco)

Outline of the Small Basin:		
Area of 153 km ² ; elevation rate: EL 3,800 m - EL 4,500 m; 16 villages		
Situation in 1995	Land Use: Irrigated farmland	303 ha
	Non-irrigated farmland	4,164 ha
	Pasture land	8,503 ha
	Forest	30 ha
	Shrub land	179 ha
	Wet land (Bofedal)	266 ha
	Erosion : Light	2,357 ha
	Medium	1,690 ha
	Medium-heavy	4,880 ha
	Heavy	4,310 ha
Final stage	753 ha	
Project Contents	Targets: 8 villages	
	Outputs	
	Slow formation terraces	440 ha
	Infiltration ditches	102 ha
	Introduction of improved crops	74 ha
	Introduction of improved grass	138 ha
	Reforestation (plantations)	280 ha

Source: Dianostico Integral de la Microcuenca de Jabon May for the outline of the small basin and the situation in 1995; AGRORURAL for the project contents



Tree Plantation on Slope Suffering from Progressive Erosion (Jabon Mayu Small Basin, Cusco)



Example of Replacement of Natural Shrub Land (Foreground) by Uniform Pine Forest(Cajamarca)

It appears that farmers who participated in the Project have much improved their understanding of how to manage natural resources through soil conservation and reforestation and also of the importance of their proper management. The leaders of farmers' organizations who were interviewed in the course of the beneficiary survey were capable of clearly explaining the importance of soil conservation facilities and reforestation work, their functions in terms of environmental conservation and their construction and maintenance methods.

As all of the land in the Sierra in northern Peru is owned by individuals, reforestation was entirely conducted based on the economic motivation of individual landowners. This hindered the formation of protection forests of which one important presupposition is that the trees in protection forests shall not be cut down.²⁰ In addition, there were cases which were not necessarily recommendable from the viewpoint of the conservation of natural resources such as the replacement of natural shrub land by a uniform pine forest.

2.4.2 Socioeconomic Impacts

The maximum number of farming households that benefited from the Project is estimated to be some 48,000.²¹ Although quantitative data clearly presenting a total picture of the socioeconomic impacts of the entire Project could not be obtained, it is safe to assume that the Project had significant and positive impacts on economic activities and the daily lives of local farmers, i.e. the intended beneficiaries. The socioeconomic impacts confirmed by the field visits and beneficiary survey conducted in Cuzco and Cajamarca are described below.

- Because of the positive contribution of the Project to local agriculture and stock farming, the importance of agriculture and stock farming in the household economy of the benefited farmers increased.²² Connection between the positive impacts of the project and decline of seasonal labour

²⁰ In the village communities of the Sierra in southern and central Peru, the land is commonly owned, making it easier to implement protection forests under the Project.

²¹ In the Sierra in southern and central Peru where traditional village communities have survived, all villagers basically participated in the Project to benefit from it. In contrast, in the Sierra in northern Peru, only some villagers participated in the Project. There was a tendency for households with more productive resources, such as land and time, to become the principal beneficiaries of the Project.

²² The percentage of households which cited agriculture and stock raising as the main sources of income among all of the benefited farming households increased from 83% 10 years ago to 93%. Half of the benefited farming households increased the area of cultivation while 60% increased the number of animals they owned.

outside the village was observed, while the same of resettlement of farmers to seek better opportunities could not be confirmed.

- The importance of stock farming as an alternative to unreliable agricultural production as a source of cash income has been increasing in areas with particularly high elevation. It is believed that the Project influenced this change. This tendency is particularly noticeable in Cuzco.
- The stabilisation, increase and diversification of agricultural production as a result of the Project have stabilised and diversified the food supply for home consumption by the benefited farmers. In addition, at least 10% of the benefited farmers have been able to send higher volumes of potatoes to the market.²³
- The benefited farmers which are engaged in irrigated agriculture replied more frequently that their lives have improved, compared to farmers where irrigation projects were not implemented. This fact implies the possibility that the irrigation component has resulted in a greater benefit than other components of the Project.
- The milk production of the benefited farmers has increased by some 70% in the last 10 years. Apart from a substantial increase of the milk consumption at home, the sales volume of such dairy products as milk and yogurt has increased.
- Reforestation has enabled self supply of firewood and timber for housing and furniture. Moreover, cash income from the sale of pine wood, etc. has become possible.
- It appears that support for entrepreneurial initiatives under the Project has not achieved a significant impact because of the small number of initiatives and a survival rate of some 60% for new businesses.²⁴
- The real cash income of the benefited farming households in Cuzco and Cajamarca has increased by approximately 40% in the last 10 years. In Cajamarca, the growth rate of the real cash income of the benefited farming households has exceeded that of the non-benefited farming households. The fact that the monthly expenditure of the benefited farming households is now some 1.5 times higher than that of the non-benefited farming households show a clear difference between the economic activities of the two groups of farming households.²⁵
- The actual impacts of the Project on daily life were diverse depending on the specific conditions of the individual sites. The ratio of the benefited farming households responding to the questionnaire survey stating that their lives had considerably improved in the last 10 years was 38% for Cuzco and 71% for Cajamarca. The main reasons were an improved diet, improved housing and increase of the educational expenditure.²⁶ The causes of such improvement identified

²³ Most of the agricultural crops produced in the Sierra are consumed at home.

²⁴ According to "Mejoramiento de la Operación del Proyecto 'Manejo de los Recursos Naturales para el Alivio de la Pobreza' Contrato PE/P27" (JBIC, 2007).

²⁵ The monthly amount of expenditure (cash) is 409 N.Sol/month for the benefited farming households and 280 N.Sol/month for the non-benefited farming households and this difference is statistically significant. In Cuzco, a similar comparison was not attempted because of the fact that all of the villagers were basically beneficiaries.

²⁶ A study on the earlier project by the World Bank found that the beneficiaries in the 10 most successful villages under the Project enjoy an income (cash and non-cash) which is double that of the non-beneficiaries and that the project impacts include improved housing, more purchase of household goods, construction of toilets and increased expenditure on health care, education and medical treatment. Another study on the same project reported that the scale of expenditure by the beneficiaries is some 20% higher than that by the non-beneficiaries.

by farmers were an increase of the number of livestock, increase of milk production, increase of the forest area and increase of the agricultural production in Cuzco. In contrast, farmers in Cajamarca identified the mitigation of agricultural damage by the weather, increase of spring water and soil moisture and improvement of the agricultural productivity along with an increase of the forest area.

2.4.3 Contribution to Poverty Alleviation

In 2007, some 11 million people in Peru were thought to be living in poverty and some 5.4 million, almost half of this figure, lived in the Sierra.²⁷ The some 48,000 farming households benefited from the Project have a total population of some 230,000, accounting for approximately 2.5% of the Sierra's population. There is no sufficient data on how many households have escaped poverty as a result of the Project. Assuming that half of the benefited farming households have done so, the Project has lowered the poverty ratio in the Sierra by approximately 1%.

2.5 Sustainability (Rating: b)

Some problems have been observed in terms of financing for operation and maintenance and follow-up of subprojects; therefore sustainability of the project is fair.

2.5.1 Institutional Aspects

(1) Benefited Farmers

The soil conservation, irrigation and reforestation facilities constructed under the Project are transferred to local farmers for their operation and maintenance through collective/group or individual work.²⁸ According to the findings of the field visits and beneficiary survey, most of the beneficiaries conduct maintenance work at least once a year. While the irrigation facilities are operated and maintained by the irrigation committees organised by farmers, requests for financial assistance to the AGRORURAL and/or a local public body are made in the case of repair beyond the financial and/or technical capacity of farmers.

(2) AGRORURAL

At the time of appraisal, it was planned that investment to targeted villages in five years. In reality, investment is still continuing for some villages. Following the decline of manpower as well as budgetary cuts of the AGRORURAL, however, project-related activities have been terminated as nearly half of the originally targeted villages, including those in remote areas and those where the willingness of farmers to participate is weak. This situation is the result of the substantial reduction of the manpower and budget allocation at local AGRORURAL offices in the project areas which in turn is necessitated by the priority deployment of manpower and funding for the Phase 3 Project currently in progress and also to areas which have not received any aid in the past.

²⁷ According to the National Institute of Statistics and Information (INEI), the national poverty ratio fell from 48.7% in 2004 to 36.2% in 2008. During the same period, the poverty ratio in the Sierra fell by 10.5 points from 64.7% to 54.2%. In 2007, the ratio of the poor and extremely poor in the Sierra was 60.1% and 29.3% respectively. Limited to rural areas in the Sierra, the ratio of the poor and extremely poor was as high as 73.3% and 40.8% respectively.

²⁸ Apart from the operation and maintenance of various facilities by individuals, the facilities may be operated and maintained based on the joint work of all community members on set dates (faena) or mutual help involving several households (minga).

For those targeted villages where the related activities are continuing, the AGRORURAL is mainly providing assistance for the production of tree seedlings by means of supplying seeds, plastic bags and tools. A field engineer visits each village approximately once a week to provide advice on various issues raised by farmers, including the production and planting of seedlings. Because these villages are selected based on accessibility and strong willingness by farmers, many of these villages are achieving relatively good results. It appears that some villages can now continue the production of seedlings on a self-help basis. In the case of those villages where related activities have been terminated, it is reported that a field engineer visits every 1 - 2 months when there is time to do so. Because of the lack of funds to provide material assistance, only advice is provided during such visits.

2.5.2 Technical Aspects

(1) Benefited Farmers

The soil conservation facilities, trees/forests and small-scale irrigation facilities constructed under the Project are operated and maintained by the benefited farmers. While the AGRORURAL has provided training for farmers on the maintenance of the new facilities as part of the Project, these new facilities do not require particularly high skills for daily maintenance. The interviews conducted as part of the field visits and beneficiary survey found that most farmers generally understand the necessity for maintenance and the methods required.

(2) AGRORURAL

The AGRORURAL has built up its technical capacity based on the experience of various activities in Peru's Sierra but some of such capacity has been lost due to the outflow of personnel following the change of the government in 2001. Although the AGRORURAL has been continuing its capacity building efforts through training, etc., some field engineers in the field are not fully experienced, resulting in a call for better training. The AGRORURAL has no serious weaknesses which threaten the sustainability of the Project but further efforts are required to strengthen its technical capacity.

2.5.3 Financial Aspects

(1) Benefited Farmers

The maintenance of the soil conservation facilities and planted sites does not incur any special cost apart from the cost of tools. However, it must be noted that as labour is the most important resource for many farmers in the Sierra, farmers may be unable to allocate sufficient time to maintenance work because their priority is those activities which are directly linked to production and income.

In regard to irrigation facilities, it appears that regular collection of the maintenance charge is not a common practice. In many cases, the necessary money is collected from the benefited farmers when repair or other work which costs money is necessary. When the cost of repair, etc. is beyond the financial capability of the farmers, external assistance is sought from a local public body, etc. The observations during the field visits did not discover any cases where funding for the necessary maintenance work could not be made available.

The targeted villages were guided by the AGRORURAL to set up a communal fund called FONCAPCO based on agricultural inputs (seed potatoes, fertilizer, insecticides, etc.) provided under the project component of introducing improved crops. These seed banks have not been well managed and have disappeared in many villages. The repayment rate at the time of project completion (2006)

was 64%.²⁹ According to the explanations of the AGRORURAL and benefited farmers, the demise of the communal fund is the result of the loss of the seed potatoes due to cold weather and/or the failure to properly hand over operation following the departure of the person originally responsible for the communal fund. The field survey found that the FONCAPCO is still in operation in only one village out of 10 villages visited.

The production of forest tree seedlings requires the purchase of seeds, plastic bags and others except for some species of which the seeds or sprout seeds can be obtained from mature trees. The production of seedlings is still continuing at those villages which receive assistance from the AGRORURAL or a local public body or NGO. The continual production of seedlings is difficult, however, for those villages which do not receive external assistance because of their lack of financial sources.

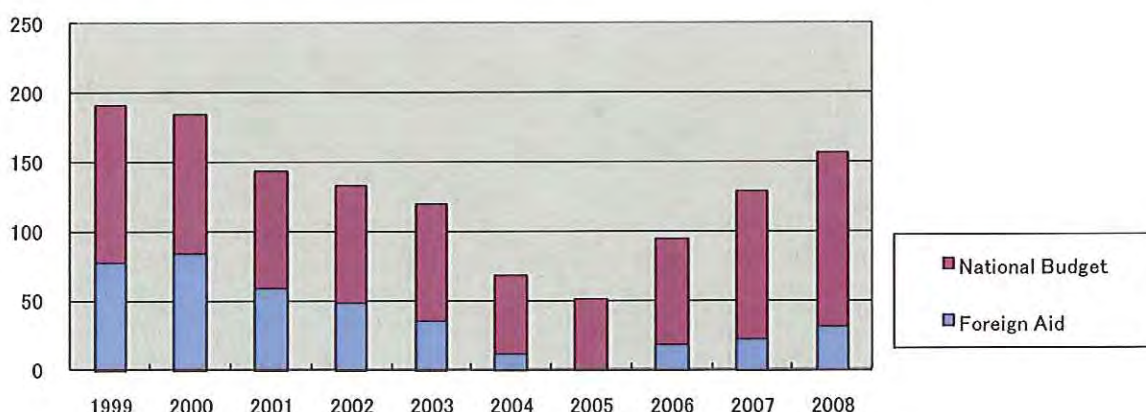
(2) AGRORURAL

From 1999 to 2005, the annual investment amount of the PRONAMACHCS in the Project dropped considerably. The amount of investment in 2004 and 2005 in particular was less than one-third of the amount in 1999 due to the suspension of the Japanese ODA loan disbursement. After this period, the amount began to recover with government funding to reach the 1999 level in 2008.

In 2009, the PRONAMACHCS was integrated to the AGRORURAL and project investment of US\$ 500 million was planned for a period of five years. As the budget size of the PRONAMACHCS at the time of integration accounted for some 70% of the entire AGRORURAL budget, it is anticipated that some US\$ 70 million (approximately S/. 200 million) will be invested in the projects/programs previously implemented by PRONAMACHCS every year. This figure would signify a 60% increase of the budget for 2008 for the Project.

Based on the above, the actual budgetary allocation to the AGRORURAL is expected to increase in the coming years. However, as funding in the forthcoming years will be prioritized to areas that were not targeted by the past ODA loan assistance, there is no guarantee of an increased budget for follow-up activities for this Project.

Fig. 1 Historical Changes of Investment by the PRONAMACHCS (Unit: S/. million)



Source: AGRORURAL

²⁹ When a repayment rate of 64% is maintained for three years, the amount of the principal is reduced to approximately one-fourth of the original amount.

2.5.4 Current status of Operation and Maintenance

The beneficiary survey found that some 5% of the soil conservation facilities had been destroyed by cattle and others while 10% had been abandoned due to the lack of time to conduct maintenance work or the reduced farmland area by the maintenance facilities.³⁰ However, no situation of critical damage to the soil conservation function of an overwhelming proportion of the soil conservation facilities was observed. Meanwhile, some farmers who have found spare time have continued to construct additional slow formation terraces by themselves after the completion of the Project using the knowledge, skills and tools acquired under the Project. A similar survey reports that the operating rate of such facilities is about 85%.³¹ Based on these facts, the situation of facility maintenance by farmers is not perfect but is judged to be within an acceptable range.

The AGRORURAL procured 24 vehicles and 132 motorcycles under the Project. Of these, 23 vehicles and 107 motorcycles are still operable at the time of ex-post evaluation and there are no problems in regard to their maintenance.

3. Conclusions, Lessons Learned and Recommendations

3.1 Conclusions

This Project aimed at increasing the agricultural productivity in Peru's Sierra where poverty is prevalent while trying to ensure environmental conservation. As this objective conformed to the policies of the Government of Peru, the Project was both highly relevant and necessary. Although only 60% (in terms of local currency) of the project budget was executed, partly because of the suspended disbursement of the Japanese ODA loan by JICA for 33 months, the planned outputs for soil conservation and reforestation were practically achieved with the active participation by the benefited farmers. In total, some 48,000 households (approximately 230,000 persons) in 1,380 villages benefited from the Project. The investment under the Project generally achieved the expected effects in terms of the improvement of environmental conservation as well as agricultural productivity, resulting in many positive impacts on the economic activities and daily lives of the benefited farmers. The achievement rate of the planned targets of the Project is estimated to be 70 - 90%. Given the fact that the actual spending was much lower than originally planned, the effectiveness of the Project is judged to be fair. Although the maintenance situation of the newly constructed facilities is not perfect, it is still within an acceptable range. Meanwhile, the project executing agency has found itself difficult to provide sufficient follow-up for the targeted villages because of a substantial reduction of its manpower and budget. There is a slight concern regarding the sustainability of communal fund management and seedling production by the farmers who were benefited from the Project. Based on the above findings, the Project is evaluated as being moderately satisfactory.

3.2 Lessons Learned

In the case of a decentralised and participatory project where a complicated execution procedure often increases the work volume of project administration, the planning of a project that matches the execution capacity of the project executing agency is essential along with sufficient support through the consulting service to realize a prompt problem shooting.

In this Project, many farmers' cooperatives individually participated in the procurement process as described in 2.2.2.1, while the Phase 1 and Phase 3 projects simultaneously took place, resulting in a huge work volume for the regional and head offices of the executing agency. In addition, changes of

³⁰ Most of the abandoned soil conservation facility sites are now actually used as farmland.

³¹ Final Report for "Evaluación Final del Proyecto 'Manejo de Recursos Naturales para el Alivio de la Pobreza en la Sierra' (ESAN, 2004)"

the personnel in charge and reduction of the budget as well as manpower at the project executing agency led to a decline of its work capacity. Consequently, sufficient project administration by the executing agency became difficult and JICA decided to suspend the disbursement.

Specific issues to be aware of in connection to this lesson are the following.

Firstly, at the planning stage of such a project, the execution capacity of the project executing agency must be carefully examined so that realistic consideration can be done regarding the scale, implementation process, administration system, scope of consulting service, and timing of project execution.

Secondly, when it is difficult to accurately assess the execution capacity of the project executing agency, the status of project execution should be checked at an early stage after project commencement with a view to making any necessary modifications. Alternatively, a Phase 1 project could perhaps be executed on a small scale with little risk while considering the urgency of its execution, and swiftly take the lessons from the implementation of Phase 1 into considerations in preparing the succeeding phases, thereby avoiding hasty implementation of complicated projects³².

Thirdly, an adequate consulting service must be in place from the stage of the Phase 1 project to ensure proper and necessary checks and modification of the project components³³. It is essential that the scope of the consulting service includes identification of problems relating to project execution and examination of possible solutions, evaluation of the project execution performance and project supervisory system and improvement of the execution process and project supervision system based on the results of these examinations and evaluation. Moreover, the TOR (Terms of Reference) must clearly describe the experience and abilities required to satisfactorily perform a range of work so that experts who have similar experiences and are capable of conducting the work in question can be recruited.

3.3 Recommendations to the AGRORURAL

- It is necessary for the AGRORURAL to review the current activities in the targeted villages of the Project and to improve the sustainability of the Project using its limited manpower and budget efficiently by means of terminating support for villages which are judged not to require further assistance and reselecting villages requiring continual support activities. The support of the AGRORURAL for the operation of nurseries should continue for the reselected villages while efforts should be made to improve the sustainability of nurseries in other villages through collaboration with a local public body and/or NGO.
- The AGRORURAL should tackle the following issues to improve its approach in the Sierra.
 - > A method to improve the sustainability and multiplication effects of the Project should be clarified by examining the possibility of the active and continuous involvement of the village authority in the preparation and execution processes.
 - > A method to achieve the participation of a local government and NGO in a micro-watershed committee should be clarified to enable the effective functioning of such a committee.

³² The participatory procedure for procurement employed in the first phase project was new to AGRORURAL and it did not have similar experiences in the past on. On the other hand, responding to the strong request by the Peruvian government, an appraisal and a loan agreement of the second phase were carried out shortly after the commencement of the first phase. Therefore, experiences of the first phase were not well reflected to the planning of the second phase.

³³ There was no component for consulting services in the first phase project.

- > The ex-post evaluation of the process and results of investment should be institutionalized to ensure the steady improvement of the project approach and results-oriented project management.
- > While the provision of production and marketing support for agriculture and stock farming in the Sierra is important, an approach which is relevant to a coastal area cannot simply be employed in the Sierra because of the much more severe natural conditions and difficult access to the market. The development and employment of a unique approach for the Sierra is essential to maintain an adequate balance between conservation and production utilising the experience of the PRONAMACHCS for more than 20 years.

Comparison Between the Original Plan and the Actual Results

Item	Components	Original Plan	Actual Results
Outputs	(1) Soil Conservation		
	• Absorption terraces	4,335 ha	1,761 ha
	• Slow formation terraces	17,340 ha	32,116 ha
	• Infiltration ditches	26,010 ha	16,688 ha
	• Installation of improved grass	3,289 ha	9,661 ha
	• Installation of improved crops	15,173 ha	9,420 ha
	(2) Small-Scale Irrigation		
	• Construction/Improvement of Irrigation Channels	521 km	324 km
	• Special irrigation structures	102 sites	1 site
	• Pressurized irrigation	6 sites	48 sites
	• Construction/Improvement of Reservoirs	219 sites	70 sites
• Multi-Purpose Water Supply	107 sites	47 sites	
• Small-Scale Dams	20 sites	0	
(3) Forestry development			
• Nursery for Forest Trees	867 sites	1,158 sites	
• Production of Forest Tree Seedlings	41,750,000	75,900,000	
• Plantations	44,942 ha	40,897 ha	
• Forest Management	8,350 ha	13,663 ha	
(4) Farming Studies and Monitoring	66 studies	16 studies	
(5) Small Warehouses	433 sites	514 sites	
(6) Support for Enterprise Initiative	350 cases	130 cases	
(7) Studies			
• Micro-watershed Studies	141 studies	0	
• Village Agricultural Investment Plan	867 villages	1,380 villages	
(8) Workshop/Training to Strengthen the Organization of the Project Executing Agency	47 times	65 times	
(9) Workshop/Training to Strengthen Rural Organizations			
• Business Management	343 times	128 times	
• Micro-watershed Committee	564 times	445 times	
• Rural Extension	375 times	3,281 times	
(10) Procurement of Vehicles, AV Equipment and Information Communication Equipment		Almost as planned	
(11) Consulting Service			
• Project Supervision	48 MM	29 MM	
• Evaluation	6 units	0 units	
• Audit	10 units	7 units	
Project Period		April 1999 to September 2004 (66 months)	June 1999 to September 2006 (88 months)
Project Cost	<ul style="list-style-type: none"> • Japanese ODA Loan Portion • Executing Agency • Total Exchange Rate	¥7,259 million ¥2,681 million ¥9,940 million S/. 1 = ¥49.1 (As of July 1998)	¥2,856 million ¥997 million ¥3,853 million S/. 1 = ¥32.7 (average between June 1999 to September 2006)