

Japan International Cooperation Agency

**Synthesis Study
on
Evaluation in the Field of
Agriculture/Rural Development
(Agricultural Extension)**

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International Development Center of Japan

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PREFACE

In the context of reviewing Japan's official development assistance (ODA) with respect to the recent financial constraints, it has demanded the improvement of project evaluation, in terms of reviewing the contribution of ODA to national and human development in developing countries.

Japan International Cooperation Agency (JICA), Japan's major ODA implementation agency, has commissioned experienced experts and consultants, who have broad outlook and remain neutral in project evaluation, to conduct evaluation survey. Since new budget allocated for "Third-Party Evaluation" in 1999, we have also commissioned third parties, who have expertise in various fields of development assistance, to make suggestions on evaluation method and conduct evaluation based on the method.

JICA has undertaken many technical cooperation projects in the field of agriculture and rural development. This evaluation study focuses on agricultural extension because an increasing number of JICA projects directly aim at improving farmers' livelihoods and enhancing their agricultural productivity. To attain these goals, a greater number of projects have come to support institutional, technological and human development associated with agricultural extension.

The Synthesis Study on Evaluation in the Field of Agriculture/Rural Development (Agricultural Extension) was conducted in Fiscal Years 2003 and 2004 based on the Synthesis Study on Evaluation in the Field of Agriculture/Rural Development in FY 2002. The overall goal of the FY2003/2004 study was to draw lessons for formulation and implementation of JICA's future projects in the field of agricultural extension. Analyzing JICA's past technical cooperation projects, the study examined the approaches that are effective and efficient in model establishment and dissemination.

This evaluation study was commissioned to International Development Center of Japan, and the study was conducted both in Japan and abroad. An advisory committee was formed with Dr. Fukumatsu Suzuki, Former Professor of Nihon University and Dr. Tetsuo Matsumoto, Professor of Nagoya University as evaluation advisors. This report was prepared with an active interaction between the study team and the advisory committee regarding the framework and methodology of the study as well as evaluation results.

We hope that this report will contribute toward improving the formulation and implementation of agricultural projects that include extension.

In the end, we would like to extend our sincere gratitude and appreciation to all those people who cooperate in this study.

October 2004

Seiji Kojima, Vice President
Japan International Cooperation Agency

Table of Contents

Preface

Table of Contents

Executive Summary

Chapter 1. Objective and Methodology of the Study	1
1.1 Background and objective of the study	1
1.1.1 Background	1
1.1.2 Objectives	1
1.2 Contents of the study	2
1.3 Methodology of the study	2
1.4 Structure of this report	5
Chapter 2. Review of JICA's Extension Projects	7
2.1 Meta-analysis of extension projects	7
2.1.1 Projects subject to meta-analysis	7
2.1.2 Framework for analysis	7
2.1.3 Principal results of fifteen projects	8
2.1.4 Approaches concerning extension	10
2.1.5 Notes on planning, implementation, and evaluation of projects	10
2.2 Lessons from case studies	15
2.2.1 Lessons on planning and implementing projects	16
2.2.2 Lessons on project implementation pattern and approaches (by project)	19
2.3 Summary and analysis	20
2.4 Positions of case study projects in JICA's Technical Cooperation Projects on agricultural extension	22
Chapter 3. Project for the Strengthening of Agricultural Technology Development and Transfer in El Salvador	23
3.1 Outline of the project	25
3.2 Project formulation	28
3.2.1 Background	28
3.2.2 Project formulation	29
3.2.3 Selection of implementation agency	29
3.2.4 Purpose and project activities	30
3.2.5 Selection of model sites	31
3.3 Project implementation	31

3.3.1	Understanding the current status	31
3.3.2	Selecting a target group	32
3.3.3	Selection of crops and technologies	32
3.3.4	Outline of project activities	35
3.3.5	Reinforcing the capacity of CENTA	36
3.3.6	Overall extension approach	41
3.3.7	Farmer to farmer extension	43
3.4	Sustainability of the project	47
3.4.1	CENTA	47
3.4.2	Sustainability of key farmers	48
3.4.3	Dissemination to intermediate farmers and other farmers	49
Chapter 4.	Kilimanjaro Agricultural Training Center Project in Tanzania	51
4.1	Outline of the project	53
4.1.1	Tanzania Kilimanjaro Agricultural Training Center Phase 1 Project	53
4.1.2	Tanzania Kilimanjaro Agricultural Training Center Phase 2 Project	53
4.2	Project formulation	55
4.2.1	Background	55
4.2.2	Project formulation	58
4.2.3	Purpose of the project	59
4.3	Phase 1 project implementation	59
4.3.1	Start-up of the project	59
4.3.2	Selecting the target group	61
4.3.3	Irrigated rice cultivation technology	61
4.3.4	Reinforcing the capacity of KATC	61
4.3.5	Outline of activities	66
4.3.6	Review of approach	70
4.4	Transition from phase 1 to phase 2	71
4.4.1	End of phase 1	71
4.4.2	Objectives and approach of phase 2	71
4.5	Phase 2 project implementation	72
4.5.1	Model site approach	72
4.5.2	Approach of extension	74
4.5.3	Farmer to farmer extension	78
4.5.4	Reinforcing the functions of implementation agency	80
4.6	Sustainability of the project	83
4.6.1	Sustainability of KATC	83
4.6.2	Sustainability of model sites	85
4.6.3	Dissemination to other schemes	86

Chapter 5. Lessons drawn from Synthesis Study	87
5.1 Lessons on the formulation of extension project	87
5.1.1 Cooperation over the long-term	87
5.1.2 Clarification of project goal	88
5.1.3 Selection of project activity and linkage between activities	89
5.1.4 Formulation of project suited to the environmental conditions of target area	90
5.1.5 Review of past experience and designation of a cooling-off period	91
5.1.6 Selection of implementation agency	92
5.1.7 Consistency between the mandate of implementation agency and the scope of project	95
5.1.8 Designating the preparation phase and exit phase	97
5.1.9 Evaluating the capacity development of extension organizations	97
5.2 Lessons on designating a model for extension project	98
5.2.1 Selecting the technology suited to the target group	98
5.2.2 Selection of farmers with suitable conditions in the target group	102
5.2.3 Project implementation method	103
5.2.4 Farmer to farmer extension	103
5.2.5 Training of farmers and extension officers	106
5.3 Capacity development of the institutions and coping with the environmental conditions	107
5.3.1 Capacity development of the institutions	108
5.3.2 Coping with environmental conditions	110
5.3.3 JICA's roles	113
Appendix 1 Evaluation grid	115
Appendix 2 Questionnaire survey	119
Appendix 3 Field schedule	139

Executive Summary

Background and objectives of the study

Japan International Cooperation Agency (JICA) has undertaken more than 160 technical cooperation projects in the field of agriculture and rural development in approximately 45 countries. The areas of cooperation vary from rice production to irrigation to horticulture. Recently, evaluation studies have been conducted on these projects. It is important to undertake a systematic review of these studies and to draw lessons for future projects.

In fiscal year (FY) 2002, JICA undertook "Synthesis Study on Evaluation in the Field of Agriculture/Rural Development" with the aim of summarizing lessons learned from past JICA projects for agriculture and rural development. The study undertook the following tasks:

- 1) Classified 110 agriculture and rural development projects that were completed during the period from FY 1996 to FY 2002 from the viewpoints of project types (e.g., forms of cooperation and subsectors) by using evaluation reports at project completion;
- 2) Analyzed 15 projects that involved extension based on evaluation reports at project completion; and
- 3) Conducted case studies of 6 projects through interviews with resource persons and summarized lessons for future project formulation and implementation.

Based on the findings of the FY 2002 study, JICA undertook "Synthesis Study on Evaluation in the Field of Agriculture/Rural Development (Agricultural Extension)" in FY2003 and FY2004 with the following objectives:

- 1) Gain lessons for the formulation of extension projects that will be established as a model and disseminated in terms of beneficiaries and geographical areas;
- 2) Examine the effectiveness of the models included in two case study projects for dissemination and draw lessons for establishing a model in future extension projects; and
- 3) Integrate the findings of this study with those of the FY 2002 study and draw lessons from them for future extension projects.

As case study projects, JICA selected the following two technical cooperation projects:

- 1) The Kilimanjaro Agricultural Training Center Project in Tanzania
- 2) The Project for the Strengthening of Agricultural Technology Development and Transfer in El Salvador

The two case study projects were selected for the following reasons.

- 1) They include activities for capacity development of the research/training centers and attempt to disseminate methods for utilization of developed technologies, training and extension.
- 2) The models of extension adopted in the projects are developed in view of generalization, technological effectiveness and adaptability to smallholder farmers;
- 3) They focus on extension, involving not only extension officers but also farmers; and
- 4) They are both implemented from the perspectives of establishment as a model and dissemination, while located in two distinct regions, i.e., Africa and Latin America, with largely different socioeconomic environments.

It is important to note that the primary objectives of the two case study projects are not agricultural extension itself, although an element of agricultural extension is included in the project.

The evaluation question of this study and related sub-questions are developed by JICA, which are as follows.

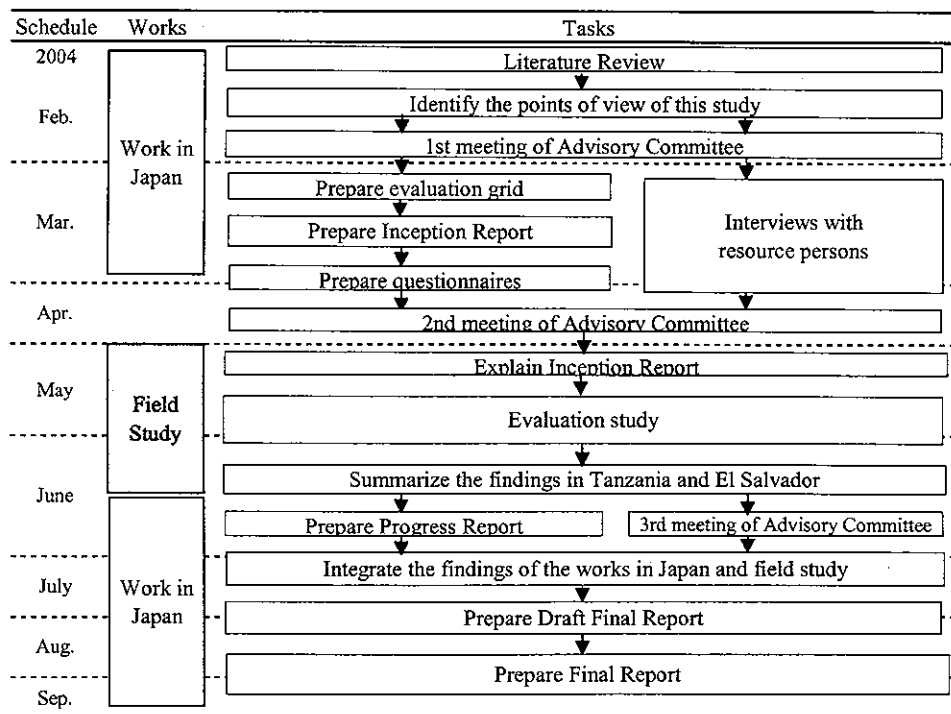
Contents of the Study

- Evaluation question:* What kinds of approaches/models are effective in establishment and/or dissemination in the project that involves extension? What kinds of environments/conditions are required for the approaches/models to be effective? If such environments/conditions are absent, what kinds of activities are necessary?
- Sub-Question 1:* The goals of the case study projects are to strengthen the capacity of Kilimanjaro Agricultural Training Center (KATC) and Centro Nacional de Tecnologia Agropecuaria y Forestal (CENTA) for extension. What kinds of measures have been taken to strengthen their technical, financial, and institutional capacity?
- Sub-Question 2:* What kinds of approaches/models are effective in establishment and dissemination?
- Sub-Question 3:* What kinds of socioeconomic environments are necessary for the effective implementation of a project that involves extension? If such environments are absent, what kinds of measures should be taken within the project?

Methodology of the Study

The study consisted of the works both in Japan and abroad (El Salvador and Tanzania). An advisory committee was formed, and the study team consulted the committee in the course of the study. The advisor committee consisted of two advisors and selected JICA staff members of Planning and Coordination Department, Rural Development Department and Regional Department III (Latin America

and the Caribbean) and IV (Africa). The study team prepared an evaluation grid to delineate the questions to be asked in the study in detail. Questionnaire survey was also conducted in both El Salvador and Tanzania. In the field study, interviews, observations and workshop were undertaken.



Profile of Case Study Projects

Project for the Strengthening of Agricultural Technology Development and Transfer in El Salvador

The Project for the Strengthening of Agricultural Technology Development and Transfer in El Salvador was implemented for five years, from February 1999 to January 2004. It has been succeeded by a one-year follow-up period until January 2005. The objective of the project is to strengthen the capacity of CENTA to develop and disseminate techniques for sustainable farming systems to small-scale farmers. Although CENTA's researchers and extension officers have sufficient techniques concerning such basic crops as corn, they had insufficient techniques concerning vegetable cultivation. So, the project focused on vegetables in strengthening the capacities of CENTA researchers and extension officers. Therefore, the purpose of this project was not to extend technology to farmers. In implementing the project, technologies to cultivate such vegetables as tomatoes were developed, the capacities of researchers and extension officers were reinforced at two extension offices selected as model sites, and the technologies were transferred to the key farmers and intermediate farmers at the model sites. Primary emphasis was placed on changes in the awareness among researchers, extension officers, and farmers to ensure the sustainability of the project.

As for the extension approach, first the technology was transferred to extension officers and researchers, and the extension officers then led the way to transfer technology to 20 key farmers. Next 400 intermediate farmers were selected, and the extension officers and key farmers worked together to provide the intermediate farmers with technical support as a group activity. In tomato cultivation, main problem is the virus transmitted by whiteflies. As countermeasures, the project implemented the use of a greenhouse, and double planting method. In order to enable cultivation in dry season when vegetable prices are high, the project also aimed to expand the cropping season. To this end, the project implemented the use of rainwater tanks and water-conserving drip irrigation system. While activities are currently under way to pave the way for technology transfer to intermediate farmers, CENTA is already planning a post-project plan to disseminate the technology to the entire country.

Kilimanjaro Agricultural Training Center Project in Tanzania

Japan has provided cooperation in irrigated rice cultivation to Tanzania through the Kilimanjaro Agricultural Development Center (KADC) Project and the Kilimanjaro Agricultural Development Project (KADP) in Kilimanjaro Region since the 1970's. In the 1980's, the Lower Moshu irrigation scheme was constructed with a yen loan, and an irrigated rice cultivation technology suited to the area was developed. As a result, the scheme increased the yield from 2 tons/ha to 6 tons/ha, or some three times the national average. Upon the completion of KADC and KADP, a new project began with the objective of disseminating the irrigated rice cultivation technology developed in Kilimanjaro to the rest of the country. Kilimanjaro Agricultural Training Center (KATC) was established under the jurisdiction of the Training Division of the Ministry of Agriculture and Food Security (MAFS) (at the time, the Ministry of Agriculture and Cooperatives). KATC's phase 1 project was launched in July 1994. It ended in June 2001, including a two-year follow-up period.

The overall goal of the project was to train extension officers and farmers around the country with the irrigated rice cultivation technology obtained in Kilimanjaro. To this end, KATC launched training courses, developed training curriculum, and trained tutors. The training courses were rice cultivation course for extension officers and district crop officers, water management course for irrigation technicians, rice mechanization course for agricultural mechanization officers, tractor operator course for tractor operators, and key farmer course for farmers and extension officers. While the principal objective of the

project is to reinforce the capacity of KATC as a training institute, activities associated with extension were also included in the project. More specifically, besides providing extension officers with training, the project also provided training to key farmers who will serve as the key to dissemination in the irrigation scheme. Joint training for extension officers and key farmers was designed so they can cooperate in technology transfer after the training. During the two-year follow-up period, KATC visited the irrigation schemes where extension officers and farmers came from, and provided follow-up guidance and outreach training.

Phase 2 has been conducted after phase 1 ended. Phase 2 is scheduled to run from October 2001 to September 2006. Although phase 1 achieved the objective of developing a training institute to provide irrigated rice cultivation training, such training activities alone did not necessarily transfer technology to farmers. Therefore, in phase 2, the principal training site was transferred from KATC to irrigation schemes in the country. The overall goal of the project is “productivity of rice increases in the place where KATC training has been conducted and surrounding area.” The purpose of the project is “productivity of rice increases in the model sites through the KATC's training.” To attain the purpose, KATC works close to the field. For KATC to be able to develop and manage training packages that are suitable for the various natural and socioeconomic conditions of Tanzania, six model sites (Mombo, Mwega, Mbuyuni, Nakhuga, Mwamapuli, and Nduguti) were selected by zone from irrigation schemes around the country. Four field training (the last one is monitoring) are held per cropping season at each model site.

The dissemination approach at each model site is farmer-to-farmer extension. Twenty key farmers were selected at each model site, and KATC has transferred technology to these key farmers through residential training at KATC and field training. Next, each key farmer has selected five neighboring intermediate farmers, and with the support of extension officers, transfer technology to intermediate farmers through field training. Each intermediate farmer is also scheduled to select two (one male and one female) other farmers and transfer technology. While outside the scope of the project, the dissemination of irrigated rice cultivation technology beyond irrigation scheme is also being considered. KATC is discussing with the district government and zone irrigation offices to seek for their participation.

Lessons drawn from Synthesis Study

The lessons that can be drawn from the synthesis study in FY2002 and the synthesis study (including case study) in FY2003-2004 are summarized here. The projects that are subject to analysis are listed below. The projects marked with a circle are case studies of the FY2003-04 Synthesis Study.

Country	Project	Stated in this Chapter
Indonesia	Project for Improvement of Agricultural Extension and Training System	Indonesia Project
Laos	Agricultural and Rural Development Project in Vientiane Province	Laos Project
Philippines	Training Services Enhancement Project for Rural Life Improvement	Philippines Project
Sri Lank	Agricultural Extension Improvement Project in Gampaha	Sri Lank Project
Dominican Republic	Pepper Culture Development Project Phase 1 and 2, Project for Agricultural Development on Sloped Terrains	Dominic Project
○ Tanzania	Kilimanjaro Agricultural Training Centre Phase I Project	Tanzania I Project
○ Tanzania	Kilimanjaro Agricultural Training Centre Phase II Project	Tanzania II Project
○ El Salvador	Project for the Strengthening of Agricultural Technology Development and Transfer	El Salvador Project

The lessons provided here are not intended to be comprehensive on formulating and implementing a project that involves extension as its element. Instead, this section provides lessons obtained from case study projects.

(1) Lessons on the formulation of extension project

Cooperation over the long-term

Extension is generally a time-consuming process. For example, implementing a new technology carries a risk, and farmers need time to make the decision. The transmission of information on a new technology also takes time. If the government provides little support with extension or farmers are remote from one another, the speed of dissemination slows even more. Even more time is required if the project begins by developing the technology, as was the case in El Salvador project. As these examples illustrate, extension is a time-consuming process, and it is necessary to take this into account when planning an extension project.

Clarification of project goal

When planning a project that includes extension as an element, it is important to clarify what the goal of the project is. Typical types of extension projects are those that emphasize the results and those that are intended to reinforce the extension system. A project that emphasizes results aims to solve the problem in the target area when the project is implemented (e.g., the income of farmers increases or stabilizes, or the lives of residents improve). On the other hand, when a project that reinforces an extension system is implemented, it reinforces the organization, personnel of the organization that is involved in the extension (e.g., extension organization or training organization).

Once the goal of a project is identified, then it is important to use the means suitable for the goal. For example, improving the capacity of implementation agency, establishment of technology, and dissemination of technology are some of the means of an extension projects. If the project is intended to reinforce the extension system, then it is necessary to first develop the capacity of the extension organization, then attempt to establish the technology, and finally conduct activities that take into account dissemination. On the other hand, if the project emphasizes results, then it may not be necessary to put so much priority on improving the capacity of the extension organization or the dissemination.

Selection of project activity and linkage between activities

In general, there is a series of steps that must be taken between when a farmer adopt a new technology and when the implementation results in income increase. These steps include, for example, development of technology, improvement of capacities of extension officers, acquisition of technology by farmers, financing of purchases of production equipment and materials and inputs, and marketing and processing. Unless the series of steps is consistently developed, the effort will not result in additional income for the farmer. On the other hand, if too many such elements were incorporated into a project, it would require a diverse range of project activities, and the project would exceed the capacity of the counterpart. It would also become difficult to coordinate the activities. Therefore, when formulating a project that includes extension elements, it is important to identify the constraints within the series, and cast the focus of the activities. It is also necessary to fully consider the linkage between the activities. For example, if a distribution facility is created before farmers begin full production activity, the facility is unlikely to be of much use.

Formulation of project suited to the environmental conditions of target area

When formulating a project, it is essential to clarify the emphasis based on the environmental conditions of the country or area. If the purpose of the project is technical development, then environmental conditions are not a major concern. In an extension project, unless the conditions of the target area are carefully analyzed, however, the technology cannot be disseminated and the project cannot attain the goal. When designating the project emphasis, it is important to determine whether the farmers segment that are

the target of the project (often, small farmers) have comparative advantage to surrounding countries and regions (that import the crop) in the crop which the project will focus. If the target farmers do have comparative advantage, then it should be possible to implement a market-oriented approach of specializing in cash crop. On the other hand, if the target area has little comparative advantage in the target crop, then it would be appropriate to take the so-called self-sufficiency promotion (social compensation) approach. An efficient way to analyze the environmental conditions is to focus on the “five capitals” and on market access.

Review of past experience and designation of a cooling-off period

Before formulating a new project or a new phase, it is important to perform an extensive review of past similar projects conducted by JICA and other donors. By collecting sufficient information on experience with such past or current projects in the preliminary study stage, the information can benefit the project formulation process.

There are a number of methods for verifying the output of previous phases. One method, as used in the El Salvador project, is to designate a follow-up period (one year) and assign one expert. As only one expert is available, the counterpart is more autonomous. The activities during this period can also be used to evaluate how much the capacity of the counterpart has been improved. The expert need not necessarily be assigned with the counterpart or only financial support could be extended to the counterpart to verify the technical and institutional sustainability. By allowing some time between phases, the focus of the following phase may also become clearer.

Selection of implementation agency

When selecting an implementation agency, it is necessary to fully consider the resources of the agency. There are generally four project formulation patterns according to the resources of the counterpart. The first pattern is when the implementation agency has sufficient resources. If it does, JICA may start the project with the implementation agency without much problem. The second pattern is when the counterpart has insufficient resources but is deemed to have potential for expansion in the future. In this case, although JICA must provide relatively more input during the cooperation period, as the capacity of the counterpart will be improved, future dissemination can be anticipated. When dissemination is intended, it is necessary to provide cooperation with the possibility of having to provide support for a long time. If a project is executed without sufficient resources or commitment on the part of the counterpart, even an enormous input may return no output. The third pattern is when the counterpart has insufficient resources and is not expected to expand its resources in the future. In this case, one approach is to skip a government organization and use a private company or NGO to directly approach farmers. If the project emphasizes results, then it would be possible to achieve the goal. On the other hand, while an approach using a private company or an NGO with high dependency upon donors may deliver high technology transfer effect during the project period, after the project ends, farmers have no one to consult with their problems because private companies or NGO may no longer be able to provide assistance since donor funding to them has already been ceased. The fourth pattern is when the counterpart is unlikely to expand its resources in the future, but the project is executed (must be executed) without skipping the counterpart. In this case, a project intended to reinforce the extension system would have a sustainability problem, and it would be difficult to achieve the goal even if the project were executed. Therefore, it would be advisable to execute a project that emphasizes results or collaborate with other organization.

Although implementation agency has been handled as a homogeneous organization in the preceding discussions, in fact, the implementation agency may not only be the extension organization of the central

government, but may also be a research organization, training organization, or local government. Even if a project includes the extension element, it is rare to designate an extension organization that belongs to the central government as the implementation agency. Various organizations have worked as an implementation agency. In many countries, extension has been transferred to local governments by decentralization. Since it is impossible to collaborate with all the local governments, in this case, it may be feasible to 1) designate the training organization that trains extension officers as the implementation agency, and reinforce the capacity of the training organization to indirectly improve the extension capacity, 2) designate a research organization as the implementation agency, and improve the collaboration between the research organization and extension officers, 3) designate the extension policy unit of the central government as the counterpart and reinforce the entire decentralized extension officer system, and 4) based on an agreement with the central government, designate a certain local government as the implementation agency, and feed back the output to the central government. In all cases, the activities to foster collaboration between the counterpart and extension officers must be incorporated into the project to ensure dissemination. In particular, in the case of 4), dissemination cannot be expected unless the activities to feed back output to the central government and the activities to standardize the technology and systemize the feedback are clearly incorporated into the project.

Consistency between the mandate of implementation agency and the scope of project

It is extremely important that the activities of the project match the mandate of the implementation agency. When the mandate of the implementation agency and the scope of the project do not match, the implementation agency should be changed to an organization that matches the activities of the project (or an appropriate implementation agency should be added). In the case of an ongoing project, when the scope of the project is changed, it may also be necessary to change the counterpart.

An extension project sometimes caters to multiple organizations and areas and more than one organization may be involved in the extension project as implementation agency. In such a case, organizational sustainability may be an issue after the project ends. For activities to continue under adequate collaboration between the relevant organizations even after the project ends, it is necessary to build an adequate mechanism. To this end, it would be advisable to clarify the goal and activities in national development plan and sector or area plan, clarify the activities as duties of line organization, secure the budget, and set rules for budget allocation.

In some cases, the implementation agency may be subject to an additional mandate, but only during the project implementation period. Establishment of a new counterpart for a project or adding a mandate is not necessarily desirable in terms of sustainability. If it is unavoidable, attention should be paid to the division of roles with other organizations responsible for extension, clarification of the future benefits to the organization of assuming the new mandate, and budget allocated to the organization.

Designating the preparation phase and exit phase

When implementing a project, it is essential to understand the current situation and needs. To this end, a preparation phase may be necessary. It may also be advisable to designate an exit phase to ensure a smooth transfer to the counterpart after the project ends.

(2) Lessons on designating a model for extension project

Selecting the technology suited to the target group

The target group differs depending on the purpose of the project. As a rule, a technology that suits the selected target should be developed or selected. The technology must have the following characteristics to be disseminated among small-scale farmers (poor farmers): 1) Is simple, 2) Requires little initial capital investment, 3) Improves yield by increasing the input of labor, a surplus resource, 4) Decreases gender gap (or does not increase the gender gap), and 5) Can be accomplished with existing farming equipment. A technology that is disseminated does not have to be a new technology. Local excellent cases are believed to be suitable for dissemination.

As described above, a technology that is simple and that allows the farmer to earn a large return without much cost is ideal. It may be difficult, however, for experts to develop such a technology within the time frame of a technical cooperation project. When the ideal technology cannot be found, there are two options for the second best technology to be selected for project. One is a technology that requires a sizable initial capital investment, but generates a sizable return. The other is a technology that requires little initial capital investment, and generates a small return. As for the first type of technology, it requires a sizable initial capital investment, and it would be difficult for farmers to accept the technology without some help. Therefore, it is necessary to reduce the cost to a level that is acceptable to the farmers or provide financing for small-scale farmers at the same time. On the other hand, the second type of technology is developed to meet the level that is acceptable to farmers. In this case, the profit to farmers tends to be small, so they may be reluctant to increase the labor input for the small benefit. At the very least, it is a measure that is acceptable to diligent farmers who are willing to give the new technology a try. When selecting a technology, it is difficult to say which option is better. It is necessary to consider a wide range of factors such as the possibility of reducing the cost of initial capital investment, diligence and risk tolerance level of farmers, comparative advantage against surrounding regions / countries, and agricultural policies of the country.

In the actual dissemination process, the two measures may be executed in stages. For example, in the El Salvador project, the greenhouse, which is the foundation of the vegetable production technology, can be shared among farmers. Therefore, in the first stage, a greenhouse is shared by farmers and a technology that requires no expense (e.g., pruning or grass mulch) is used to increase income. Then, after a reasonable amount of profit has been saved, each farmer could make an investment in his own greenhouse. While this technique consumes farmers' time, it allows them to overcome the capital shortage and risk associated with infrastructure investment. Also by showing a possibility of success in the future, this method motivates farmers.

When taking the approach as described above, another important point is how the infrastructure that is necessary for agricultural production is provided to the farmers. Whatever it may be, a new technology poses a risk to farmers. In this case, the role of the project is to 1) increase the farmers' interest in the technology, and 2) reduce the risk of implementing the technology. There are generally three ways to alleviate risk. First is to demonstrate the new technology on a trial farm and tell the farmers of the possibilities. No infrastructure or input is provided to farmers, and the project waits until the farmer voluntarily implements the new technology. Second is to provide a preferential loan through the project. Third is to provide the infrastructure and input on a cost-sharing basis. Which method is desirable would depend on the characteristics of the technology to be transferred and the circumstances of the target area (e.g., farmers' income level). The El Salvador project used the third method. It is based on the idea that the burden on farmers should be minimized during the stage when they are learning the new technology.

The extensive support provided during the learning process was of considerable help in key farmers and intermediate farmers learning the technology. As key farmers and intermediate farmers served as the core and demonstration for technology transfer to other farmers, they have a positive external effect. This benefit justifies that part of the equipment and supplies is provided by the project. On the other hand, it is necessary to consider whether the method can be sustainable in the long-term within the policy framework of the El Salvadorian government.

It is also important to provide equipment and supplies on cost sharing basis. If the equipment and supplies are merely given to them, farmers would not develop a sense of ownership and would fail to properly maintain and manage the equipment and supplies. Farmers would also fail to devise ways to modify the equipment and supplies to better suit their own farms. In addition, in many developing countries where subsidies to the agricultural sector are being abolished or cut, a large equipment or supply aid through a project may create inconsistency with the overall agricultural policy.

Selection of farmers with suitable conditions in the target group

Considering the diversity of farmers and areas, it is generally difficult for a technology to be disseminated to all the farmers in the target area. Technology tends to be disseminated primarily to farmers with the most suitable conditions. Therefore, in an extension project, selecting target farmers and areas from the target group and region would facilitate the project implementation. In a project whose purpose is to extend technology and requires some initial capital investment, if the target group is small-scale (poor) farmers, the poorest farmer segment (extremely impoverished segment) should be avoided as the target. While the implementation of a new technology carries some sort of risk, it is difficult for the extremely impoverished segment to assume that type of risk.

Grasping the current situation and needs by survey

When implementing a project, it is essential to accurately grasp the current situation. While a survey of the target area is conducted via a preliminary survey, it is often insufficient. Therefore, detailed surveys should be conducted at the startup of the project. When conducting a survey, it is important to first clarify the framework. The size and items of the survey should be decided by the experts by taking into account the details and period of the project.

Material support for a fixed period

The El Salvador project cut material support (provision of input) to key farmers when the principal subject of the activities moved to intermediate farmers. After the support for key farmers was cut off, their sense of ownership of infrastructure increased and they began to adjust their activities in anticipation of the end of the project. Cutting off support for key farmers also helped to instill awareness in intermediate farmers that the project support is only temporary. This is believed to have increased the incentive among intermediate farmers to quickly acquire the technology.

Farmer to farmer extension

Farmer to farmer extension is an important approach for realizing dissemination. When farmers consider implementing a new technology, they place high priority on whether other farmers that they are familiar with have succeeded with the new technology. Furthermore, due to financial constraints, extension officers and extension organizations in developing countries tend to be feeble. Farmer to farmer extension is an approach that can accommodate such characteristics of farmers and the environment surrounding extension officers and extension organizations. As a farmer who receives technology

transfer then serves as the center of extension and transfers technology to many other farmers, farmer to farmer extension is a highly efficient approach.

In both the El Salvador and Tanzania II projects, the approach of “key farmers to intermediate farmers to other farmers” was taken. Technology was first transferred to key farmers, then key farmers transferred the technology to intermediate farmers with the support of extension officers. Next, intermediate farmers transferred the technology to other farmers.

The selection of key farmers is very important. In the Tanzania II project, the selection criteria and roles of the key farmers were clarified in advance and notified to all the farmers in the irrigation scheme. As a result, not only the key farmers, but also other farmers gained an understanding of the roles that key farmers play. This understanding is believed to have made a large contribution to the dissemination of technology through key farmers. On the other hand, intermediate farmers were selected by key farmers, and certified by the project according to selection criteria. This measure was taken to facilitate the joint activities between the key farmers and intermediate farmers. In addition, technology transfer to intermediate farmers was conducted based on group activities. This is an effective technique to improve the efficiency of technology transfer and to lay the stepping stone for future joint activities (e.g., joint purchase or joint sales).

In farmer to farmer extension, there is a heavy burden on the farmers who serve as the core of the extension activities (key farmers and intermediate farmers). In addition, even key farmers may not be versed in all the techniques, they require technical support. Therefore, extension officers also play an important role in farmer to farmer extension. In general, extension officers work under various constraints, and it is difficult for them to engage in sufficient extension activities. As farmers raise their awareness, and farmers form groups, however, extension officers will find it easier to engage in extension activities. It is important to improve the capacity of extension officers even if farmer to farmer extension approach is employed.

Demonstration farms play an important role in technology transfer. Farmers are most likely to be convinced of the effectiveness of a new technology when a farmer that they have known well, and not a public experimental farm, succeeds with the technology in cultivation. It is important to create as many demonstration farms as possible. Ideal locations for a demonstration farm include a lot along a road often traveled by farmers and a lot near a meeting place. The size of a demonstration farm should be the basic unit generally used in the region.

Measures to promote competition between farmers have been effective. In Tanzania, for example, the farm of each intermediate farmer is adjacent to the farm of a key farmer. This proximity fosters friendly competition to improve rice cultivation techniques and ultimately increase crop yield. In El Salvador, key farmers frequently visited other key farmers and observed how the technology was being implemented. Such reciprocal visits helped develop a sense of competition between the key farmers. In both projects, the competition raised the incentive for farmers to implement technology and helped expedite the technology transfer.

Training of farmers and extension officers

When developing a training package, it is important to develop a training package that securely transfers the technology, while considering the cost. If cost is given the priority while developing a package that is receptive to the recipient country, the outcome may be a training package with uncertain technology. Therefore, the first priority should be given to developing a training package that securely transfers the

technology. When this is accomplished, the content of the training package can be carefully examined, and unnecessary elements can be deleted to the level that is acceptable to the counterpart.

It is also important to make the training as simple as possible. For example, in Tanzania projects, tutors explained to trainees that it is important to “standardize” many of the tasks concerning rice cultivation. The farmers also saw actual work in a training on the farm. Such simple and practical training has been highly evaluated.

The Tanzania project has conducted joint training of extension officers and key farmers. The advantage of joint training is that by living together in a dormitory for the training period, extension officers and key farmers develop a relationship of trust and they will be able to collaborate in disseminating the technology in their irrigation schemes after the training.

(3) Capacity development of the institutions

Reinforcing the organization through research and extension collaboration

In the El Salvador project, the organization was reinforced through the research and extension collaboration system (Generación y Transferencia de Tecnología, or GyTT). By reinforcing the collaboration between extension and research, researchers began to conduct research according to the needs of farmers, and extension officers find it easier to receive the help of researchers when they come across a technical problem. It also became possible to conduct technology development and extension activities at the same time. There may be requirements in implementing this system. For example, in many countries extension and research are conducted by different organizations (in some countries they are privatized), researchers and extension officers are not necessarily friendly with each other, and researchers do not fully meet the needs of extension officers. One of the reasons that the system succeeded in El Salvador is that it had been implemented with the support of World Bank before the project started, and the gap between extension officers and researchers in education levels and wages was not so large.

Reinforcing the practical aspect

In El Salvador and Tanzania alike, the primary problem of researchers, extension officers, and tutors (hereafter referred to as technicians) was their lack of practical skills or experience. When they teach farmers, regardless how much they emphasize theory, farmers are not willing to listen. Practical skills are essential. Therefore, in both projects, the Japanese experts developed the practical skills of technicians. The experts created a farm, and jointly cultivated crops with the technicians. This allowed the technicians to fully acquire the practical skills before showing them to farmers. As a result, farmers improved their evaluation of the technicians.

Farm management guidance

Guidance on farm management and vegetable cultivation techniques represent the wheels of a vehicle, and neither can be removed from agricultural guidance. Farmers consider the implementation of a new technology based on how it would affect the entire farm management, and such a view is also essential to the transfer of a technology. Such guidance was emphasized in the El Salvador project.

Grasping the needs of farmers

It is important for extension officers and tutors of training organizations to understand the needs of farmers and engage in activities (training) to suit those needs. As extension officers and tutors have historically felt that they are superior to farmers, they had little interest in learning from farmers. After

receiving the guidance from experts, extension officers and tutors began learning from farmers.

Internalization into government organization

The first step in achieving financial sustainability is for the project to be internalized into the recipient country's government organization. The Dominica project was successful in writing the promotion of extension of pepper cultivation in the country's five-year development plan. As a result, it became possible for the government agency in charge of the project to secure a budget for the project.

Participation in the framework of aid coordination

Agricultural Sector Development Programme (ASDP) is currently under way in Tanzania. It is extremely important to the future of the KATC to position KATC within that framework. As a facet of aid coordination, all agricultural projects supported by donors will be integrated and unified within the framework of ASDP. On the district level, ASDP's activities will be conducted through the District Agricultural Development Plan (DADP). Funds will flow to DADP from ASDP's basket fund. Therefore, if DADP requests for KATC's training, KATC will be able to use ASDP's basket fund. Using the funds of other donors through the framework of ASDP/DADP does present a model for African nations whose governments are strapped for cash.

JICA office's role of connecting the project with other organizations

Extension covers a wide range of fields, and often requires the collaboration of other organizations. However, for example, it is difficult for KATC in Tanzania, which is located far from the capital, to take the initiative in such collaboration activities with other organizations. Therefore, the project feels that it is desirable for JICA office which is located in the capital to actively work on such collaborations.

Chapter 1. Objective and Methodology of the Study

1.1 Background and objective of the study

1.1.1 Background

Japan International Cooperation Agency (JICA) has undertaken more than 160 technical cooperation projects in the field of agriculture and rural development in approximately 45 countries. The areas of cooperation vary from rice production to irrigation to horticulture. Recently, evaluation studies have been conducted on these projects. It is important to undertake a systematic review of these studies and to draw lessons for future projects.

In fiscal year (FY) 2002, JICA undertook "Synthesis Study on Evaluation in the Field of Agriculture/Rural Development" with the aim of summarizing lessons learned from past JICA projects for agriculture and rural development. The study undertook the following tasks:

- 1) Classified 110 agriculture and rural development projects that were completed during the period from FY 1996 to FY 2002 from the viewpoints of project types (*e.g.*, forms of cooperation and subsectors) by using evaluation reports at project completion;
- 2) Analyzed 15 projects that involved extension based on evaluation reports at project completion; and
- 3) Conducted case studies of 6 projects through interviews with resource persons and summarized lessons for future project formulation and implementation.

1.1.2 Objectives

Based on the findings of the FY 2002 study, JICA undertook "Synthesis Study on Evaluation in the Field of Agriculture/Rural Development (Agricultural Extension)" in FY2003 and FY2004 with the following objectives:

- 1) Gain lessons for the formulation of extension projects that will be established as a model and disseminated in terms of beneficiaries and geographical areas;
- 2) Examine the effectiveness of the models included in two case study projects for dissemination and draw lessons for establishing a model in future extension projects; and
- 3) Integrate the findings of this study with those of the FY 2002 study and draw lessons from them for future extension projects.

As case study projects, JICA selected the following two technical cooperation projects:

- 1) The Kilimanjaro Agricultural Training Center Project in Tanzania
- 2) The Project for the Strengthening of Agricultural Technology Development and Transfer in El Salvador

The two case study projects were selected for the following reasons.

- 1) They include activities for capacity development of the research/training centers and attempt to disseminate methods for utilization of developed technologies, training and extension.
- 2) The models of extension adopted in the projects are developed in view of generalization, technological effectiveness and adaptability to smallholder farmers;
- 3) They focus on extension, involving not only extension officers but also farmers; and

- 3) They focus on extension, involving not only extension officers but also farmers; and
- 4) They are both implemented from the perspectives of establishment as a model and dissemination, while located in two distinct regions, *i.e.*, Africa and Latin America, with largely different socioeconomic environments.

It is important to note that the primary objectives of the two case study projects are not agricultural extension itself, although an element of agricultural extension is included in the project.

1.2 Contents of the study

The evaluation question of this study and related sub-questions are developed by JICA, which are as follows.

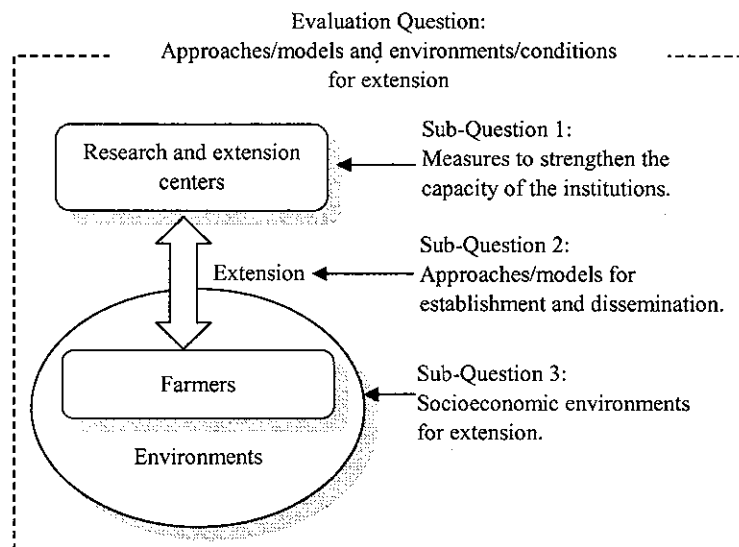
Evaluation question: What kinds of approaches/models are effective in establishment and/or dissemination in the project that involves extension? What kinds of environments/conditions are required for the approaches/models to be effective? If such environments/conditions are absent, what kinds of activities are necessary?

Sub-Question 1: The goals of the case study projects are to strengthen the capacity of Kilimanjaro Agricultural Training Center (KATC) and Centro Nacional de Tecnologia Agropecuaria y Forestal (CENTA) for extension. What kinds of measures have been taken to strengthen their technical, financial, and institutional capacity?

Sub-Question 2: What kinds of approaches/models are effective in establishment and dissemination?

Sub-Question 3: What kinds of socioeconomic environments are necessary for the effective implementation of a project that involves extension? If such environments are absent, what kinds of measures should be taken within the project?

The relationship between the evaluation question and three sub-questions is shown here.



1.3 Methodology of the study

- (1) Study members

This study team consisted of the following members:

Project Manager/Agricultural Extension Social Impact Analysis Evaluation Monitoring (El Salvador)	Dr. Satoko Emoto Dr. Michio Watanabe Ms. Hiromi Takenaka	IDCJ ² , Economist IDCJ, Economist JICA, Planning and Coordination Department
Evaluation Monitoring (Tanzania)	Ms. Ayumu Ohshima	JICA, Planning and Coordination Department

An advisory committee was formed, and the study team consulted the committee in the course of the study. The advisors to this study and the members of the committee are shown below.

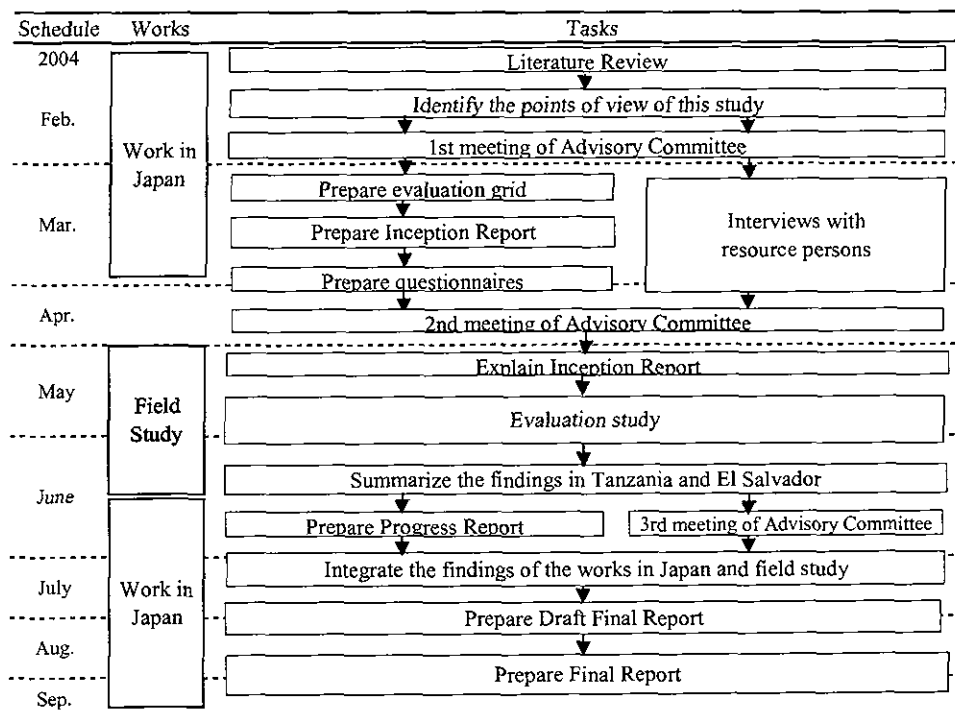
Advisors: Dr. Fukumatsu Suzuki Former Professor, Nihon University
Dr. Tetsuo Matsumoto Professor, Nagoya University

Members of the advisory committee:

Ms. Satoko Miwa	JICA , Planning and Coordination Dept.
Mr. Kazuaki Sato	
Ms. Chihiro Saito	
Ms. Chieko Yokota	
Mr. Tetsuji Goto	
Ms. Kyoka Noguchi	JICA , Rural Development Dept.
Mr. Shinichi Noguchi	
Ms. Mayumi Murakami	
Mr. Toshifumi Egusa	
Dr. Yoshimi Sokei	
Mr. Takashi Nakane	JICA, Regional Dept. III (Latin America and the Caribbean)
Mr. Shin Sakai	
Mr. Makoto Hirata	
Mr. Yoshifumi Tsukii	JICA , Regional Department IV (Africa)

(2) Work flow

The work flow of this study is shown here.



² International Development Center of Japan

The major tasks to be undertaken in this study are summarized below.

1) First work in Japan

The study team conducted literature review, followed by extensive interviews with resource persons (*e.g.*, former and current Japanese advisors of the projects and JICA staff members who were involved in the project formulation and/or implementation). In addition, the study team prepared an evaluation grid and questionnaire survey. Advisory committee meetings were held twice.

2) Field study

The study team visited El Salvador and Tanzania for three weeks, respectively. In each country, the study team conducted a field study for approximately two weeks and summarized the outline of the case study project and lessons learned in a preliminary report. Then, the study team discussed the preliminary findings with the stakeholders of each project. In El Salvador, in order to solicit comments to the findings, the study team held a workshop, inviting 18 CENTA engineers.

3) Second work in Japan

The study team presented preliminary findings of the field study in El Salvador and Tanzania at the third advisory committee meeting, and prepared a progress report. Then, the results of the FY2002 study were integrated to develop the final report of this study.

(3) Preparation of an evaluation grid

An evaluation grid was developed to delineate the questions to be asked in the study in detail. The evaluation grid consists of four components (one for the entire project and the other three corresponding to each sub-question).

(4) Questionnaire survey

Questionnaire survey was conducted in both El Salvador and Tanzania. In El Salvador, the survey was conducted for 1) CENTA researchers, 2) CENTA extension officers, and 3) key farmers. The questions were prepared in Spanish, and the survey was distributed and collected through JICA and CENTA prior to the visit of the study team. In Tanzania, the questionnaire was developed for 1) KATC Tutors, 2) extension agents, and 3) key farmers. The questions were prepared in Kiswahili. Due to the difficulty in access to irrigation schemes, only the schemes which the study team visited were covered by the survey.

(5) Definitions of major terms used in the study

The major terms used in this study are defined below.

1) Extension³

According to a World Bank study, “extension” is considered as a concept that synthesizes diverse perspectives into five goals – transferring knowledge from researchers to farmers; advising farmers in their

³ This definition follows that of FY2002 Synthesis Study, which is developed based on Feder et al. (1999). Feder G., Willett, A., and Zijp, W., 1999, Agricultural Extension: Generic Challenges and Some Ingredients for Solutions, Policy Research Working Paper 2129, Washington DC: World Bank.

decision-making; educating farmers to be able to make similar decisions in future; enabling farmers to clarify their own goals and possibilities and to realize them; and stimulating desirable agricultural development. Extension is viewed both as a system and a set of functions performed by that system to induce voluntary changes among rural people. The present study uses this broad definition of extension.

2) Model and approach

An “approach” is a means that is used to attain a project goal (in this case, extension). On the other hand, a “model” is an approach that is adopted so that it can be reproduced somewhere else or by someone else. Models have different levels. A training course, a training program that is composed of training courses, a training program and demonstration farms are all examples of models. The entire system of extension can also be a model. This implies that approaches also have diverse levels.

3) Establishment and dissemination

“Establishment” (as a model or base for future expansion) refers to technology transfer to those farmers who have been directly approached by the project. “Dissemination” refers to technology transfer to those farmers that the project has not directly contacted or to those who have adopted the technology after the project is completed. Dissemination thus includes expansion and replication of the project activities.

4) Key farmers and intermediate farmers

Key farmers are those that are selected from farmers in the target area to receive intensive guidance on the technology to be transferred from the project through, for example, training and demonstration farms. Intermediate farmers are located near key farmers and chosen by the project as an intermediary between the key farmers and other farmers. The guidance they receive from the projects is much less intensive than key farmers.

1.4 Structure of this report

This is the report of the Synthesis Study on Evaluation in the Field of Agriculture/Rural Development (Agricultural Extension) in FY2003 and 2004. But it also incorporates the findings of the FY2002 study. In Chapter 2, the findings of the FY 2002 study are summarized. In Chapters 3 and 4, the details of the case study projects in El Salvador and Tanzania are summarized. Finally, in Chapter 5, the results of the two case study projects as well as FY2002 study are integrated and presented as lessons drawn for the formulation and implementation of agricultural extension projects in the future.

Chapter 2. Review of JICA's Extension Projects

The purpose of this chapter is to serve as a reference for Chapter 5 which draws lessons for formulation and implementation of agricultural extension projects. To this end, this chapter summarizes the results of meta-analysis of the fifteen extension projects conducted as a facet of the FY2002 Synthesis Study, summarizes the points on the planning, implementation, and evaluation of projects and the lessons drawn from the six case studies.⁴

2.1 Meta-analysis of extension projects

2.1.1 Projects subject to meta-analysis (15 projects that contain extension elements)

	Country	Project	Period
①	China	Tianjing Dairy Farming Development Project Aftercare Programme	1990.03.01 – 1997.02.28
②	Indonesia	Development of High Quality Seed Potato Multiplication System Project	1992.10.01 – 1997.09.30
③	Indonesia	Quality Soybean Seed Multiplication and Training Project	1996.07.01 – 2001.06.30
④	Indonesia	Project for Improvement of Agricultural Extension and Training System	1999.09.01 – 2002.03.31
⑤	Laos	Agricultural and Rural Development Project in Vientiane Province	1995.11.01 – 1997.10.31
⑥	Philippines	Training Services Enhancement Project for Rural Life Improvement	1996.06.15 – 2001.06.14
⑦	Sri Lank	Agricultural Extension Improvement Project in Gampaha	1994.07.01 – 1999.06.30
⑧	Ghana	Small-scale Irrigated Agriculture Promotion Project	1997.08.01 – 2002.07.31
⑨	Kenya	Mwea Irrigation Agricultural Development Project	1991.02.01 – 1996.01.31
⑩	Kenya	Mwea Irrigation Agricultural Development Project (Follow Up)	1996.02.01 – 1998.01.31
⑪	Tanzania	Kilimanjaro Agricultural Training Centre Project Phase I	1994.07.01 – 2001.06.30
⑫	Dominican Republic	Pepper Culture Development Project Phase 2	1992.07.07 – 1997.07.06
⑬	Dominican Republic	Project for Agricultural Development on Sloped Terrains	1997.09.01 – 2002.08.31
⑭	Mexico	Project on the Improvement of Techniques for the Production of Vegetables in Morelos State	1996.03.01 – 2001.02.28
⑮	Paraguay	Project for the Improvement of Vegetable Production Techniques for Small Scale Farmers in Paraguay	1997.04.01 – 2002.03.31

2.1.2 Framework for analysis

The meta-analysis, a cross-sectional analysis of fifteen projects, was conducted based on three analysis themes. The first is to organize and analyze information based on five perspectives: project summary, evaluation at project completion, planning stage, implementation stage, and evaluation stage. The second and third analysis themes are to set a common framework for classification and to classify the fifteen projects, and analyze the features of each type (the role of "models" is also identified in this process). "Approach for Extension" (Draft) is provided as a summary of the meta-analysis.

Analysis themes:

- ① When the focus is placed on "extension," based on what kind of a plan was the project executed?
- ② What roles does the model in the project play in the extension elements of the project?
- ③ How can the extension project be classified in terms of extension? In addition, if classification is possible, what types (model approaches) can achieve effective extension?

Common framework for classification of extension projects

⁴ Meta-analysis is an analytical technique whose purpose is to conduct an overall, cross-sectional analysis, and derive common information between the projects based on the tendencies, common features, and project types derived from the analysis.

Project: Target area: Final target group:		• Use of agricultural equipment and materials. Target: farmers	• Use of technology. Target: farmers	• Institutional aspects, procedures, and customs. Target: farmers and farming villages	• Agricultural services and methods. Target: service organizations	• Guidance method and extension method. Target: extension officers
Project intervention stage in extension development, practical application, and conveyance processes	• Research (fundamental and applied)					
	• Pilot (practical application)					
	• Demonstration					
	• Introduction and announcement of output					
	• -1 Guidance (guidance to extension officers)					
	• -2 Guidance (guidance to key farmers)					
	• Extension (guidance to other farmers)					
Models which were constructed (or those who were engaged in the construction of models)	① Farms					
	② Farmers					
	③ Groups					
	④ Organizations					
	⑤ Systems					
	⑥ Training programs					
	⑦ Technology					
	⑧ Miscellaneous					

2.1.3 Principal results of fifteen projects

(1) Analysis results of planning stage

The result of the analysis of the planning stage is that "overall, the analysis to define development needs is insufficient." Only in few of the projects, the indicators and targets for evaluating the degree of achievement were clearly set in the planning stage.

(2) Analysis results in implementation stage

In the implementation stage, three analyses were conducted: the relationship between technical areas handled by each project and model construction, the relationship between model construction and emphasis of extension, and generalization process in each project.

1) Relationship between technical areas and model construction

	Introduction/implementation of agricultural technology	Introduction/implementation of agricultural organizations and policies	Development of training program and improvement	Improvement and implementation of extension system	Others
Model not constructed	⑭ (③⑨⑮)		(⑨)		
Model constructed	①⑤⑦⑩⑫	⑤⑦	④⑥⑦⑩⑫	⑤⑥	
Executed to generalization	②⑧⑪⑬	⑧⑬	②⑧⑪⑬	⑧⑪⑬	⑪

(Note: ③, ⑨, and ⑮ are projects for which models were planned to be constructed, but the model construction was deemed to be insufficient.)

(Note: ⑪ is a project for which a model was constructed, the functions of institutes was reinforced, and collaboration with related organizations was promoted.)

(Note: The numbers in the table indicate the project numbers used in the list of projects subject to meta-analysis.)

2) Relationship between model construction and three dimensions of emphasis in extension

a. Emphasis on technical effectiveness or usability

	Emphasis on technical effectiveness	Emphasis on usability	Emphasis on both
Model not constructed	⑭ (③⑨⑮)		
Model constructed	①	④	⑤⑥⑦⑩⑫
Executed to generalization	②⑧		⑪⑬

b. Emphasis on improvement of agricultural productivity or increase of farm household income

	Emphasis on improvement of agricultural productivity	Emphasis on increase of farm household income	Emphasis on both
Model not constructed	⑭ (③⑨⑮)		
Model constructed	①⑫		④⑥⑦⑩
Executed to generalization	②⑧⑪		⑬

c. Emphasis on agricultural technology or organizational technology

	Emphasis on agricultural technology	Emphasis on organizational technology	Emphasis on both
Model not constructed	⑭ (③⑨⑮)		
Model constructed	①④⑦		⑤⑥⑩
Executed to generalization	②⑪		⑧⑬

(Note: The numbers in the table indicate the project numbers used in the list of projects subject to meta-analysis.)

3) Generalization process

In four projects, steps were taken to construct a model and extend the technology. As the analysis is based primarily on evaluation reports at project completion, however, it has not been verified whether the activity was properly implemented in the implementation stage after fully considering generalization process in project formulation.

(3) Results by project category and type

The following analyses were conducted by project category based on information on project summary, evaluation at project completion, planning stage, implementation stage, and evaluation stage:

- Matrix analysis on current needs assessment
- Matrix analysis on combination of emphasis and extent of cooperation
- Matrix analysis on combination of emphasis of cooperation and cooperative approach

The analysis by type was conducted according to the classification of extension project as indicated in 2.1.2 (Framework for analysis) and based on the analysis results of five analytical views.

1) Current status of needs assessment

Analysis of the projects revealed a tendency of insufficient need assessment in the preliminary stage. In some projects, however, needs assessment was conducted before the project began. In some of these cases, the need assessment was conducted during the actual phase, while in other cases the need assessment was conducted during a preliminary phase (approximately two years) which was created before the project was actually executed.

2) Current combination of emphasis and extent of cooperation

Analyzed projects include those with emphasis on technology extension, although these are fewer than the number of projects with emphasis on technology development. Of the projects with emphasis on technology extension, two are for establishment of the core for dissemination and three are, to some degree, for dissemination. On the other hand, none of the analyzed projects with emphasis on technology development contained extension elements.

3) Current combination of emphasis and approach of cooperation

Projects with emphasis on technology development and projects with emphasis on technology extension each had only one project that adopted "strategic advancement of project," and the rest were on "progressive advancement of project." Evaluation report at project completion concluded that for a project to be advanced strategically in the future, it must take into account balance with participatory approach and project planning that incorporate a programming perspective (multiple projects are combined to satisfy the development needs).

4) Analysis results based on classification of extension projects

The five types of projects and the principal features and trends of each type learned through meta-analysis are shown in Table 2-1 (following page). There are three conclusions derived from this classification:

- i. The two projects belonging to type 3 include guidance of ordinary farmers. Therefore, an attempt is made to bring the outcome of the project close to the intended results of extension.
- ii As a project is executed with finite input resources during a finite period of time, there are limitations of the project itself to conduct the instruction of ordinary farmers. It is possible, however, to include in the main project to allow the counterpart to independently provide guidance to ordinary farmers.
- iii In order to enhance extension, as can be seen in type 3, it would be effective to consider the feasibility of the technology and the possibility that the farm income will increase with the technology.

2.1.4 Approaches concerning extension

Table 2-2 shows the viewpoints that should be incorporated into the project (i.e., the "set of project elements") for each of the two different approaches concerning extension, one with emphasis on technology development and the other with emphasis on technology extension. ■ indicates a general category in line with the project operation. □ indicates the strategies. By formulating plans while taking into account such differences, differences will arise between the two approaches in how targets are set, how the implementing capacity is improved, and the activities that should be pursued. The FY 2002 Synthesis Study recommends that, when formulating an extension project, the approach be selected depending on which approach is more appropriate for the conditions given the development needs and environmental conditions (in some cases, the approach may be a compromise between the two).

2.1.5 Notes on planning, implementation, and evaluation of projects

FY2002 Synthesis Study calls attention to the following steps when planning, implementing, or evaluating a project.

Table 2-1. Five Types of Extension Projects and Principal Features and Tendency of Each Type

	Type 1	Type 2	Type 3	Type 4	Type 5
Outline of activity	Project consisting primarily of research	Project that includes research, guidance, and extension of guidance method and extension method	Project that aims to extend use of technology or guidance / extension method without conducting research	Project designated as a preliminary phase before the main phase	Follow-up project
Primary features	Most of the elements that should be extended is "agricultural materials" or "use of technology" There has been no notable output in model construction	Models are being actively constructed	Models are constructed for training program, system, or organization	Emphasis is on survey of current situation In some of the projects, pilot and demonstration have been conducted for "use of technology," "institutions, procedure, and customs," and "agricultural services and methods "	In applicable projects, research, and construction of pilot and training programs have been conducted for "agricultural materials," "use of technology," and "institutions, procedure, and customs "
Projects	①④⑮	②③⑦⑨⑫	④⑥⑧⑪⑬	⑤	⑩
Degree of project achievement	× · △ inadequate	△ · ○ some projects inadequate	○ more projects adequate than inadequate	○ goal is deemed to have been achieved	△ · ○ goal has been mostly achieved, according to the report
Characteristics in implementation stage	<ul style="list-style-type: none"> ■ Priorities in extension are "technical effectiveness," "improvement of agricultural productivity," and "agricultural technology " ■ Nature of extension production-push type ■ Establishment of the core for dissemination ■ Emphasis is clearly placed on research and pilot ■ The constructed models serve more as models for summarizing the technology rather than to extend the technology 	<ul style="list-style-type: none"> ■ Priorities in extension are "technical effectiveness and usefulness," "improvement of agricultural productivity," and "agricultural technology " ■ Nature of extension production-push type ■ Establishment of the core for dissemination ■ Also engaged in the extension of "guidance method and extension method " ■ Priority of intervention is on both "pilot" and "guidance (extension officers and key farmers) " ■ "Farm" is a model that was constructed in all five projects Other models, such as "training program," are concurrently used 	<ul style="list-style-type: none"> ■ Priorities in extension are "somewhat higher emphasis on usefulness than technical effectiveness," "improvement of agricultural productivity and improvement of farm household income," and "agricultural technology and institutional technology " ■ Nature of extension production-push type and some demand-pull type ■ Three projects with dissemination ■ Including projects that provide guidance on "institutions, procedure, and customs " ■ Does not intervene in "research " ■ Tends to construct solid models In relatively large number of projects, the models are used to actually provide guidance ■ Tends to pay attention to the importance of needs assessment compared to other types 	<ul style="list-style-type: none"> ■ Priorities in extension are "multi-faceted, and comprehensive projects" ■ Although it resembles activity list, the goal is set prior to commencing the project ■ "Study," "pilot," and "demonstration" are combined to resemble a pilot-type development study ■ What the project considers as a "model" is a development plan that summarizes the results of the activity 	<ul style="list-style-type: none"> ■ Priorities in extension Due to the role of reinforcing or complementing weaknesses in the preceding phase or before commencement of follow-up, it is difficult to point out characteristics inherent to this type

Table 2-2. Extension Project Element Sets

Elements of Cooperation with Emphasis on Technology Development (Improvement and Adjustment)	Elements of Cooperation with Emphasis on Extension (Implementation and Promotion of Use)
Basic flow of activities: technology development (improvement and adjustment) (research and development → trial → pilot (→ demonstration → extension))	Basic flow of activities: Extension (implementation and promotion of use) ((research and development → trial → pilot) → demonstration → extension)
Needs assessment study Technology establishment feasibility study Technology development (improvement and adjustment) : Set goals Technology development (improvement and adjustment) : Formulate strategies (For whom?, When?, Where?, By whom?, How?, With how much budget?, and What?) Technology development (improvement and adjustment) : Formulate plans (e.g. schedule, activities, person in charge, required equipment and materials) Execute Technology development (improvement and adjustment) Self-evaluation of Technology development (improvement and adjustment)	Needs assessment study Technology application feasibility study Extension (implementation and promotion of use): Set goals Extension (implementation and promotion of use): Formulate strategies (For whom?, When?, Where?, By whom?, How?, With how much budget?, and What?) Extension (implementation and promotion of use): Formulate plans (e.g. schedule, activities, person in charge, required equipment and materials) Execute extension (implementation and promotion of use) Self-evaluation of extension (implementation and promotion of use)
Technology development (improvement and adjustment): Develop infrastructure (e.g. research facilities and test farm)	Extension (implementation and promotion of use): Develop infrastructure (e.g. irrigation, well, farm road, warehouse, and sorting area)
Technology development (improvement and adjustment): Train personnel (researchers and technicians) (e.g. in testing and research methods, method of verifying the effectiveness of developed technology, method of studying the feasibility of applying technology, and method of providing guidance on developed technology)	Extension (implementation and promotion of use): Train personnel (extension officers and farmer leaders) (e.g. motivating, role playing, creating text from field cases, facilitation technology, participatory planning technique, guidance on implemented technology)
Technology development (improvement and adjustment): Develop organization (improve organizational functions of the center)	Extension (implementation and promotion of use): Create organization (improve organizational functions of the institute)
Technology development (improvement and adjustment): Secure activity funds	Extension (implementation and promotion of use): Secure activity funds
Technology development (improvement and adjustment): Promote policies and institutions	Extension (implementation and promotion of use): Promotion policies and institutions (e.g. technology implementation subsidy, bonus, pardon)
Technology development (improvement and adjustment): Provide information (e.g. presentation at academic society, pamphlets, and seminars)	Provide information that should be extended (promoted or used) (e.g. broadcasting, pamphlet, seminars, and word-of-mouth)
Technology development (improvement and adjustment): Create text	Extension (implementation and promotion of use): Pilot activities
Technology development (improvement and adjustment): Create a manual for activities	Extension (implementation and promotion of use): Create text
Support the promotion of practical application of technology	Extension (implementation and promotion of use): Create a manual
	Support farmers to find customers
	Use and develop quality evaluation organization for agricultural products
Plus some extension (promotion of implementation and use) activities	Plus some research and development (improvement and adjustment) activities

(1) Planning stage

1) Thorough assessment of development needs

It is necessary to thoroughly analyze and define the development needs to decide the detailed plans for the project. In this process, it is important to properly determine the true problem that the project must solve, who the final beneficiaries are and what their profile is, and what the size and distribution of the target population are.

2) Grasp the important factors that affect the project

As the final beneficiaries are affected by various factors including socioeconomic, cultural and historical, and institutional, it is necessary to thoroughly analyze the effects of those factors that are believed to have large effects.

3) Identify other issues to achieve the overall goal of the project

The more that JICA attempts to address fundamental development needs, the larger or more diverse the matters it must intervene in. Therefore, it would be difficult for a single project to address the development needs. To this end, it would likely be necessary to formulate projects based on the program approach. It is necessary to consider not only the collaboration with other aid projects, but also consider, upon the planning stage of the project, what part of the program the project addresses and how other projects will cover the parts of the program that are beyond the scope of the project.

4) Improve the specificity of project targets

When the aims of the project are narrowed down, it is possible to accurately set activities and indicators. By conducting needs assessment and envisioning the state in which the needs are satisfied, it is possible to set more concrete project targets.

5) Select the implementation agency by taking into account its authority, mandates, and organizational abilities

When selecting the implementation agency, it is necessary to make adjustments for the project to be consistent with the roles of associated organizations and relationships between the organizations. In addition, if the framework of the project exceeds the authority or scope of the implementation agency, then it is important to consider bringing an organization that can provide the necessary roles into the project.

6) Designate the focus of the project according to the project purpose

It is necessary to consider whether to formulate a project with focus on technology (development or improvement) or a project with focus on extension of the developed technology in order to achieve the given project purposes. It is important to recognize that the strategy, implementation capacity, and input of the project will vary greatly depending on the focus.

7) Consider the extension in terms of feasibility in addition to technical effectiveness

When developing a technology in a project, it is necessary to consider the feasibility in addition to technical effectiveness. In particular, it is important to consider the profitability of farmers and whether the extension activities are consistent with the framework of institutions and agricultural support system.

8) Decide the size of input to project activities by taking into account the scale of economy and economic effect

When considering the size of input to a project, it is necessary to consider whether the intervention suits the beneficiary.

(2) Implementation stage

1) Confirm and review the plan

In the implementation stage, it is important for the experts to reconfirm the development needs confirmed in the planning stage. In some cases, it may be necessary to conduct a baseline survey during a short period of time in the initial stage. If a discrepancy is found between the purpose and needs, it is necessary to promptly make adjustments, including corrections to the plan.

2) Clarify definitions of terms that express specific concepts

When using a term that expresses a certain concept, such as "model," "pilot," or "system," it is necessary to clarify the definition of the term. It is also desirable to standardize as much as possible the definitions and use of these terms when used in JICA projects.

3) Clarify the roles of "model" in individual projects

Besides clarifying the definitions and terms of such terms as "model," it is also necessary to clarify the framework of a model in each project (purpose of constructing the model and structure of the model). "Framework" refers to whom the activity caters, what the objectives are, what the presumptions are, what the targets are, what resources are used, and what elements the activity includes.

4) Exchange information with personnel of neighboring countries

Exchanging information with personnel of neighboring countries is an effective means of enhancing the effect of technical cooperation.

5) Consider the climate, environment, and crop characteristics of the target area

When implementing a new crop, it is important to select the crop by taking into account the climate and environment of the target area and the characteristics of the crop.

6) Use of farmer leaders

Disseminating techniques through farmer leaders, who are part of the final beneficiaries, is an effective means of spreading technology to ordinary farmers.

7) Consider approaches incorporating cash income means

Developing a means to earn cash income as an approach to developing rural areas is not only realistic and effective, but also it rejuvenates the community from social and economic aspects.

8) Consider or clarify the path of dissemination

When disseminating a technology, idea, or procedure, it is necessary to clearly show what they mean to the final beneficiaries, and consider the path of dissemination of the technology. It is not necessary, however, to incorporate the entire path into the project activities.

9) Promptly cope with problems that occur (are expected to occur)

There are many suggestions that are too late even when they are given upon evaluation at project completion (e.g., actions that are necessary for ensuring sustainability). Therefore, it is necessary to the counterpart and experts to thoroughly monitor the project and promptly address the first signs of problems.

2.2 Lessons from case studies

The case study of the FY2002 Synthesis Study covers six projects (Table 2-3). Of these, Kilimanjaro Agricultural Training Centre Project Phase I is also subject to the case study of this FY2003-04 Synthesis Study. These projects were selected for the case studies by taking into account the possibility of interviewing experts involved in the projects, based on a questionnaire survey for the agriculture task members of JICA Agricultural Development Cooperation Department (at the time of the FY2002 Synthesis Study), and as a result of meta-analysis. The lessons drawn from the case studies of these six projects are shown below (excerpt from the FY2002 Synthesis Study report).

Table 2-3. Outline of Six Case Study Projects in FY2002 Synthesis Study

Project	Indonesia Project for Improvement of Agricultural Extension and Training System	Laos Agricultural and Rural Development Project in Vientiane Province	Philippines Training Services Enhancement Project for Rural Life Improvement	Sri Lanka Agricultural Extension Improvement Project in Gampaha	Tanzania Kilimanjaro Agricultural Training Centre Phase I Project	Dominican Republic Pepper Culture Development Project Phase 2 / The Project for Agricultural Development on Sloped Terrains
Period	1999.09.01 – 2002.03.31	1995.11.01 – 1997.10.31	1996.06.15 – 2001.06.14	1994.07.01 – 1999.06.30	1994.07.01 – 2001.06.30	1992.07.07 – 2002.08.31
Keywords: 1) Lesson elements	Extension project formulation method, scope of extension project, cooperation resource, technical transfer method, sustainability of project	Extension project formulation method, scope of extension project, participatory development technique, fostering ownership, sustainability of project	Scope of extension project, participatory development technique, fostering ownership, sustainability of project	Extension project formulation method, scope of extension project, cooperation resource, sustainability of project	Extension project formulation method, scope of extension project, cooperation resource, fostering ownership, technical transfer method, sustainability of project	Extension project formulation method, scope of extension project, cooperation resource, fostering ownership, effective use of PDM, technique of strengthening institutions, efficiency of project, sustainability of project
2) When is lesson used?	When project is formulated	When project is formulated	When project is formulated, implemented, and monitored	When project is formulated, implemented, and monitored	When project is formulated, implemented, and monitored	When project is cultivated, formulated, and evaluated
3) Who uses the lesson?	JICA staff, experts, recipient government including implementation agency	JICA staff, experts, recipient government including implementation agency	JICA staff, experts, recipient government including implementation agency	JICA staff, recipient government including implementation agency, project personnel,	JICA staff, experts, recipient government including implementation agency,	JICA staff, experts, evaluation mission, recipient government including implementation agency
Project purpose	Reinforce planning, implementation, monitoring, and	Improve planning, implementation, and evaluation	Rural Life Improvement (RLI) training program is	Effective land utilization method and crop diversification is	Kilimanjaro Technical Training Center enhances its	Improve the farm economy of small-scale farmers

	evaluation systems in training and extension	techniques in agricultural and rural development	created and systemized within Agricultural Training Institute (ATI)	developed in coconut farms in Gampaha	capacity to train farmers and extension officers in irrigated rice cultivation technology	household in three target areas on mountain slopes (Project for Agricultural Development on Sloped Terrains)
Description of project	Of the 31 agricultural education and training centers (BDP) around the country, designate the Kayuambon BDP in Java Barat as the model, investigate the existing status of training and extension to detect problems and plan new training techniques. Find and analyze successful cases of leading farmers in the area, compile as extension information, and incorporate into the extension activities.	This project was conducted as a two-year preparation phase. The main phase (phase 2) consists of improvement of rural development planning technique, introduction of improved crops and livestock, improvement of farm management, and development of agricultural infrastructure (e.g., irrigation facilities and farm roads). The project attempted to introduce and implement the technique of creating a rural development plan while incorporating participatory approach.	As opposed to the conventional top-down extension, this project attempted to introduce, verify, and implement the approach of first understanding the needs of rural areas, then training residents in the technology and know-how that are needed by the residents. The project aimed to build a model from the approach while conducting a pilot training.	The project took advantage of the location of the target area, near capital Colombo, to select export crops and crops for Colombo. At the same time, the project provided the extension officers and key farmers with technical guidance through training, fostered production groups, and implemented a group fund. By improving the extension methods, the project attempted to introduce and implement catch crop for coconut farms.	Kilimanjaro Agricultural Training Center provided guidance and instructions on improving training method and training text for tutors. Through this process, the project improved the capacity of KATC. By training government personnel, extension officers, and key farmers it intended to improve the skills of irrigated rice cultivation.	This project included research and development and extension to implement pepper cultivation in the country that had almost no experiences. In phase 1, the project conducted research of pepper cultivation method suited to the country and developed cultivation technology for saplings. In phase 2, technology was developed by trial farms, and it was extended to farmers in the mountain slope areas. Pepper was incorporated by farmers into sustainable farm management system.
Issues	Formulate a plan based on development needs. Consistency between the scope of project and scope of the mandate of implementation agency. Project development pattern Create text material from field cases.	Conduct preliminary phase in advance of the main phase. Necessity of assessment of the counterpart's capacity in project formulation, and implementation agency.	Consistency between the scope of project and the scope of the mandate of implementation agency Project development pattern	Consistency between the scope of project and the scope of the mandate of implementation agency Change the approach while the project is in progress	Consistency between the scope of project and the scope of the mandate of implementation agency Project development and implementation pattern	Project development and implementation approach Needs for the project Project implementation agency and organization

2.2.1 Lessons on planning and implementing projects

(1) Grasp and clarify development needs for project implementation

Essential to the success of a project is "need." A project must be executed for a clear need. Unless the development needs are fully grasped in the project planning stage before deciding on the specifics of the project, there is a risk that the fundamental development needs will not be sufficiently met although the project targets may be achieved. Development needs must be shown in the most concrete form through

the process of setting the project targets, overall goals, and target group. It is anticipated that, through this process, what must be done to satisfy the needs becomes clear, and this knowledge is shared among the relevant personnel. In the case of extension projects, one should be aware of the danger that extension itself may be perceived as the objective and the interest in the state that should be realized by using extension as the means may wane.

Related projects: Indonesia Project for Improvement of Agricultural Extension and Training System
Dominican Republic Pepper Culture Development Project Phase 2 / The Project for Agricultural Development on Sloped Terrains

(2) Need for assessment of the project implementation capacity of the recipient country

It is necessary to fully define the needs of the target people in the project formulation stage and consider what kind of project implementation capacity is desired and what kinds of collaborations must be made and what functions must be reinforced to achieve institutional capacity development. In addition, even if the organization in the recipient country that made the request for cooperation is positioned as the implementation agency, if another organization is deemed appropriate, it is necessary to consult with the recipient country and add or replace the implementation agency. Furthermore, when substantial capital is required, such as an agricultural infrastructure project, it is necessary to fully consider whether to rely on donors or government funding, or to incorporate the payment by beneficiaries (farmers). In particular, as Japanese involvement decreases after the project ends, it is important to create a mechanism.

Related projects: Indonesia Project for Improvement of Agricultural Extension and Training System
Lao People's Democratic Republic Agricultural and Rural Development Project in Vientiane Province
Dominican Republic Pepper Culture Development Project Phase 2 / The Project for Agricultural Development on Sloped Terrains

(3) Implement preparation phase

Depending on how the needs are grasped in the preliminary stage, implementing a preparation phase before the main phase, consisting primarily of studies to accurately grasp the needs of farmers is effective.

Related projects: Lao People's Democratic Republic Agricultural and Rural Development Project in Vientiane Province

(4) Consider the project scope and activities in detail upon designing

Activities to extend a new crop to ordinary farmers who have had no experience are restricted in time. It is therefore necessary to design the project by taking into account the balance between the outcome and improving the capabilities of counterpart personnel. When considering the division of works between Japanese side and recipient country side, it is necessary to take into account a number of factors such as the possibility of extending the term of cooperation, capacity of the recipient country, and the balance between cost and benefit.

Related projects: Dominican Republic Pepper Culture Development Project Phase 2 / The Project for Agricultural Development on Sloped Terrains

(5) Consistency between scope of the project and the mandate of implementation agency

When planning a project, it is important to ensure consistency between the scope of the project and the mandate of the implementation agency. The inconsistency may interfere with the smooth implementation of the project. It is also important that the relevant parties, including those from the

Japanese side and those from the recipient country side, share the awareness on the scope of the project and the mandate of the implementation agency. Then, the risk that the project activities will deviate from the target will be reduced.

When designating the implementation agency in an extension project, it is necessary to fully clarify the positioning of the project in the extension system and the objectives and activities of the project, and grasp the roles of the relevant organization of the recipient country before selecting a proper implementation agency. Different organizations and personnel will be involved in each stage of extension activities, from the research to extension to farmers. If an organization that does not match the needs of the stage becomes the implementation agency, the activity itself will be confined, and the outcome will naturally be inadequate. In particular, if the organization of the recipient country is vertically structured and authority is finely divided, or when the roles of organization is unclear as decentralization of authority has been advanced, the problem is more serious as it would be difficult to obtain the collaboration of organizations in the project implementation stage.

Related projects: Indonesia Project for Improvement of Agricultural Extension and Training System
 Philippines Training Services Enhancement Project for Rural Life Improvement
 Sri Lanka Agricultural Extension Improvement Project in Gampaha
 Tanzania Kilimanjaro Agricultural Training Centre Phase I Project

(6) Actions concerning project sustainability

It is necessary to have a view of the capacity for maintaining the achieved targets. When various types of organizations, such as research, training, and extension are involved, and especially when the government agency in charge of each activity is different, or authority is divided between central government and local government, an adequate mechanism must be created to ensure that activities are continued with full collaboration between the relevant organizations even after the project ends. It is unrealistic to expect the capacities and budget to continue after the project ends. As it would be difficult to create such a mechanism in a short period of time, it is desirable to plan the mechanism from the early stages of the project. Namely, it is important to take the following steps:

- Clarify the targets and activities under national, sector or local development plan (basis for the activities)
- Designate an activity as a normal duty or responsibility in line organization (secure the personnel)
- Secure the necessary budget and set rules for budget allocation in line organization (securing the budget)

In Africa, in particular, securing the necessary resources, such as budget and human resources, is an extremely difficult problem for any project, not only extension projects. Following the rule of bearing local cost will jeopardize not only sustainability, but also the project itself. Although there is no easy answer to this problem, the following lessons (rules that should be emphasized) can be drawn from the project.

(Budget)

- Fully consider the possibility of the implementation agency to secure its own income.
- If the center can secure its own income, then reduce input from Japan gradually, and create a mechanism that the income is used to implement the project and activities.

(Human resources)

- Designate the proper allocation of human resources as a prerequisite for implementing the project, and particularly prevent excessive intervention by upper organization.
- Note that Africa lacks even the basic conditions (e.g., adequate food) for the counterpart and related personnel to perform to their full potential.

(Common to budget and human resources)

- As the outcome and sustainability of activities are entirely dependant on the resources of the recipient country, in the case of LLDC, primarily African countries, do not set overoptimistic targets in the stage of project formulation, but share a common view of the limitations between the relevant personnel, and consider how the

project should be implemented from various angles.

Considering the actual conditions in Africa, however, even when the above considerations are made, it may be unrealistic to expect the implementation agency to become self-sufficient. In order to support institutions in LLDC, including African countries, and continue to have the desired effects, there are two approaches that can be taken: i) shift the support to the private sector, and ii) provide public organizations with continuous support for a long period of time. It is necessary to discuss the specific policies, while taking into account that Japanese ODA and technical cooperation are designed primarily to support public organizations.

Related projects: Sri Lanka Agricultural Extension Improvement Project in Gampaha
Tanzania Kilimanjaro Agricultural Training Centre Phase I Project
Dominican Republic Pepper Culture Development Project Phase 2 / The Project for Agricultural Development on Sloped Terrains

(7) Changing the approach in midst of a project

If the initial approach is found to be ineffective, it is important to make necessary changes to the plan, not insisting on maintaining the initial plan. When making changes to the project, it is important to receive support from the JICA office in the country as well as from JICA headquarters.

Related projects: Sri Lanka Agricultural Extension Improvement Project in Gampaha

2.2.2 Lessons on project implementation pattern and approach (by project)⁵

(1) Indonesia Project for Improvement of Agricultural Extension and Training System

1) Project advancement pattern

When constructing a model (in this project, a model training program), it is not necessarily sufficient to complete the model after conducting only one trial. One way to construct an effective model is to conduct multiple trials, correct the model and manual, and accumulate experience. In addition, when disseminating the model to other regions, certification or institutionalization by the central government would also serve as reinforcements. Furthermore, for the project to attain extension, it is necessary to urge the recipient government to prepare and implement an extension plan for national dissemination.

2) Learning from local cases (training text)

It is not always necessary to introduce technology from abroad. When extension resources such as best technologies in the recipient country are used, they may be easier to implement as their effectiveness has already been verified locally. In some cases, target farmers are more likely to trust successful methods that are being practiced by nearby farmers.

(2) Philippines Training Services Enhancement Project for Rural Life Improvement

When constructing a model (in this project, a model training program), it is not necessarily sufficient to complete the model after conducting only one trial. If the contents of the trial will take firm root in the

⁵ The lessons on project implementation patterns and approaches were organized by project because the implementation pattern differed between each study project, and it was difficult to group the projects. The Laos Agricultural and Rural Development Project in Vientiane Province and Agricultural Extension Improvement Project in Gampaha in Sri Lanka are not included here because the former was a preparation phase and the latter changed the approach during the project.

implementation area when it is conducted once, it may be advisable to move the implementation area and conduct multiple trials, correct the model and manual in the process, and accumulate experience to construct an effective model.

(3) Tanzania Kilimanjaro Agricultural Training Centre Project Phase I

1) Program approach as a result

Even if various projects are implemented to solve one primary problem, this work alone is insufficient to be called a "program approach." Only when the overall picture of what must be done to solve the problem becomes clear and each of the projects are systematically positioned based on the overall picture can the work be called a "program approach." The program approach concept is particularly important in providing support in LLDC, including African countries. Since the resources for cooperation are limited and there is a growing need for coordination with other donors, the concept of program approach is essential in realizing effective aid coordination.

2) Implement with balance between needs and resources

It is important to devise a clear framework on how to implement the project based on a certain strategy in the planning stage. The devised framework is not necessarily fixed, but should be corrected and improved as the need arises by taking into account the overall balance in the implementation stage.

(4) Dominican Republic Pepper Culture Development Project Phase 2 / The Project for Agricultural Development on Sloped Terrains

When a model is constructed for introducing a new crop, the target faces many uncertainties. Therefore, the approach of steadily building up results in phases and spreading the results is effective. In the process, the problems are clarified in each stage, and the lessons allow to solve the problems. By concentrating the model to a certain region in the initial stage and achieving positive results, related personnel, particularly farmers, will have a greater incentive to implement the new crop, and develop a greater interest in the project. As a result, it would likely be easier to implement the activities and attain the goal.

2.3 Summary and discussions

The lessons on project formulation and implementation drawn from the results of meta-analysis and FY2002 Synthesis Study are summarized below.

(1) Lessons concerning project formulation

- 1) Grasp the development needs for project implementation and clarify the project targets
- 2) Grasp the important environmental (socioeconomic, cultural, institutional) conditions that affect project implementation
- 3) Consider project formulation through a program approach
- 4) Consider the scope of project and activities in detail
 - Assess project implementation capacity of recipient country
 - Consider climate and environment of the targeted area and crop characteristics
 - Designate focus that is in line with project goals
 - Consider from feasibility viewpoint in addition to technical effectiveness
 - Decide the size of input for the project activities by considering the scale and economic effects of the beneficiaries

5) Consistency between the scope of project and mandate of the implementation agency

As repeated throughout the FY2002 Synthesis Study, the most important lesson is 1) grasp development needs. Only when the development needs are accurately defined can the targets of the project be set as concrete and clear objectives. Only then can corresponding activities be planned. As for 2) environmental conditions, it may not be sufficient to analyze the envisioned effects on project implementation, but under certain circumstances, also create a plan for making changes to meet the conditions and incorporating them into the project. As for 3) program approach, as this approach is becoming the mainstream in development assistance by major donors, it is necessary to consider more specific methods in future project formulations. The problem of 5) consistency between the scope of project and mandate of implementation agency was found in four out of the six case study projects. Along with grasping development needs, this is an important point to remember in the formulation stage. As the implementation of extension project is being shifted to local governments and private sector under decentralization policies in many countries in recent years, mandate of implementation agency is a point that must be carefully reviewed in future project formulation.

(2) Lessons concerning project implementation

- 1) Reconfirmation and review of the plan by Japanese experts in initial stage
- 2) Preparation phase consisting primarily of studies prior to the main phase
- 3) Construction and dissemination of a model by steadily building results in phases
- 4) Implementation of extension method suited to the local conditions
 - Learning from local cases (training text)
 - Dissemination through farmer leaders (farmer to farmer extension)
 - Consider an approach incorporating cash income means
- 5) Consider or show the path of dissemination
- 6) Preparation, implementation, and institutionalization of extension plan by the recipient government for the dissemination of the model
- 7) Flexible implementation according to the problems that arise (e.g., changing the approach in the midst of the project)

The lesson that is believed to be particularly important in implementing an extension project is 3) the approach to steadily accumulate and spread results in phases. As pointed out in the FY2002 Synthesis Study, this approach is important when introducing a new crop that presents the target with many uncertainties. Farmer to farmer extension as described under 4) should be an effective method in LLDCs. The two projects that are the subject of the case studies in this report also used farmer to farmer extension (key farmers → intermediate farmers → ordinary farmers). In an extension project, it is desirable for a model that is developed or adopted by a project to be also spread to areas outside of the target area of the project (dissemination). 6) Preparation, implementation, and institutionalization of extension plan by recipient government are also important. 5) Clarify the path of dissemination is also a preparation or support to this end. The importance of 7) Flexible advancement is not limited to extension projects, but is particularly important in extension projects that are likely to cater to various areas and beneficiaries. On the other hand, thorough monitoring is essential to take appropriate actions against problems or changes in the environment or to make effective adjustments.

(3) Overall lessons

- 1) Clarify the definitions of terms that express certain concepts

- 2) Clarify the roles of the model in each project
- 3) Exchange information with related personnel in own country and in neighboring countries
- 4) Ensuring sustainability of the project

The FY2002 Synthesis Study refers to 1) through 3) as points to remember in the implementation stage. These points should, however, be considered from the formulation stage. As for 1) Clarify the definitions of terms, as the definitions of "model" and "approach" were unclear in this study in the beginning, their definition and concepts have been clarified. The FY2002 Synthesis Study refers to 2) Clarify the roles of the model, the roles should be clarified first in the formulation stage. Furthermore, the roles of the model should be reviewed according to the local conditions that become clear through implementation, and generalize (disseminate) an even more practical model. 3) Exchange information is limited to "related personnel in neighboring countries" in the FY2002 Synthesis Study, but as this study implies that collaboration with related domestic organizations and other donors is also important, "related domestic personnel" are added here. As 4) Sustainability is difficult to achieve in a short period of time upon the completion of the project, it should be addressed from the beginning of the project. Ideally, the project should be planned in the formulation stage so it can achieve sustainability after the cooperation is discontinued. In particular, sustainability in financial terms should be predictable to considerable accuracy in the formulation stage by grasping the fiscal conditions of the recipient government and in budgets for extension activities.

2.4 Positions of case study projects in JICA's Technical Cooperation Projects on agricultural extension

Viewed in terms of extension, the flow of JICA's technical cooperation projects in the agricultural field can be divided into three stages. In the first stage are projects with focus on research or technology development. Although these projects focused primarily research or technology development, the research outcome did not necessarily find its way to farmers. Therefore, as part of the project, JICA called on farmers in the interest of linking the outcome of research to farmers.

In the second stage are projects that address extension, in addition to research and development, from the formulation stage. The purpose of these projects is to increase the beneficiaries of outcomes of research and technology development. The emphasis of these projects was still on research and technology development, however, and did not necessarily take into account the mandate of the implementation agency, as the research organization remained as the implementation agency, in implementing extension activities.

In the third stage are projects in which extension is an increasingly important part. In the beginning, research and development was more important than extension. The Kilimanjaro Agricultural Training Centre (KATC) Phase I Project in Tanzania that began in 1994 is one example. The implementation agency for the project is a training organization. Although the purpose of the project was to reinforce the training capacity, extension was also given priority in the activities. The KATC Phase 2 Project that began in 2001 is an evolution of this project. In phase 2, projects aim to develop a training package that would actually be accepted by farmers. Even though the purpose is the same (i.e., to reinforce the training institute), the extension factor is given greater weight. JICA has also begun to form projects that give greater weight to extension and less weight to research, where research is conducted to develop a technology that will be disseminated. JICA has also begun to select implementation agencies whose mandate is extension. The Project for the Strengthening of Agricultural Technology Development and Transfer that began in 1999 in El Salvador is one such project.

Chapter 3. Project for the Strengthening of Agricultural Technology Development and Transfer in El Salvador

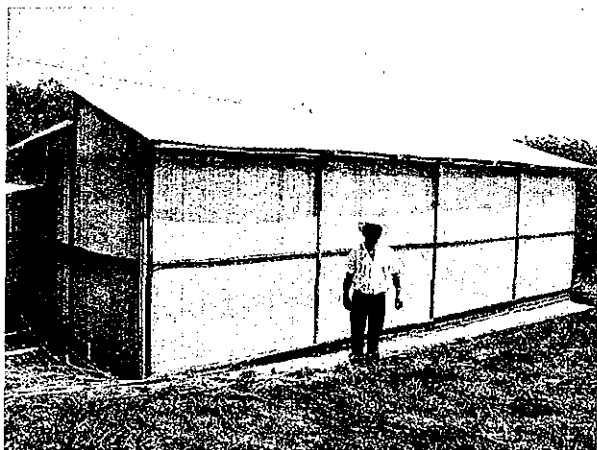


Photo 3-1. Greenhouse constructed by key farmer with the project's support

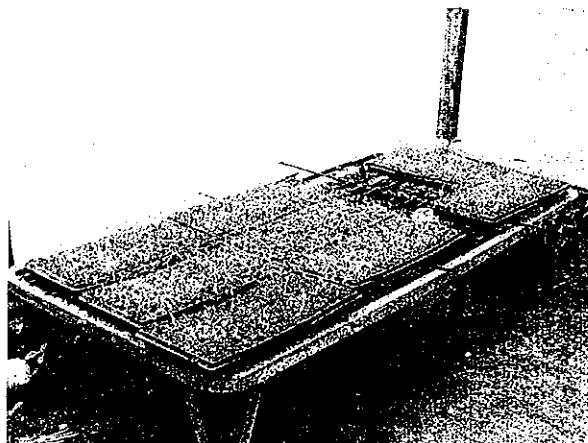


Photo 3-2. Tray nursery used to control virus transmitted by whiteflies



Photo 3-3. Pot nursery



Photo 3-4. Tomatoes near harvest

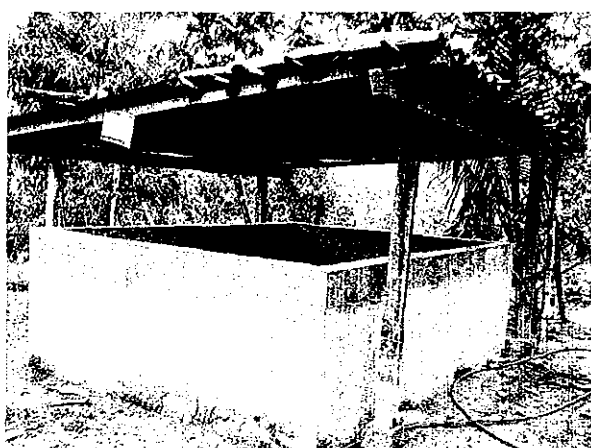


Photo 3-5. Water tank installed at key farm to extend cropping season



Photo 3-6. Farm of key farmer on hillside



Photo 3-7. Training of intermediate farmers at key farm



Photo 3-8. Training of intermediate farmers at key farm

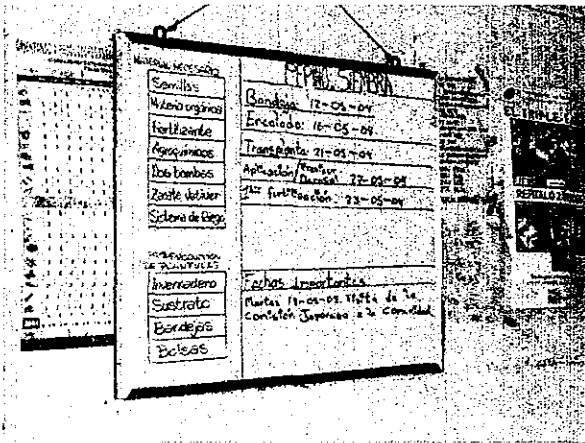


Photo 3-9. Green pepper cultivation schedule prepared by key farmer with extension officers



Photo 3-10. Simple water tank used by intermediate farmers



Photo 3-11. Greenhouse disseminated with financial assistance of a different project in San Martin (non-model site area)



Photo 3-12. CENTA researchers/extension officers at the study team's presentation

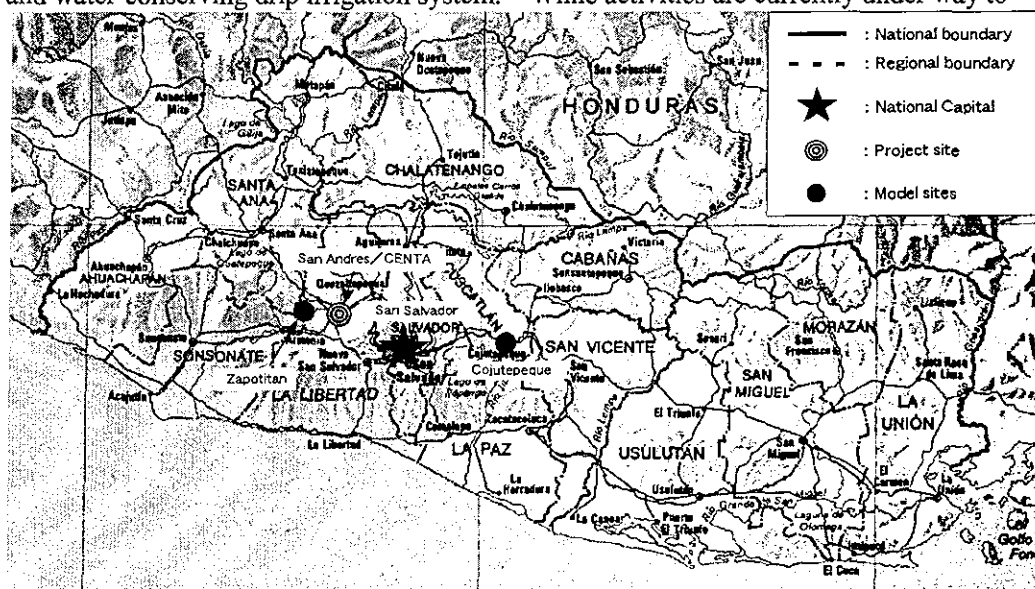
3.1 Outline of the project

The Project for the Strengthening of Agricultural Technology Development and Transfer in El Salvador was implemented for five years, from February 1999 to January 2004. It has been succeeded by a one-year follow-up period until January 2005. Map 3-1 and Table 3-1 show El Salvador's map and the project design matrix (the PDM₂ used for evaluation at project completion).

The objective of the project is to strengthen the capacity of CENTA (Centro Nacional de Tecnología Agropecuaria y Forestal, Ministry of Agriculture and Livestock) to develop and disseminate techniques for sustainable farming systems to small-scale farmers. Although CENTA's researchers and extension officers have sufficient techniques concerning such basic crops as corn, they had insufficient techniques concerning vegetable cultivation. So, the project focused on vegetables in strengthening the capacities of CENTA researchers and extension officers. Therefore, the purpose of this project was not to extend technology to farmers. In implementing the project, technologies to cultivate such vegetables as tomatoes were developed, the capacities of researchers and extension officers were reinforced at two extension offices selected as model sites, and the technologies were transferred to the key farmers and intermediate farmers at the model sites. Primary emphasis was placed on changes in the awareness among researchers, extension officers, and farmers to ensure the sustainability of the project.

As for the extension approach, first the technology was transferred to extension officers and researchers, and the extension officers then led the way to transfer technology to twenty key farmers. Next 400 intermediate farmers were selected, and the extension officers and key farmers worked together to provide the intermediate farmers with technical support as a group activity. In tomato cultivation, main problem is the virus transmitted by whiteflies. As countermeasures, the project implemented the use of a greenhouse, and double planting method. In order to enable cultivation in dry season when vegetable prices are high, the project also aimed to expand the cropping season. To this end, the project implemented the use of rainwater tanks and water-conserving drip irrigation system. While activities are currently under way to

pave the way for technology transfer to intermediate farmers, CENTA is already planning a post-project plan to disseminate the technology to the entire country.



Map 3-1. Map of El Salvador

Table 3-1. Project Design Matrix of the Project for the Strengthening of Agricultural Technology Development and Transfer in El Salvador

Target Group: Small-scale farmers in slope areas

NARRATIVE SUMMARY	OBJECTIVITY VERIFIABLE INDICATORS	Means of Verification	IMPORTANT ASSUMPTIONS
<p>OVERALL GOAL The higher and more stable income of small-scale farmers will be realized through the acquisition of techniques for sustainable farming systems.</p> <p>PROJECT PURPOSE The functions of CENTA for the development and transfer of the techniques for sustainable farming systems to small-scale farmers will be strengthened.</p>	<p>By the year 2008, 1500 small-scale farmers in the country adopt techniques for sustainable farming systems through the assistance from CENTA.</p> <p>1 By the year 2004, sustainable farming systems are established for 20 small-scale key farmers in the model sites.</p> <p>2 By the year 2004, 400 small-scale key farmers in the model sites adopt techniques for sustainable farming .</p>	<p>Annual report of CENTA</p> <p>Annual report of the detailed farming system survey</p> <p>Annual report of the extension offices</p>	<p>National development policy giving priority over agriculture remains unchanged.</p> <p>1 Provision of credit and the market for agricultural products are improved.</p> <p>2 Meteorological conditions remain unchanged.</p> <p>3 Training for researchers and extension officers in the country is continuously conducted.</p>
<p>Outputs</p> <p>1 The capabilities of researchers and extension officers of CENTA necessary for enhancing the development of techniques for sustainable farming systems will be strengthened.</p> <p>2 The capabilities of researchers and extension officers of CENTA for implementing the extension activities will be strengthened.</p>	<p>1-1 By the year 2004, researchers improve/develop at least 1 extendable technique of cultivation meeting the farmers' needs.</p> <p>1-2 By the year 2004, researchers and extension officers draw more than 20 improving cases of farming system adaptable at each site.</p> <p>2-1 By the year 2004, the performance rate of extension activities based on the plan is at least 80%.</p> <p>2-2 By the year 2004, researchers and extension officers introduce more than 20 improving cases of farming system to the farmers.</p> <p>2-3 By the year 2004, at least 80% of researchers and extension officers are satisfied with the quality of the manuals of cultivation/extension.</p> <p>2-4 By the year 2004, at least 60% of farmers who get extension services are satisfied with the instructions and method.</p>	<p>Project implementation records</p> <p>Project implementation records</p> <p>Project implementation records</p> <p>Project implementation records</p> <p>Result of evaluation questionnaire of researchers and extension officers</p> <p>Result of evaluation by local consultant</p>	<p>1 Policy of the Ministry of Agriculture and Livestock on the development of techniques for sustainable farming systems to support small-scale farmers remains unchanged.</p> <p>2 Policy of the Ministry of Agriculture and Livestock on the management of CENTA remains unchanged.</p>

<p>3 The training system for researchers, extension officers of CENTA and key farmers will be strengthened.</p>	<p>3-1 By the year 2004, practical training courses based on the participants needs for each target group are conducted constantly and deliberately. 3-2 By the year 2004, at least 80% of participants are satisfied with the training course. 3-3 By the year 2004, the rate of utilization of technique acquired in the training course is at least 50% in farmers training and at least 80% in researcher and extension officer training.</p>	<p>Result of evaluation questionnaire of participants Result of evaluation questionnaire of participants Result of evaluation by local consultant</p>	
<p>ACTIVITIES</p> <p>1 Cultivation</p> <p>1-1 To study the actual conditions of farmers and their problems related to farming systems at the model sites.</p> <p>1-2 To improve existing cultivation techniques and introduce new adaptable cultivation techniques.</p> <p>1-3 To examine and prepare the adoptable techniques for sustainable farming systems at each site.</p> <p>1-4 To verify the adoptable cultivation techniques for the area.</p> <p>1-5 To evaluate the methods for improving the techniques for sustainable farming systems adopted at the model sites.</p> <p>2 Extension</p> <p>2-1 To prepare the extension plan to improve the techniques for sustainable farming systems for the key farmers in the model sites.</p> <p>2-2 To prepare audio-visual materials and demonstration farms for carrying out extension activities.</p> <p>2-3 To carry out technical support for the key farmers in the model sites.</p> <p>2-4 To foster and strengthen farmers' organizations.methods adopted at the model sites.</p> <p>2-5 To evaluate the extension methods adopted at the model sites.</p> <p>3 Training</p> <p>3-1 To prepare the training plan for researchers, extension officers and key farmers.</p> <p>3-2 To prepare the training materials.</p> <p>3-3 To conduct the training courses and seminars.</p> <p>3-4 To evaluate the training methods adopted.</p>	<p>INPUTS</p> <p>1 Japanese Side Dispatch of Japanese experts *Long-term experts 1) Chief Advisor 2) Coordinator 3) Cultivation 4) Extension / Training *Short-term experts</p> <p>2 Provision of machinery and Equipment</p> <p>3 Training of Salvadorian counterpart personnel in Japan *Administrative staff *Secretaries for Japanese *Drivers for Japanese experts *Other necessary support personnel</p> <p>2 Provision of land, buildings and other necessary facilities</p> <p>3 The supply or replacement of equipment, machinery, vehicles, instrument, tools and other materials other than that provided by the Government of Japan.</p> <p>4.Allocation of operational expenses for the Project.</p>	<p>Salvadorian Side 1.Assignment of counterpart personnel and administrative staff *Project Director *Project Manager *Project Sub-Manager *Counterpart personnel in the fields of: 1) Cultivation 2) Extension 3) Training 4) Japanese Short-term experts *Administrative staff *Secretaries for Japanese *Drivers for Japanese experts *Other necessary support personnel</p> <p>2 Provision of land, buildings and other necessary facilities</p> <p>3 The supply or replacement of equipment, machinery, vehicles, instrument, tools and other materials other than that provided by the Government of Japan.</p> <p>4.Allocation of operational expenses for the Project.</p>	<p>Researchers and extension officers trained by the Project stay with CENTA.</p> <p>PRE-CONDITIONS</p> <p>1 Small-scale farmers need techniques for sustainable farming systems.</p> <p>2 Researchers and extension officers of CENTA need to enhance their capabilities to develop and transfer techniques for sustainable farming systems.</p>

Source: JICA, 2001, Mid-term Evaluation Report of the Project for the Strengthening of Agricultural Technology Development and Transfer in El Salvador (In Japanese).