

**Japan International Cooperation Agency (JICA)**

**Ministry of Agriculture, Livestock and Food (MAGA)**

**THE VERIFICATION STUDY  
OF  
THE MASTER PLAN ON SUSTAINABLE RURAL DEVELOPMENT  
FOR THE REDUCTION OF POVERTY  
IN  
THE CENTRAL HIGHLAND REGION  
OF  
THE REPUBLIC OF GUATEMALA**

**VOLUME-I : MAIN REPORT**

**MARCH 2003**

**Nippon Koei Co., Ltd.**

<b>AFA</b>
<b>JR</b>
<b>03-28</b>

## **LIST OF REPORTS**

VOLUME I: MAIN REPORT

VOLUME II: ANNEX 1 PILOT PROJECTS

- A. General Information
- B. Plan of Revolving Fund for Hand Weaving Thread (Xeatzan Bajo)
- C. Mini Irrigation Plan (Xeatzan Bajo)
- D. Water Quality Improvement Plan (Xeatzan Bajo)
- E. Coffee Production Improvement Plan(Panyebar)
- F. Plan for Reducing Workload in Mountainous Area through Coffee Processing (Panyebar)
- G. Rehabilitation Plan for Drinking Water System (Panyebar)
- H. Water Quality Improvement Plan (Panyebar)
- I. Plan of Extension Use of Improved Cooking Stoves and Sauna Baths (Pachum)
- J. Potato Storage Plan (Palestina)
- K. Plan of Model Farm on Potato Production (Palestina)
- L. Mini Irrigation Plan (Palestina)
- M. Plan for Migrant People to the Coastal Areas (Palestina)
- N. Municipality Community Health Service Plan (Palestina)
- O. Water Quality Improvement Plan (Palestina)

ANNEX 2 EVALUATION AND OBSERVED IMPACTS

ANNEX 3 LESSONS LEARNED

ANNEX 4 APPLICATION FORMS

## PREFACE

In response to a request from the Government of the Republic of Guatemala, the Government of Japan decided to conduct the Verification Study of the Master Plan on Sustainable Rural Development for the Reduction of Poverty in the Central Highland Region of the Republic of Guatemala and entrusted the study to the Japan International Cooperation Agency (JICA).

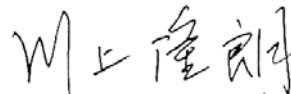
JICA dispatched a study team headed by Mr. Kenjiro Onaka of Nippon Koei Co., Ltd. to the Republic of Guatemala between September 2001 and February 2003.

The team held discussions with the officials concerned in the Government of Guatemala, and conducted field surveys in the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials of the Government and those concerned in the Republic of Guatemala for the close cooperation they have extended to the study.

March, 2003



---

Takao Kawakami  
President

Japan International Cooperation Agency

Mr. Takao Kawakami  
The President of  
Japan International Cooperation Agency  
Tokyo, Japan

## LETTER OF TRANSMITTAL

Dear Sir,


We have the pleasure of submitting herewith the study report on Verification Study of Master Plan on Sustainable Rural Development for the Reduction of Poverty in the Central Highland Region of the Republic of Guatemala.

The study was carried out by Nippon Koei Co., Ltd., under contract to JICA, for a total period of 19 months from September 2001 to March 2003. In the verification study, thirteen pilot projects were selected from eighteen pilot projects that were proposed in master plan study on sustainable rural development for the reduction of poverty in the central highland region that was completed in July 2001. Each pilot project was implemented, monitored and evaluated to verify (1) technical soundness of the project, (2) organizational soundness for executing body, management of project, support system, etc, and (3) improvement of farmers' capability through the execution of the project. Based on the results and lessons learned in the verification study, the planning methodology proposed in Master Plan study was improved. It may be concluded that the improved methodology made should be very effective and practical for use of the projects on sustainable rural development for the reduction of poverty in the Central Highland Region. It was recommended in this report that the implementation of the projects on the sustainable rural development for the four provinces of Chimaltenango, Solola, Totonicapán and Quetzaltenango in the Central Highland Region should be carried out based on the proposed methodology.

We do hope this report will be helpful for promoting reduction of poverty in the Central Highland Region as well as regional socio-economic development plans conceived by the Guatemalan Government and be of any services to prosper the cordial relations and good-will between Japan and the Republic of Guatemala.

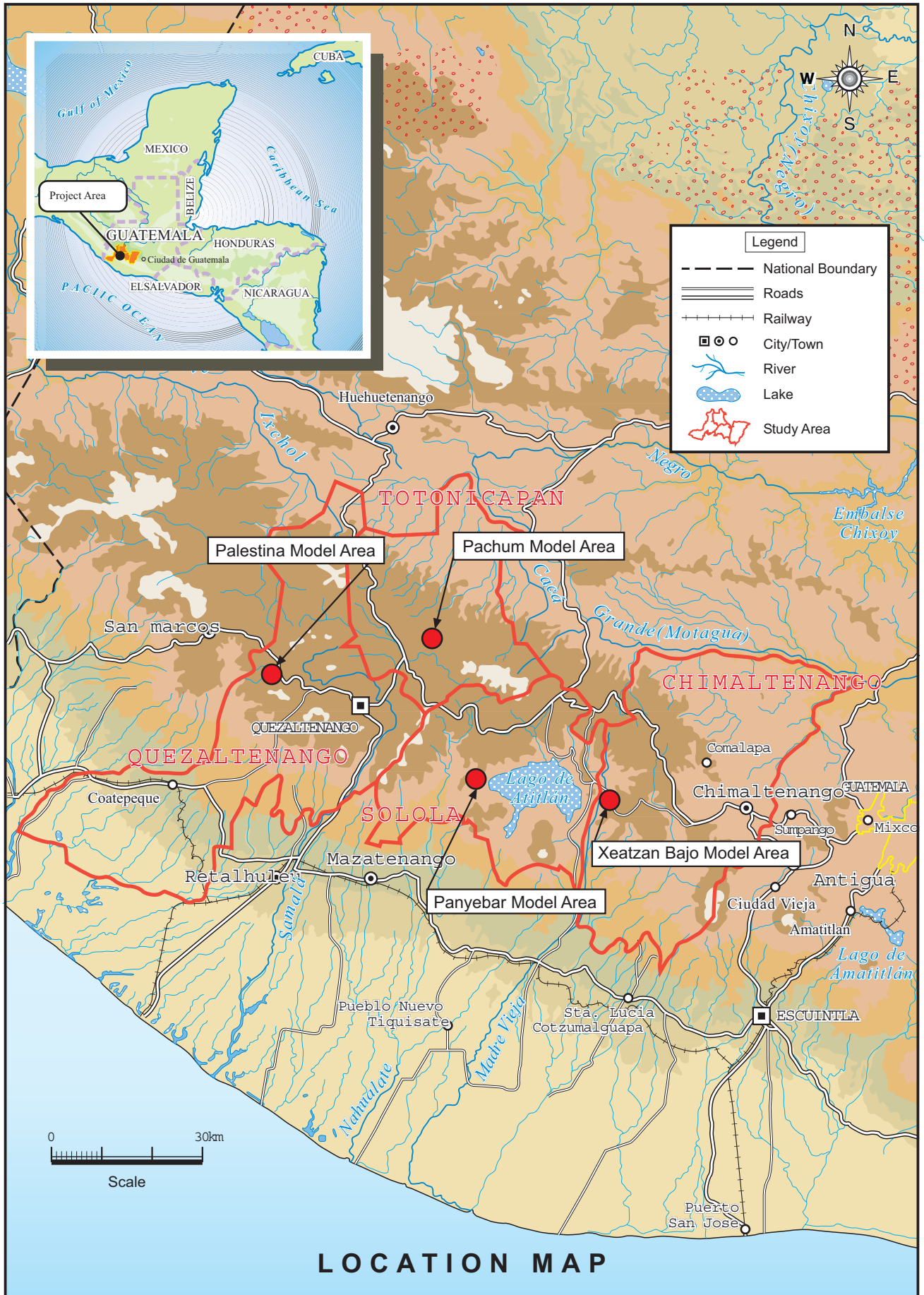
We wish to express our deep appreciation and gratitude to the personnel concerned of your Agency, your Office in the Republic of Guatemala, the Embassy of Japan in the Republic of Guatemala, and Ministry of Agriculture, Livestock and Food for the courtesies and cooperation extended to us during our field surveys and studies.

Very truly yours,



---

Kenjiro Onaka  
Team Leader  
The Study Team of the Verification  
Study of Master Plan on  
Sustainable Rural Development for  
the Reduction of Poverty in the  
Central Highland Region of the  
Republic of Guatemala



## Present Situation of the Model Micro-cuenca (Xeatzan Bajo)



Mini Irrigation Plan : Installation of the Pipelines



Mini Irrigation Plan : Construction of the Water Tank



Mini Irrigation Plan : Cultivation and Harvesting



Plan of Revolving Fund for Hand Weaving Thread : Thread Shop



Plan of Revolving Fund for Hand Weaving Thread : Literacy Training



Water Quality Improvement Plan:  
The Shack of the Sterilizer

## Present Situation of Model Micro-cuenca (Panyebar)



Coffee Production Improvement Plan :  
Seedlings of Coffee



Coffee Production Improvement Plan :  
Vinyl House



Plan for Workload Reduction in the Mountainous Area through Coffee Processing : Demonstration of Pulping Machine



Plan for Workload Reduction in the Mountainous Area through Coffee Processing : Before the Project (left), After the Project (right)



Rehabilitation Plan for Drinking Water System :  
Construction of the Water Tank



Rehabilitation Plan for Drinking Water System:  
Rehabilitation of the Pipelines



Water Quality Improvement Plan :  
Construction of the Shack



Water Quality Improvement Plan :  
Training on Maintenance Work

### **Present Situation of Model Micro-cuenca (Pachum)**



Plan of Extension Use of the Improved Stove and  
of the Improved Sauna : Improved Stove



Plan of Extension Use of the Improved Stove and  
of the Improved Sauna : Improved Sauna

### **Present Situation of Model Micro-cuenca (Palestina)**



Plan of Model Farm on Potato Production :  
Seeding of potatoes



Plan of Model Farm on Potato Production :  
Cultivation of Potatoes





Potato Storage Plan :  
Potato Storage (ICTA Type)



Potato Storage Plan :  
Potato Storage (Japan-I Type)



Municipality Community Health Activity Plan :  
Minimul Pharmacy Unit (MPU)



Municipality Community Health Activity Plan :  
Training of Auxiliary Pharmacist



Plan for the Migrant People to the Coastal Area :  
Training and Distribution of Material



Water Quality Improvement Plan :  
Installed Sterilizer and the Shack

## INTRODUCTION

### 1. Authority

- 01 This is the Final Report prepared by the JICA Study Team in accordance with the Scope of Work (S/W) for the Verification Study on the Master Plan on Sustainable Rural Development for the Reduction of Poverty in the Central Highland Region of the Republic of Guatemala (the Study). The S/W was agreed upon between the Ministry of Agriculture, Livestock and Food (MAGA) of the Government of Guatemala and the Japan International Cooperation Agency (JICA) on March 5, 2001.
- 02 The objectives of the study were (1) to implement the selected pilot projects proposed in the master plan in order to verify the prepared sustainable rural development plan for the central highland region by taking into account (a) income increase, (b) improvement of living conditions and (c) conservation of natural resources, and (2) to transfer technology to the counterpart personnel of the Government of Guatemala regarding planning and verification of methodology and their procedures.
- 03 The study area covers about 6,000 km<sup>2</sup> located in the central highland region consisting of four provinces: Chimaltenango, Sololá, Totonicapán, and Quetzaltenango (see the location map). The model micro-basins where the pilot projects were implemented are shown in the table below.

Province	Municipality	Model micro-basins	Area of micro-basin
Chimaltenango	Patzun	Xeatzan Bajo	9.3 km <sup>2</sup>
Sololá	San Juan La Laguna	Panyebar	5.8 km <sup>2</sup>
Totonicapán	Santa María Chiquimula	Pachum	10.5 km <sup>2</sup>
Quetzaltenango	Palestina de Los Altos	Palestina	3.2 km <sup>2</sup>

\*: The Palestina area consists of 5 caseríos: Los Cabrera, Los Morales, Los Diaz, Sector I and Los Perez.

### 2. Project Background

- 04 After the signing of the Peace Accords in December 1996, the Government of Guatemala has considered rural development as one of the most important issues under the National Development Plan, especially the assistance for small farmers in the central highland region. Since then the Government has been promoting poverty alleviation in rural areas with its higher attention.
- 05 In July 1998, the Government of Guatemala requested that the Government of Japan extend the technical assistance for the Study. In response to the request, the Government of Japan dispatched its Preliminary Study Team to have a series of

discussions with the Government of Guatemala and both sides mutually agreed on the Scope of Work (S/W) in July 1999. As a result of full investigation for over one year from January 2000 until July 2001, it was recognized that verification of the Master Plan was necessary through implementation of a series of pilot projects. In accordance with this necessity, the Government of Guatemala requested that the Government of Japan provide technical assistance for implementation of the pilot projects. In response, the Government of Japan dispatched an Advisory Study Team to discuss the work with the Government of Guatemala, and in March 2001 both sides agreed on the Amended Scope of Work for the Master Plan incorporating the implementation of the selected pilot projects.

## THE PILOT PROJECTS

### 1. Objectives of the Pilot Projects

- 06 The pilot projects were carried out for the following purposes:
- Monitoring and assessment of technical soundness of the Project through the implementation of the pilot projects
  - Monitoring and assessment of organization for implementation and support systems for the Projects and its management (operation and maintenance) through the implementation of the pilot projects
  - Monitoring and assessment of improvement for farmers' capacity in solving problems and constraints through the implementation of the pilot projects

### 2. Selection of Pilot Projects

- 07 The pilot projects were selected from the 59 approaches proposed in the master plan. The selection was made based on several criteria: farmers' intention, economic efficiency, possibility of project realization and expected demonstration effect. As a result, 18 pilot projects were selected in the master plan as listed in the table below.

Model Area	Pilot Project	Implementation Period	
		Phase-I	Phase-II
Xeatzan Bajo	Plan for revolving fund for hand weaving thread	o	o
	Mini-irrigation plan	o	o
	Water quality improvement plan for the existing drinking water supply	-	o
Panyebar	Coffee production improvement plan	o	o
	Plan for reducing workload in mountainous area through coffee processing	o	-
	Rehabilitation plan for drinking water system	o	o
	Water quality improvement plan for the existing drinking water supply	-	o
Pachum	Reforestation plan	*	*
	Plan for Layer-chicken Raising for Women's Group	*	*
	Water quality improvement plan for the existing drinking water supply	*	*
	Plan for extension use of improved cooking stoves and of sauna baths "Temascal"	o	o
	Plan for installation of minimal pharmacy unit	*	*
Palestina	Potato storage plan	o	-
	Plan for model farm on potato production	-	o
	Mini-irrigation plan	*	*
	Plan for the migrant people to the coastal areas	o	o
	Municipal community health activity plan	o	-
	Water quality improvement plan for the existing drinking water supply	-	o

\*: These projects were suspended or canceled because of security reason.

However, some of the pilot projects were modified or suspended due to strong requests from the beneficiaries, insufficient construction time and security problems as follows.

- (1) Plan for reducing workload in Mountainous Area thorough coffee processing:

The pulping machine was changed to engine-operated machine from manual operated one that had been originally planned.

- (2) Potato Storage Plan in the Palestina

Although it was originally planned to be implemented both at the farm level by simple storage and at the association level by construction of cold storage, construction of the cold storage was not implemented and only the storage system at the farm level was implemented due to the shortage of time. As a result, farmer's group association consisting of potato section and irrigation section was not set up.

(3) Pilot Projects in Pachum

Out of the five proposed pilot projects, four were suspended due to security problems. Plan for increasing use of improved cooking stoves and of sauna baths was directly conducted by MAGA Totonicapán office under guidance of the JICA study team.

(4) Mini-irrigation Plan in Palestina de Los Altos

This plan was also suspended because coordination with the communities near the project area could not be made.

As a result, 13 pilot projects were selected and implemented.

**3. Components of Pilot Projects**

08 Components of the pilot projects are outlined below:

**Summary of Pilot Projects**

Area/ Project No./ Name of Pilot Project	Beneficiaries	O&M Organization	Project Contents	Expected Benefit	Cost (Q x 10 <sup>3</sup> )	Cost for Beneficiary
<b>Xeatzan Bajo</b>						
1	Plan for Revolving Fund for Hand Weaving Thread	200 persons.	Huipils Production Association	Formation of association and training Joint purchase of material for thread Establishment of revolving system	Increase of income Capacitation of association members'	Q 258 O&M cost
2	Mini-irrigation Project	80 hh	Irrigation Committee	Installation of irrigation facility Introduction of vegetable production	Improvement of farmers' income	Q 808 Land (0.20,000) Labor (1,950day)
3	Water Quality Improvement Plan for the Existing Drinking Water	240 hh	Development Committee	Installation of sterilizer Education on water quality improvement	Improvement of health condition	Q 21 O&M cost Land (30m <sup>2</sup> )
<b>Panyebar</b>						
4	Coffee Production Improvement Plan	72 hh	Coffee Producers Association	Nursery construction & operation Training on coffee production Introduction of fruit tree production	Improvement of productivity Increase of income	Q 132 Labor (175days) Land (420+375m <sup>2</sup> )
5	Plan for Reducing Workload in the Mountainous Area through coffee processing	80 hh	Coffee Producers Association	Introduction of engine-operated pulping machine Training on pulping	Reduction of workload Income increase by sale of dried beans	Q 75 O&M cost Land (30m <sup>2</sup> x4)
6	Rehabilitation Plan for Drinking Water System	301 hh	Water Committee	Rehabilitation of water system Strengthening of fee collection Education on O&M	Stabilization of water supply from the system	Q 559 O&M cost Hand labor Land for tank
7	Water Quality Improvement Plan for the Existing Drinking Water	301 hh	Water Committee	Installation of sterilizers Education on water quality improvement	Improvement of health condition	Q41 O&M cost Land (30m <sup>2</sup> x2)
<b>Pachum</b>						
8	Plan for extension Use of Improved Cooking Stoves and Sauna Baths "Temascal"	Stove 130 hh Sauna 40 hh	Beneficiaries	Installation of facilities - Improved stove (130 units) - Improved sauna (40 units)	Reduction of firewood consumption Improvement of health condition	Q 129 O&M cost Hand labor Materials
<b>Paleslina</b>						
9	Potato Storage Plan	210 hh	Key farmers	Installation of simple storing system, and storing test of the facility	Improvement of selling price Increase of income	Q 16 Labor Land area by Municipality

10	Project for Model Farm on Potato Production	210 hh	Key farmers	Installation of model farm Training on farming practices	Improvement of productivity Increase of income	Q 14	Land (10cuerdas) Hand labor
11	Plan for the migrant people to the Coastal Area	200 hh	-	Base-line survey Training on health management Provision of simple equipment	Improvement of migrants' health condition through preventive-care	Q 320	-
12	Municipality Community Health Activity Plan	325 hh	Health Committee & Municipality	Purchase medicines from PROAM and resale at reasonable price Installation of 2 MPUs Training of promoters & pharmacists	Securing easily available medicines Improvement of health condition	Q 92	Land for MPUs
13	Water Quality Improvement Plan for the Existing Drinking Water	106 hh	Water Committee	Installation of sterilizer Education water quality improvement	Improvement of health condition	Q 145	O&M cost Land (30m x 3)
					Total	Q 2,610	-

#### 4. Implementation Schedule

09 Implementation of the 13 pilot projects is shown below. The total period of implementation and monitoring of the pilot projects was about 15 months from October 2001 to December 2002.

Component	2001			2002											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Plan for Revolving Fund for Hand Weaving Thread (Xeatzan Bajo)</b>															
Establishment of association				■	■	■									
Market survey			■	■	■										
Provision of thread						■									
Training				■	■	■	■					■	■	■	■
Monitoring										■	■	■	■	■	■
<b>Mini-Irrigation Project (Xeatzan Bajo)</b>															
1) Construction works			■	■	■	■									
2) Technical assistance				■	■	■					■	■	■	■	■
3) Cultivation							■	■	■	■	■	■	■	■	■
4) Monitoring			■	■	■	■	■	■	■	■	■	■	■	■	■
<b>Water Quality Improvement Plan (Xeatzan Bajo)</b>															
1) Purchase of equipment												■	■		
2) Installation of sterilizer													■	■	
3) People education														■	■
4) Monitoring													▲	▲	
<b>Coffee Production Improvement Plan (Panyebar)</b>															
1) Provision of greenhouse and input materials			■	■	■	■									
2) Operation									■	■	■	■	■	■	■
3) Marketing of seedlings (planting season)															
4) Training & monitoring technical training Monitoring			◆	◆	◆	◆	◆			◆		◆	◆	◆	◆
<b>Plan for Reducing Workload Reduction in the Mountainous Area through coffee processing (Panyebar)</b>															
1) Ordering of Machines			■												
2) Installation of facilities			■	■	■										
3) Training Activity				■	■									■	■
4) Monitoring						▲						▲			

Summary

Component	2001			2002											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Rehabilitation Plan for Drinking Water System (Panyebar)</b>															
1) Purchase of equipment			■	■	■										
2) River crossing work				■	■	■	■				■	■	■	■	
3) Protection work for pipeline				■	■	■	■				■	■	■	■	
4) Storage tank				■	■	■	■				■	■	■	■	
5) Distribution pipe/ Connection pipe					■	■	■				■	■	■	■	
6) Monitoring													▲	▲	
<b>Water Quality Improvement Plan (Panyebar)</b>															
1) Purchase of equipment												■	■		
2) Installation of sterilizer													■	■	
3) People education														■	
4) Monitoring													▲	▲	
<b>Plan for extension Use of Improved Cooking Stoves and Sauna Baths (Pachum)</b>															
1) Designing & demonstration			■	■											
2) Construction works				■	■	■	■						■	■	
3) Monitoring & Evaluation					■	■								■	
<b>Potato Storage Plan (Palestina)</b>															
1) Construction of simple storage			■	■	■										
2) Training			■	■	■	■	■	■							
3) Monitoring				■	■	■	■	■							
<b>Plan for Model Farm on Potato Production (Palestina)</b>															
1) Preparatory work and establishment of model farms										■	■				
2) Management and monitoring												■	■	■	■
3) Training												■	■	■	■
4) Field										■	■				■
<b>Plan for the Migrant People to the Coastal Area (Palestina)</b>															
1) Baseline survey				■	■										
2) Training programs					■	■									
3) Procurement of materials & provision to the migrant people						■	■								
4) Monitoring											■		■		
<b>Municipality Community Health Activity Plan (Palestina)</b>															
1) Training program-I and II			■	■	■										
2) Procurement of drugs and necessary equipment						■									
3) Construction of MPU buildings			■	■	■	■									
4) Health education			■	■	■	■	■	■	■	■	■	■	■	■	■
5) Operation of MPU							■	■	■	■	■	■	■	■	■
6) Monitoring							■	■	■	■	■	■	■	■	■
<b>Water Quality Improvement Plan for the Existing Drinking Water (Palestina)</b>															
1) Purchase of equipment												■	■		
2) Installation of sterilizer													■	■	
3) People education														■	
4) Monitoring													▲	▲	

5. Problems and Countermeasures of the Pilot Projects

10 Problems encountered in the pilot projects and appropriate countermeasures are

summarized as follows:

Pilot Project	Problems	Countermeasures
<b>Xeatzan Bajo</b>		
1. Plan for revolving fund for hand weaving thread	<ul style="list-style-type: none"> <li>- Improper stock control</li> <li>- Improper cash control and loss of money</li> <li>- Doubt about misappropriation of money and stock by the committee</li> <li>- No consideration of the development of the community and reluctant to work voluntarily without incentives</li> <li>- Heavy workload for operation of shop for committee women's members</li> <li>- Low profitability of thread shop</li> </ul>	<ul style="list-style-type: none"> <li>- Employment of one shopkeeper with incentive</li> <li>- Provision of shelves with locks for stock except necessary amount</li> <li>- Improvement of account books</li> <li>- Strengthening capacity building on account</li> <li>- Prohibition of provision of credit</li> <li>- Preparation of financial statement</li> <li>- Reducing supervision of shop management</li> <li>- Increase sales by obtaining more customers from outside of the communities</li> <li>- Reduction of operation costs, revise price margin</li> <li>- Expansion of kinds of commodities</li> </ul>
2. Mini-irrigation project	<ul style="list-style-type: none"> <li>- Heavy workload of some committee members in terms of administrative works</li> <li>- Presence of more farmers who want to join the mini-irrigation project than the number of vacancies for participation in the project</li> <li>- Low yield of vegetable crops</li> <li>- Low profitability</li> <li>- Possibility of inadequate capacity for expansion of irrigated lands (for future)</li> </ul>	<ul style="list-style-type: none"> <li>- Provision of proper incentives and sharing administrative works by committee members and beneficiaries (for future)</li> <li>- Provision of regulation of irrigation association in terms of application for membership, maximum cultivation area/beneficiary and provision of part of irrigation free to community</li> <li>- Reinforcement of extension work</li> <li>- Design of cropping pattern so as to apply appropriate harvest time at time of high selling price</li> <li>- Identification of demarcation of allocated irrigation land by borders with pickets (for future)</li> </ul>
3. Water quality improvement plan	<ul style="list-style-type: none"> <li>- Late provision of improved drinking water due to break down of pump in the existing potable water system</li> </ul>	<ul style="list-style-type: none"> <li>- Checking of condition of all the water supply facilities in planning stage</li> </ul>
<b>Panyebar</b>		
4. Coffee production improvement project	<ul style="list-style-type: none"> <li>- Break down of verbal agreement for provision of lands necessary for vinyl houses when project started</li> <li>- Low rate of participants for training and provision of voluntary labor force</li> <li>- Death of many coffee, avocado and peach seedlings</li> <li>- No provision of irrigation water to vinyl houses from the committee of drinking water in spite of verbal agreement between coffee and drinking water associations</li> </ul>	<ul style="list-style-type: none"> <li>- Agreement with written document was prepared.</li> <li>- Provision of technical guidance services on coffee without charge from ANACAFE</li> <li>- Provision of incentives for laborers and arrangements so that several projects would not be implemented at the same time (for future)</li> <li>- Provision of irrigation water to green houses by water tank assisted by municipal office</li> </ul>
5. Plan for reducing workload in the mountainous area through coffee processing	<ul style="list-style-type: none"> <li>- Some difficulty in pulping fresh coffee beans</li> </ul>	<ul style="list-style-type: none"> <li>- Provision of technical guidance in the form of a specialist dispatched from ANACAFE</li> </ul>
6. Rehabilitation plan for drinking water system	<ul style="list-style-type: none"> <li>- Delay of construction due to lack of voluntary labor forces in the construction works</li> </ul>	<ul style="list-style-type: none"> <li>- Provision of daily labor wages from municipality office</li> </ul>
7. Water quality improvement plan	<ul style="list-style-type: none"> <li>- Unreasonable claims for water treatment</li> <li>- Break down of verbal agreement of provision of lands necessary for houses for water treatment when project started</li> </ul>	<ul style="list-style-type: none"> <li>- Explanation of effectiveness and harmlessness of the water sterilization to all beneficiaries by JICA Study Team</li> <li>- Agreement in the form of a written document was prepared.</li> </ul>



<b>Pachum</b>		
8. Plan for extension use of improved cooking stoves and of sauna baths	- Friction between the committee and some villagers when the committee requested some charge for entitlement of benefits from the villagers	- Agreement to provide benefits free of charge through long discussion in meeting by JICA Study Team
<b>Palestina</b>		
9. Potato storage plan	- Damage of stored potatoes by pests and diseases - Insufficient acceptance of standards for exported potatoes processed by introduction of simple storage technology	- Provision of an appropriate pre/post treatment of potatoes to be stored, proper selection of potato seeds (for future) - Introduction of warehouses equipped with cooling facilities for meeting standards for exported potatoes (for future)
10. Plan for Model Farm on potato production	- Difficulty of obtaining certified seeds with breakdown of dormancy - Low yield of potatoes - Low rate of participants in training program	- Establishment of system of supply of certified seeds (for future) - Increasing frequency of field inspection and quick treatment for pests and diseases (for future) - Design of an appropriate cropping pattern to avoid negative climatic conditions (for future) - Reinforcement of training program (for future)
11. Plan for migrant people to the coastal area	- Very low rate of use of water filter, portable toilets and seeds of repellent plants in the coastal area	- Design of more portable and adequate methods and equipment (for future) - Reinforcement of training program for health (for future)
12. Municipality community health activity plan	- Small amount of sale of drugs - Low rate of participants in health training programs - Improper cash control and loss of money	- Reinforcement of advertisement of drug sale for people outside model area and provision of medical tour to MPUs - Provision of health training program to the students and teachers who are interest in health matters - Provision of frequent and strict audits by the health committee
13. Water quality improvement plan	-	-

## 6. Evaluation of the Pilot Projects

11 Evaluation for pilot projects was mainly based on the five criteria that were proposed in PCM, namely efficiency, effectiveness, impact, relevance, and sustainability. Since the period of monitoring of the results of the pilot projects was short, more monitoring time is required to properly evaluate the projects. The results of evaluation at this moment are shown below:

Model Area/Pilot Project	Criteria				
	Efficiency	Effectiveness	Impact	Relevance	Sustainability
<b>Xeatzan Bajo</b>					
Plan for revolving fund for hand weaving	Relatively high	Basically achieved	Positive impact is expected.	High	Low
Mini-irrigation	Medium	Medium	Many positive impacts were observed	High	Medium
Water quality improvement plan for the existing drinking water supply	High	Will be achieved in the later stage	Negative impact was observed	High	High
<b>Panyebar</b>					
Coffee production improvement plan	Medium	-	Positive and negative impacts	Medium	Medium

			were observed.		
Plan for reducing workload in the mountainous area	Medium	Achieved	Positive impact was observed.	High	High
Rehabilitation plan for drinking water system	Medium	High	Positive impact was observed.	High	High
Water quality improvement plan for the existing drinking water	High	Will be achieved in the later stage	Negative impact was observed.	High	High
<b>Pachum</b>					
Plan for extension use of improved cooking stoves and of sauna baths	Medium	Achieved	Positive impact was observed.	High	High
<b>Palestina</b>					
Potato storage plan	High	Partly achieved.	Positive impact was observed.	High	Relatively high
Plan for model farm on potato production	Very low	Not achieved	No positive impact was observed.	Low	Low
Plan for the migrant people in the coastal area	Low	Partly achieved.	Positive impact was observed.	Medium	Partly high
Municipality community health activity plan	High	Partly achieved	Positive impact was observed.	High	Relatively high
Water quality improvement plan for the existing drinking water supply	High	Will be achieved in the later stage	Negative impact was observed.	High	High

## 7. Evaluation of the Pilot Projects

12 The conclusions of the pilot project evaluation are outlined below:

Pilot project	Conclusion
<b>Xeatzan Bajo</b>	
1. Plan for revolving fund for hand weaving thread	It was observed that income and the women's capacity were gradually improved after the implementation of the project. However, continuous and close supervision is still necessary in order to make this improvement more certain. On the other hand, the supporting system under the present government is quite weak and provision of continuous supervision would be difficult. From this point of view, it can be considered that the sustainability of the project is low.
2. Mini-irrigation project	Timing of cultivation, which was started immediately after the construction, was not a good period for getting a good selling price for the products. Thus the profitability in the first cultivation was low. Even though the profitability was low because of the low selling price at the harvest season, farmers' interest for the next crop was still high. Based on the simulation with a proper cultivation period, the effectiveness of the irrigation was proved. It is expected that high income from irrigation would be realized in the next cultivation. The reduction of the burden of the committee members is a key to the project sustainability.
3. Water quality improvement plan for the existing drinking water	The water quality was improved immediately after installation of the sterilizer. However determination of the benefit of the project will require a longer monitoring time. The municipality started to become involved in the water treatment recently and intends to support the project continuously.
<b>Panyebar</b>	
4. Coffee production improvement project	Because of the season of planting, the coffee seedlings grown in the vinyl houses could not be sold up to next rainy season. Thus, the actual condition of income increase should be analyzed next rainy season. In terms of seedlings for fruit cultivation, there is a relatively high possibility of further extension and prosperity in future, comparing with coffee.
5. Plan for reducing workload in the mountainous area through coffee production	Workload of transportation was dramatically reduced by the introduction of the pulp machines. Also farm incomes were increased. This will contribute to reduction of poverty in the rural area.
6. Rehabilitation plan for drinking	Because of lack of voluntary labors, the schedule of construction was

water system	delayed in Phase-I. However, the water supply system was improved and reinforced. People can receive stable water supply services. It is expected that they can collect water fees effectively because of the enhancement of the water committee.
7. Water quality improvement plan for the existing drinking water	The water quality was improved immediately after installation of the sterilizer. However analysis of the benefit of the project will require a longer monitoring time. The municipality started to become involved in the water treatment recently and intends to support the project continuously.
<b>Pachum</b>	
8. Plan for extension use of improved cooking stoves and of sauna baths	The reduction of firewood consumption by the improved facilities was remarkable. It contributes not only to improve the quality of life in the community but also to conserve the forest and environment.
<b>Palestina</b>	
9. Potato storage plan	The results of the project showed that technology of simple storage at the farmer's level was technically sound and economically feasible. It is necessary that small storage at the farmer's level be properly managed in terms of control of pests and diseases. It is strongly expected that application of technology of simple storage at farmer's level will bring about an increase of farm income and contribute to the reduction of the poverty of the potato farmers in the potato production areas.
10. Plan for model farm on potato production	The results of the project could not show that technology of improved farming method with use of certified potato seeds was technically sound and economically feasible. Because certified seedlings could not be planted at an appropriate time due to the difficulty of obtaining certified seeds and experimental areas of the model farms. Further, there were abnormally long consecutive rainy days that resulted in a big occurrence of pest and diseases. The model potato farm experiment should be carried out again at the right time.
11. Plan for the migrants in the coastal area	Morbidity from contamination of agricultural chemicals was not found in the coastal area because most people used materials and equipment free from contamination of agricultural chemicals, which resulted in improvement of health conditions for the migrants. On the other hand, most migrants used portable toilets and dismantled water filters in Palestina de Los Altos and the actual living conditions of the migrants did not produce the health improvement in the coastal area, as was the original purpose. It is necessary to research more portable and adequate methods and equipment for water filtration and portable toilets.
12. Municipality community health activity plan	Improvement of the quality of health services in the communities was achieved by good management of an established revolving drug fund system of PROAM that played a role in supply of cheaper drugs and regular health education. Various impacts such as reduction of medical expenses of the local people and promotion of activities for health service and so forth occurred. It is necessary to increase the amount of sale of drugs and incentives of health promoters in view of project sustainability.
13. Water quality improvement plan for the existing drinking water	The water quality was improved immediately after installation of the sterilizer. However analysis of the benefit of the project will require a longer monitoring time. The municipality started to become involved in the water treatment recently and intends to support the project continuously.

## OVERALL EVALUATION AND LESSONS LEARNED

### 1. Overall Evaluation

- 13 Since the timing of the evaluation survey was too early and the sample number was quite limited, information for investigating multiple effects and secondary effects could not be obtained sufficiently to make a quantitative analysis. However, the following four points were observed as positive effects from the project

implementation.

- 1) Organization strengthening through project implementation
- 2) Improvement of communication with other communities
- 3) Development of a business outlook
- 4) Multiplier effect of the projects

## 2. Lessons Learned

14 Through the Study, various lessons were learned that would be useful for the future planning and implementation of projects in the central highland region. Important points regarding the planning stage, implementation stage, and monitoring/operation stage are summarized below:

### 1) Planning Stage

Item	Lessons Learned
1) Formation of development concept <i>Projects referred to*: Due to overall observation, no specific projet is referred to.</i>	<ul style="list-style-type: none"> <li>- Since the concept of a micro-basin sometimes does not match with the actual situation, it should be flexibly modified in application according to the situation.</li> <li>- Approach to the poverty alleviation from 3 aspects (income generation, improvement of living facilities, and conservation of natural resources) is useful for project sustainability and equal distribution of benefits.</li> </ul>
2) Selection of project area <i>Projects referred to: Due to overall observation, no specific projet is referred to.</i>	<ul style="list-style-type: none"> <li>- It is difficult to implement a project in an area that consists of more than one community.</li> <li>- For implementation of a project in an area that consists of more than one community, selecting an appropriate leader will be quite important.</li> <li>- Initial conditions of each community (organization, project experience, political factors, etc.) affect project implementation.</li> </ul>
3) Participatory survey <i>Projects referred to: Due to overall observation, no specific projet is referred to.</i>	<ul style="list-style-type: none"> <li>- A simple methodology for participatory survey is necessary for the Guatemalan government to apply in the future.</li> <li>- People tend to be near-sighted in thinking of community needs. Hence, sufficient discussion is necessary to make people aware of long-term needs.</li> <li>- A project ranked as high priority may not necessarily reflect the people's real needs. It is necessary to reinforce the people's actions to reconfirm their real intention and needs.</li> </ul>
4) Survey by experts <i>Projects referred to: #11</i>	<ul style="list-style-type: none"> <li>- People in communities are quite sensitive in contacting outsiders, especially women. Therefore, it is necessary to ask the village people to always accompany when visiting each house.</li> <li>- To investigate the existence of political conflict, it is necessary to conduct social surveys not only for the project area but also for it's surrounding area.</li> </ul>
5) Utilization of NGOs <i>Projects referred to: Due to overall observation, no specific projet is referred to.</i>	<ul style="list-style-type: none"> <li>- For selection of an NGO, it is necessary to decide its role in project implementation first. Then, the NGO should be selected according to its role and the ability of the NGO. Besides, since the NGO has a lot of knowledge on the background of community, it should be utilized in investigating the social aspects of the community.</li> </ul>
6) Details of project planning <i>Projects referred to: #01, 02, 11, 12, 13</i>	<ul style="list-style-type: none"> <li>- Scale of project should be smaller than is usually expected since demand cannot be as large as it is estimated.</li> <li>- Special consideration is necessary if the water source originally used for potable water supply is used for other purpose such as irrigation.</li> <li>- If a project provides benefits to a limited number of people, expansion of profit for the whole community should be considered.</li> <li>- Combination of two projects should be considered in planning since they may have a multiplier or complementary effect.</li> <li>- Special attention should be paid to gender issues so that the status and capacity of women will be improved.</li> </ul>

\*: The project number means the projects referred to in extracting the lessons. The number mentioned here is the number indicated in Item No. 8

## 2) Implementation Stage

Item	Lessons Learned
1) Participation of people <i>Projects referred to*:</i> <i>#02, 04, 06</i>	<ul style="list-style-type: none"> <li>- There is a tendency to hesitate to participate in the project at the beginning due to the doubt or to be <i>free rider</i>. The design of a project should provide for a flexible scale.</li> <li>- There are difficulties in the implementation of several projects in the same area within a limited time due to the lack of availability of voluntary labor.</li> </ul>
2) Conflict among people <i>Projects referred to:</i> <i>#04, 05, 11</i>	<ul style="list-style-type: none"> <li>- Existence of political conflict affects implementation of projects seriously. It is necessary to conduct a careful social survey before implementation to avoid any problems.</li> <li>- Preparation of written documents for any kind of agreement, especially for cases using land or water source is important.</li> </ul>
3) Supporting system <i>Due to overall observation,</i> <i>no specific projet is referred to.</i>	<ul style="list-style-type: none"> <li>- Establishment of a system to provide continuous and close supervision on the projects under the present institutional framework is important.</li> </ul>
4) Communication <i>Due to overall observation,</i> <i>no specific projet is referred to.</i>	<ul style="list-style-type: none"> <li>- Many negative affects arise due to poor communication among communities/municipalities.</li> </ul>
5) Tasks of the committee <i>Projects referred to:</i> <i>#01, 02</i>	<ul style="list-style-type: none"> <li>- More participation of beneficiaries in project management by simplification of management work for reduction of workload of the committee and trainers is advantageous.</li> </ul>
6) Understanding of project facility <i>Projects referred to:</i> <i>#01, 13</i>	<ul style="list-style-type: none"> <li>- There is a necessity for continuous education for people, especially for principal members of the project, to show that any facilities of projects are not for private individuals but for the whole community.</li> </ul>

\*: The project number means the projects referred to in extracting the lessons. The number mentioned here is the number indicated in Item No. 8

## 3) Monitoring/Operation Stage

Item	Lessons Learned
1) Monitoring <i>Projects referred to*:</i> <i>#01, 02, 03, 04, 13</i>	<ul style="list-style-type: none"> <li>- Keep monitoring indicators as simple as possible</li> <li>- Establish a feedback system of monitoring results to the community</li> </ul>
2) Transparency in management <i>Projects referred to:</i> <i>#01, 02, 04, 13</i>	<ul style="list-style-type: none"> <li>- Transparency in management of the project and establishment of an auditing system by a third party is advantageous.</li> </ul>
3) Burden of committee and payment of incentives <i>Projects referred to:</i> <i>#01, 02, 13</i>	<ul style="list-style-type: none"> <li>- Reduction of heavy workload of the volunteer committee members of the projects without payment is important. There should be an examination of payment for work accrued from operation of the work.</li> </ul>
4) Regulation of people's organization <i>Projects referred to:</i> <i>#02, 04, 05</i>	<ul style="list-style-type: none"> <li>- Establishment of regulations regarding use of facility in detail to prohibit its misuse is important.</li> </ul>
5) Supervision and supporting system <i>Due to overall observation,</i> <i>no specific projet is referred to.</i>	<ul style="list-style-type: none"> <li>- There is a necessity to establish a system to provide continuous and close supervision on the projects under the present institutional framework.</li> <li>- Insufficient communication among governmental organization makes it difficult to fully utilize useful development programs.</li> </ul>

\*: The project number means the projects referred to in extracting the lessons. The number mentioned here is the number indicated in Item No. 8

## PROPOSED METHODOLOGY

### 1. Basic Concept

15 The methodology proposed here aims at providing a simple and practical method of planning for sustainable development in the central region that the government of Guatemala or any other organization would be able to apply to future development. The basic framework of the proposed methodology consists of:

- (1) Using a three-pronged approach to poverty alleviation: increasing income, improving living conditions, and conservation of natural resources.
- (2) Ensuring people's participation in planning
- (3) Adopting simple and practical methods

### 2. Planning Methodology

#### 1) Selection of the project area

16 The project area should basically be a micro-basin of about 5 km<sup>2</sup> in the central highland region. If, however, the basin contains several communities, it will be necessary to confirm whether these communities are socio-economically related to each other. If they are not related, a community should be selected as the project area rather than selecting a micro-basin.

17 The central highland region will be divided into micro-basins of about 5 km<sup>2</sup> each that will be delineated on a topographic map and communities in each micro-basin will be identified. Poverty class of the communities will be checked based on the poverty criteria defined by FIS. It is necessary to update the indicators if the data are available. The FIS indicator classifies the poverty level as follows.

Level	Particular
a	Extreme poverty
b	Severe poverty
c	Regular poverty
d	Relative poverty
e	Low degree of poverty

Micro-basins or communities that belong to class “d” and “e” should be excluded from potential project areas. Then, the potential areas should be evaluated based on the following five factors and final selection made.

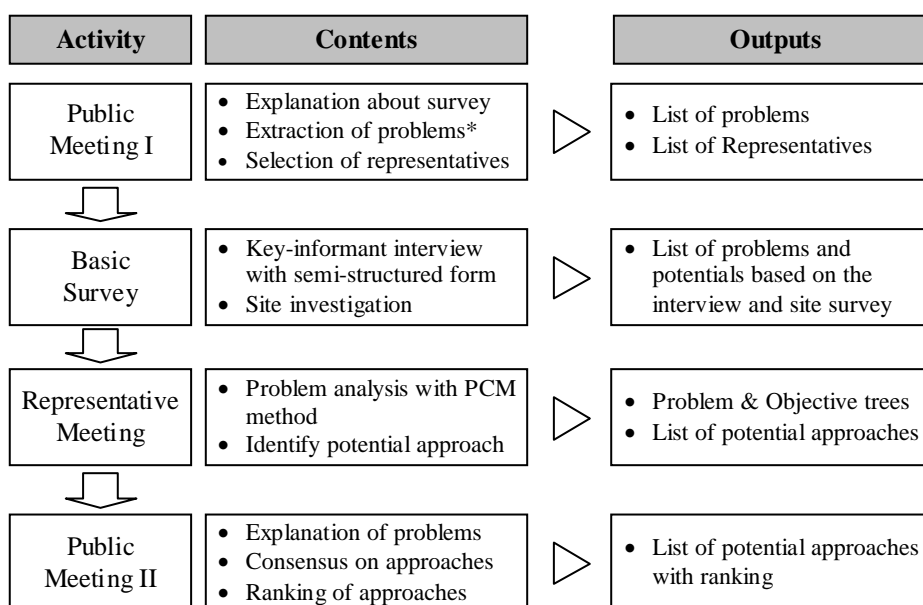
No.	Evaluation factors	Criteria
01	Number of households	50 ~ 250 households
02	Area	3 ~ 15 km <sup>2</sup>
03	Existence of other projects	There should be no planning or implementation of projects by other agencies.
04	Social problems	There are no serious social problems. (Ex. Serious political conflict, conflict among community people, etc.)
05	Overlapping with other municipalities	Micro-basin should not belong to more than one municipality or administrative body.

For evaluation of social problems, the following six factors shall be checked.

- Social structure of the project area
- Organization in the communities
- Past experiences of projects
- Political background
- Economic activity of community people
- Others (religion, custom, belief, influence of the internal war)

## 2) Participatory survey

18 In order to extract the problems and needs of the selected communities, a simple participatory survey should be conducted with application of the PCM method. The survey could be made by NGOs or local consultants since governmental organizations have human resource constraints. The procedure of the survey is shown below.



\*: For extracting problems, participants shall be divided into groups by gender in order for them to feel free to discuss especially for women.

### **3) Survey of the Project Area**

19 The needs to be extracted through participatory survey may have the following weak points.

- (1) People tend to focus only on facility-providing projects
- (2) People pay less attention to long term needs of the communities.

Therefore, additional socio-economic surveys should be conducted at the same time as the participatory survey considering long term needs and needs from technical points of view. The survey should be performed from the aspects of organization, rural sociology, economic condition and projects implemented in the past. It is necessary for smooth implementation of projects and for avoiding potential problems in the future. The survey may be conducted by the organization staff in charge of project formation in cooperation with community people. Then the result will be cross-checked with the results of the participatory survey.

### **4) Formulation of Development Plan**

20 Based on the results of the surveys mentioned above, a development plan for the selected area would be prepared considering the three aspects of increasing income, upgrading living conditions, and conservation of natural resources. The plan would be a list of potential development approaches for each aspect.

### **5) Selection of Priority Projects**

21 The list of potential development approaches (projects) should be assessed based on the following three evaluation factors.

Evaluation factor	Grade	Description
Degree of farmers' perception	1	No (No intention is observed in the process of the participatory survey)
	2	Strong (approaches that are less than 6th priority in the participatory survey results)
	3	Very strong (approaches that are in 1st-5th in the participatory survey results)
Degree of contribution to poverty reduction (*1)	1	Small (contribution to poverty reduction is quite small)
	2	Medium (contribution to poverty reduction is indirect and/or partial)
	3	Large (contribution to poverty reduction is direct and large)
Possibility of realization	1	Low (no organization at present, considerable time necessary for setting up of organization)
	2	Medium (though there is no organization at present, quick formation can be expected)
	3	High (There is a farmer's organization (s) at present that can be used for early implementation of projects)

(\*1): The degree of contribution for poverty reduction is graded considering 3 viewpoints, environmental conservation, income increase and improvement of living condition.



Basically, projects will be implemented according to priority. If there is more than one project in the same priority, income-increasing projects will be the first priority. Improvement of living condition would be the second and environmental conservation related projects would be last. The final selection of the project will be made based on the following criteria.

No.	Criteria
01	Beneficiaries should agree to share construction costs of the project.
02	Lands necessary for project facilities can be secured.
03	The project is not legally categorized as a private sector project
04	Project cost should be in the range predetermined by the related organizations.
05	O&M of the project should be surely sustainable by community people (ex. development committee).

After selection, the possibility of project realization will be checked by taking into account the initial conditions of the project area.

The selected projects will be confirmed with the community people. In order to confirm the actual intentions of the community, specific actions required of them should be requested.

Then, the following arrangements should be made.

- Preparation of action plan for each project (responsible organization, cost sharing, supporting system, monitoring, etc.)
- Preparation of agreement on water use, land use, labor force, etc.
- Reconfirmation regarding existence of political conflict

### **3. Implementation of the Development Projects**

22 The selected development projects will be implemented taking into account the following points.

(1) Pre-arrangement for implementation

- Selection of contact persons or groups (Alcalde Auxiliar, member of development committee, school teacher, etc).
- Preparation of a detailed implementation schedule (considering people's seasonal working schedule, labor availability, climatic conditions and other related factors).

(2) Preparation of specification and selection of Contractors

- Preparation of specification
- Selection of contractor through tender procedure or direct nomination (transparency has to be maintained in case of direct nomination)

(3) Preparatory work for implementation

Before the implementation, contact persons or contact groups shall be selected so that they can tentatively take charge of project implementation. Besides, written agreements on water use, land use, and voluntary labor shall be prepared. Existence of political conflict also shall be reconfirmed both in and outside of the communities.

(4) Implementation

The following points should be considered during the implementation stage.

(a) Organization development

- Selection of principal members:  
Biased selection may lead to complaints from people who belong to other groups.
- Registration of the organization as a legal entity such as cooperatives or civil association.
- More participation of beneficiaries in project management by simplification of management work for reduction of workload of committee
- Employment of permanent staff for any work that requires continuous engagement of staff
- Consideration of payment of incentives if workload of principal member (committee member) is too heavy.
- Continuous supervision for management of the organization especially at the initial stage
- Establishment of an auditing and reporting system on management condition

(b) Construction

- Allocation of sufficient time for construction works so that it can be managed by available labor force, even though people promise to offer free labor force before the implementation
- Avoidance of construction works during rainy season due to the

- topographic condition of central highland region
- Strict supervision on construction material to avoid stealing
  
- (c) Training
  - Proper setting of training schedule for increasing participation rate in training, especially for women.
  - Use of audio-visual equipment for increasing participation
  
- (d) Provision of equipment and/or facilities
  - Provision of sufficient education on ownership for people in case any equipment and/or facilities are provided to the community.
  - Attendance to the training should be a precondition before any equipment is provided to individual participants.
  
- (e) Mediation of conflict
  - In case any conflicts arise, it is necessary to mediate by involving a third party from outside of the community or municipality. Several separate potential third parties should be specified according to the level of conflict.

#### **4. Operation/Monitoring of the Projects**

23 The following points should be considered during the operation/monitoring stage.

(1) Monitoring

- Monitoring is important for community people's understanding of the impact of projects, for project sustainability and as an evidence of the performance of committee members.
- Involvement of the municipal government for assisting monitoring in view of the human resource constraints in the central governmental
- Application of simple monitoring indicators considering the fact that the community will conduct the monitoring itself.

(2) Operation

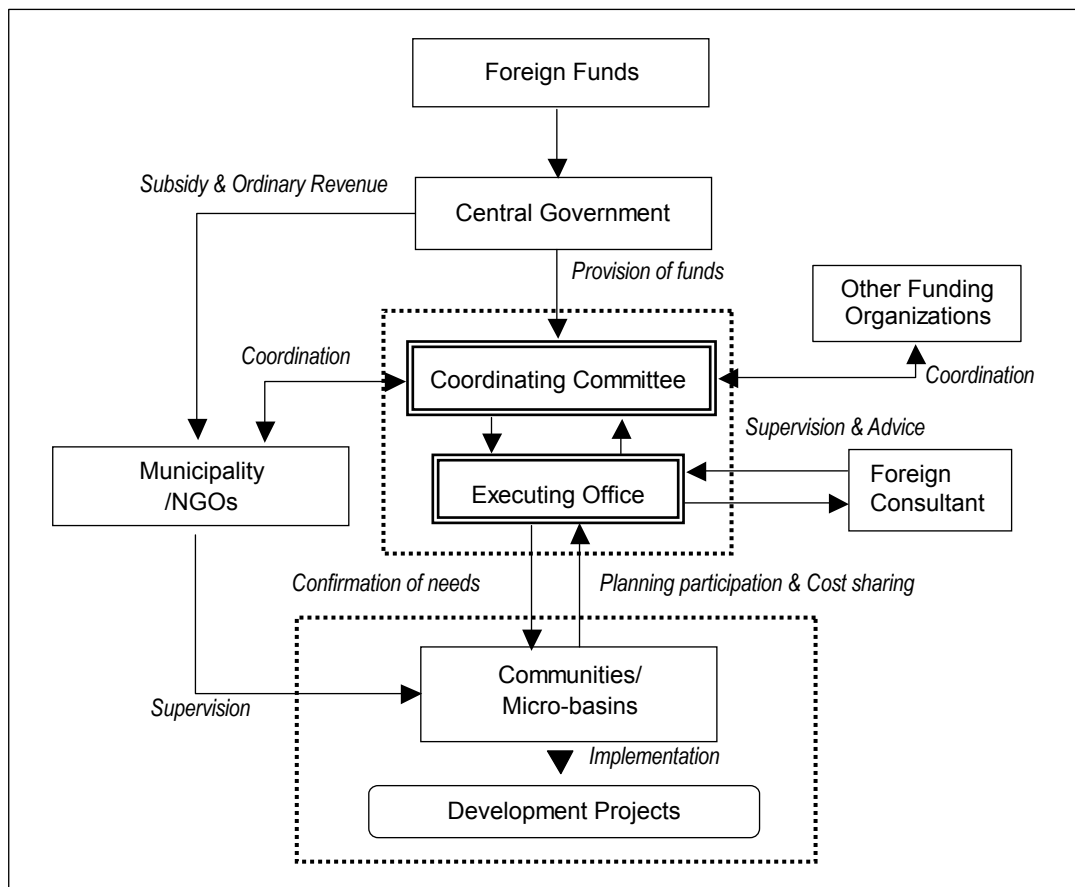
As the major problems at operation stage, 1) workload of committee members, 2) distrust against committee members, and 3) insufficient understanding of the people on the meaning of projects can be mentioned. The committee members have many tasks especially at initial stage and those works are usually voluntary one. Due to this fact, the committee member

may lose their intention to work or misappropriate association's assets. It is necessary to consider employment of permanent staff, reduction of obligation and/or payment of economic incentives.

Besides, it is necessary to maintain the transparency in operation especially in money management in order to avoid misunderstanding about the committee members. For this purpose, establishment of auditing system by the third party in the community should be considered. In addition, auditing results shall be disclosed to the community people regularly.

## **5. Organization for Implementation**

- 24 It is expected that the project implementation in the central highland region will be continued by utilizing available foreign funds. A coordinating committee for project implementation will be established. The committee will be headed by MAGA Central and consist of representatives from relevant organizations and agencies such as SEGEPLAN, MSPAS, and so on. Representatives of supporting funds and credit organizations should also be involved in the committee. An executing office will be established under the coordinating committee for supervision, monitoring and evaluation of project implementation. Foreign consultants will provide supervision services and advice on project implementation as a third party under the executing office. A proposed organization for future project implementation is shown below:



**CONCLUSIONS AND RECOMMENDATIONS**

25 The conclusions of the study are summarized as follows.

- (1) The verification study for the 13 pilot projects selected from 18 pilot projects suggested in the Master Plan Study was undertaken with a view towards technical soundness, organizational aspects and improvement of the farmer’s capacity through implementation of the pilot projects. Through implementation of the projects, various responses and problems were observed that are peculiar to the indigenous people in Guatemala. With the implementation of the projects, precious lessons were obtained as it is explained in the Item No.14.. The key words of those lessons are as follows.

Planning stage:

Formation of development concept, selection of project area, participatory survey, survey of experts, practical use of NGO, project planning.

Implementation stage:

Participation of people, conflict among people, supporting system, communication, task of committee, understanding on project facility.

Monitoring/operation stage:

Monitoring, transparency in management, burden of committee and

payment of incentives, regulation of people's organization, supervision and supporting system.

Initial conditions and influence on the project

A planning methodology is prepared by utilizing the above mentioned lessons as the feedback of this verification study to the prepared master plan.

- (2) It is concluded that the proposed methodology is quite effective and practical for the implementation of the sustainable rural development for the reduction of poverty.

26 The recommendations are summarized as follows.

- (1) The monitoring period for evaluation of the pilot projects was very short. However, since multiple effects by a combination of projects and other secondary effects are also expected, it is recommended to conduct monitoring at a later stage.
- (2) It is recommended that the implementation of the projects on the sustainable rural development for the four provinces of Chimaltenango, Solola, Totonicapán and Quetzaltenango in the Central Highland Region should be carried out based on the methodology proposed in this report.
- (3) It is recommended that the above pilot projects should be monitored by project beneficiaries and MAGA, and evaluation of the pilot projects should be made and the most appropriate methodology should be established for future sustainable development.(3) It is recommended that operation and management of the 14 pilot projects that were carried out in the Verification Study should be continued under the full support of the Ministry of Agriculture, Livestock and Food (MAGA) and related organizations concerned.

**THE VERIFICATION STUDY  
ON  
THE MASTER PLAN ON SUSTAINABLE RURAL DEVELOPMENT  
FOR  
THE REDUCTION OF POVERTY  
IN  
THE CENTRAL HIGHLAND REGION  
OF  
THE REPUBLIC OF GUATEMALA**

**CONTENTS**

General Map  
Summary

	<i>Page</i>
<b>1. INTRODUCTION.....</b>	1-1
1.1 Authority .....	1-1
1.2 Objectives of the Study and the Study Area .....	1-1
1.3 Performance of the JICA Study Team .....	1-1
1.4 Technology Transfer .....	1-4
<b>2. PROJECT BACKGROUND.....</b>	2-1
2.1 Background of the Study .....	2-1
2.2 Master Plan and the Pilot Projects .....	2-2
<b>3. THE PILOT PROJECTS.....</b>	3-1
3.1 General.....	3-1
3.1.1 Objectives .....	3-1
3.1.2 Implementation Schedule.....	3-1
3.2 Xeatzan Bajo Model Area.....	3-3
3.2.1 Plan of Revolving Fund for Hand Weaving Thread .....	3-3
3.2.2 Mini-irrigation Project .....	3-10
3.2.3 Water Quality Improvement Plan for the Existing Drinking Water....	3-15
3.3 Panyebar Model Area .....	3-18
3.3.1 Coffee Production Improvement Plan .....	3-18
3.3.2 Plan for Reducing Workload in the Mountainous Area through Coffee Processing .....	3-22

3.3.3	Rehabilitation Plan for Drinking Water System .....	3-25
3.3.4	Water Quality Improvement Plan for the Existing Drinking Water....	3-28
3.4	Pachum Model Area .....	3-30
3.4.1	Plan of Extension Use of Improved Cooking Stoves and of Sauna Bath “Temascal” .....	3-30
3.5	Palestina Model Area .....	3-33
3.5.1	Potato Storage Plan .....	3-33
3.5.2	Project of Model Farm on Potato Production .....	3-38
3.5.3	Mini-irrigation Project .....	3-44
3.5.4	Plan for Migrant People to the Coastal Area .....	3-50
3.5.5	Municipality Community Health Activity Plan.....	3-58
3.5.6	Water Quality Improvement Plan for the Existing Drinking Water....	3-64
<b>4.</b>	<b>OVERALL EVALUATION AND LESSONS LEARNED .....</b>	<b>4-1</b>
4.1	Overall Evaluation .....	4-1
4.1.1	Benchmark and Evaluation Survey.....	4-1
4.1.2	Results of the Surveys.....	4-2
4.1.3	Overall Evaluation by Community .....	4-4
4.1.4	Observed Impacts.....	4-7
4.2	Lessons Learned.....	4-8
4.2.1	Planning Stage .....	4-8
4.2.2	Implementation Stage .....	4-11
4.2.3	Monitoring/Operation Stage .....	4-12
4.2.4	Initial Conditions of Communities and Effects on Project Implementation .....	4-14
4.2.5	Evaluation on Non Governmental Organization (NGO) in the Pilot Projects .....	4-16
<b>5.</b>	<b>PROPOSED METHODOLOGY.....</b>	<b>5-1</b>
5.1	Planning of Sustainable Development Plan.....	5-1
5.1.1	Basic Concept .....	5-1
5.1.2	Procedure .....	5-1
5.1.3	Planning Methodology.....	5-2
5.2	Implementation of the Development Projects.....	5-8
5.3	Operation/Monitoring of the Projects .....	5-10
5.4	Organization for Implementation.....	5-11
<b>6.</b>	<b>CONCLUSIONS AND RECOMENDATIONS .....</b>	<b>6-1</b>



## **LIST OF TABLES**

	<i>Page</i>
Table 1.4 (1) List of Counterpart Personnel and JICA Study Team .....	T-1
Table 3.2.1 (1) Inventory of Thread (1/3).....	T-2
Table 3.2.1 (1) Inventory of Thread (2/3).....	T-3
Table 3.2.1 (1) Inventory of Thread (3/3).....	T-4
Table 3.2.1 (2) Financial Statements of the Thread Shop .....	T-5
Table 3.2.1 (3) Status of Women's Attendance in Literacy Training .....	T-6
Table 3.2.2 (1) Summary of Simulation of Benefit in Mini-irrigation, Xeatzan Bajo...	T-7
Table 3.2.3 (1) Result of Bacteriologic Water Quality Test.....	T-8
Table 3.5.1 (1) Economic Analysis of Results on Model Project of Rustic Storage Potatoes.....	T-9
Table 3.5.2 (1) Input Used and Cost per Each Treatment of Potato Model Farm (1/2).	T-10
Table 3.5.2 (1) Input Used and Cost per Each Treatment of Potato Model Farm (2/2).	T-11
Table 3.5.2 (2) Reasons of Low Yield of Potatoes in Each Section in the Model Farms (1/3) .....	T-12
Table 3.5.2 (2) Reasons of Low Yield of Potatoes in Each Section in the Model Farms (2/3) .....	T-13
Table 3.5.2 (2) Reasons of Low Yield of Potatoes in Each Section in the Model Farms (3/3) .....	T-14
Table 3.5.4 (1) Result of Interview (1/2).....	T-15
Table 3.5.4 (1) Result of Interview (2/2).....	T-16
Table 4.2.4 (1) Initial Condition and Project Implementation (1/2).....	T-17
Table 4.2.4 (1) Initial Condition and Project Implementation (2/2).....	T-18

## **LIST OF FIGURES**

	<i>Page</i>
Figure 3.2.2 (1) Work Progress of Mini-Irrigation Project in Xeatzan Bajo.....	F-1
Figure 3.3.3 (1) Overall Schedule and Progress of Construction Works: Rehabilitation Plan for Drinking Water System in Panyebar, Solola ....	F-2
Figure 3.5.1 (1) Potato Marketing Periods and Selling Price at Farmers Market in "La Cumbre" Selling Point .....	F-3
Figure 5.1.2 (1) Planning Procedure of Development Plan for Micro-basins/Communities .....	F-4

## **PDM & PROJECT PROFILES**

1. Xeatzan Bajo Model Area	
#01 Plan of Revolving Fund for Hand Weaving Thread .....	AT-1
#02 Mini-irrigation Project .....	AT-5
#03 Water Quality Improvement Plan for the Existing Drinking Water.....	AT-9

2. Panyebar Model Area
  - #04 Coffee Production Improvement Plan ..... AT-13
  - #05 Plan for Reducing Workload in the Mountainous Area  
through Coffee Processing ..... AT-17
  - #06 Rehabilitation Plan for Drinking Water System ..... AT-21
  - #07 Water Quality Improvement Plan for the Existing Drinking Water. AT-25
3. Pachum Model Area
  - #08 Plan of Extension Use of Improved Cooking Stoves and  
of Sauna Bath “Temascal” ..... AT-29
4. Palestina Model Area
  - #09 Potato Storage Plan ..... AT-33
  - #10 Project of Model Farm on Potato Production ..... AT-37
  - #11 Mini-irrigation Project ..... AT-41
  - #12 Plan for Migrant People to the Coastal Area ..... AT-44
  - #13 Municipality Community Health Activity Plan ..... AT-48
  - #14 Water Quality Improvement Plan for the Existing Drinking Water. AT-52

### ATTACHMENTS

- Attachment 1 Scope of Works
- Attachment 2 Minutes of Meetings: Inception Report, Monitoring Report-I, Mid-term Evaluation Report, Monitoring Report-II, and Evaluation Report
- Attachment 3 Minutes of Meeting on Plan for Reducing Workload in the Mountainous Area through Coffee Processing in Panyebar
- Attachment 4 Minutes of Meeting on Explanation of Pilot Projects in Pachum
- Attachment 5 Request Letter for Cancellation of the Mini-irrigation Project in Palestina

### CURRENCY EQUIVALENTS

US \$1.00 = Quetzales 7.61 = Japanese Yen 121.69  
as of December 2002

### UNITS

Area:

1 manzana = 0.7 ha		
1 cuerda (Chimaltenango)	= 1/6 manzana	= 0.117 ha
1 cuerda (Sololá)	= 1/9.7 manzana	= 0.072 ha
1 cuerda (Quetzaltenango & Totonicapán)	= 1/16 manzana	= 0.044 ha

Weight:

1 quintal (qq.) = 100 lb. = 45.36 kg

## ABBREVIATION

ACNUR	: United Nations High Commissioner for Refugees (UNHCR) (Alto Comisionado de las Naciones Unidas para los Refugiados)
AGEXPRONT	: Asociacion Grimal de Exportadores de Productos No Tradicionales
AIDS	: Acquired Immune Deficiency Syndrome (Sindrome de Inmuno Deficiencia Adquirida)
ANACAFE	: National Association of Coffee (Asociacion Nacional del Café)
ARI	: Acute Respiratory Infection
ASINDES	: Asociacion de Entidades de Desarrollo y de Servicios No Gubernamentales de Guatemala
AVIDEH	: Victim Assistance Program of Violations to the Human Rights (Asistencia a Victimas de Violaciones a Derechos Humanos)
BANRURAL	: Bank for Rural Development (Banco para el Desarrollo Rural)
BOSCOM	: Municipal and Communal Forestry Reinforcement Program (Proyecto de Fortalecimiento Forestal Municipal)
CADISOGUA	: Association for coordination for Integrated Development in South-east Guatemala (Coordinadora de Asociaciones en Desarrollo Integral del Sur Occidente de Guatemala)
COINDE	: Council of Development Institution (Consejo de Instituciones de Desarrollo)
CONADEA	: National Council for Agriculture and Livestock Development (Consejo Nacional de Desarrollo Agropecuario)
CONAMA	: National Commission for Environment (Comision Nacional de Medio Ambiente)
CONAP	: National Council for Protected Area (Consejo Nacional de Areas Protegidas)
CONGCOOP	: Coordination for NGO and Cooperatives (Coordinacion de ONG y Cooperativas)
CONTIERRA	: Presidential Office for the Resolusion of Land Conflict (Oficina Presidencial para la Resolucion de Conflictos)
COPMAG	: Guatemalan Maya Council (Consejo de Pueblos Mayas de Guatemala)
CPR	: Communities of Population in Resistance (Comunidades de Poblacion en Resistencia)
CTEAR	: Comision Tecnica para la Ejecucion del Acuerdo sobre el Reasentamiento de las Poblaciones Desarraigada por el Enfrentamiento Armado
DHS	: Demographic and Health Survey (Programa de Encuestas de Demografia y Salud)
E.E.U.U.	: Estados Unidos de Norte America (USA)
EMPAGUA	: Municipal Company of Water of Guatemala
FAO	: Food and Agricultural Organization of United Nations (Organizacion de Naciones Unidas para la Agricultura y Alimentacion)
FIS	: Social Investment Fund (Fondo de Inversion Social)
FODIGUA	: Guatemalan Fund for Indigenous Development (Fondo para el Desarrollo Indigena Guatemalteco)
FOGUAMA	: Guatemalan Fund for the Environment (Fondo Guatemalteco de Medio Ambiente)
FONAGRO	: National Fund for Reactivation and Modernization of Agriculture and Livestock Activities (Fondo Nacional para la Reactivacion y Modernizacion de las Actividades Agropecuarias)
FONAPAZ	: National Peace Fund (Fondo Nacional para la Paz)
FONTANERO	: Plumber
FONTIERRA	: National Land Fund (Fondo Nacional de Tierra)
Foror Permanente	: Foro Permanente de ONG y Cooperantes
FSDC	: Solidarity Fund for Community Development
FUNCEDE	: Central America Fundation for Development (Fundacion Centroamericana de Desarrollo)
GDP	: Gross Domestic Product
HIV	: Human Immunodeficiency Virus
ICTA	: Institute of Science and Agricultural Technology (Instituto de Ciencias y Tecnologia Agricola)
IGN	: National Geographical Institute (Instituto Geografico Nacional)
IGSS	: Instituto Guatemalteco de Seguridad Social (Guatemalan Social Security Institute)

IICA	: Inter-American Institute of Agricultural Cooperation (Instituto Interamericano de Cooperación Agrícolas)
INAB	: National Institute of Forest (Instituto Nacional de Bosques)
INCAP	: Institute of Nutrition of Central America and Panama (Instituto de Nutrición de Centroamérica y Panamá)
INDE	: National Institute of Electrification (Instituto Nacional de Electrificación)
INE	: National Institute of Statistics (Instituto Nacional de Estadística)
INFOM	: Municipal Development Institute (Instituto de Fomento Municipal)
INSIVUMEH	: Instituto de Sismología, Vulcanología, Meteorología
INTA	: National Institute of Agrarian Reform (Instituto Nacional de Transformación Agraria)
INTECAP	: Technical Institute for Capacitation and Productivity (Instituto Técnico de Capacitación y Productividad)
JICA	: Japan International Cooperation Agency (Agencia de Cooperación Internacional del Japón)
MAGA	: Ministry of Agriculture, Livestock and Food
MINUGUA	: Misión de Verificación de las Naciones Unidas en Guatemala
MMR	: Maternal Mortality Rate (Tasa de Mortalidad Materna)
MSPAS	: Ministry of Public Health and Social Assistance (Ministerio de Salud Pública y Asistencia Social)
MTIV	: Ministry of Transportation and Road (Ministerio de Transporte y Vial)
OMS	: Organización Mundial de la Salud (WHO)
ONG/NGO	: Non-governmental Organization (Organización No Gubernamental)
ORS	: Oral Rehydration Salt (Sobre de Rehidratación Oral)
PDP	: Small Project Program for the Productive Development of the Resettled Areas (Programa de Pequeños Proyectos para el Desarrollo Productivo de las Áreas de Reasentamiento)
PEA	: Economic Active Population (Población Económicamente Activa)
PINFOR	: Forest Incentive Program (Programa de Incentivos Forestales)
PLAMAR	: Action Plan for Modernization and Encouragement of Low Risk Agriculture (Plan de Acción para la Modernización y Fomento de la Agricultura Bajo Riego)
PNUD/UNDP	: United Nations Development Program (Programa de las Naciones Unidas para el Desarrollo)
PROAM	: Programa de Facilidad de Acceso a Medicamentos
PROFRUTA	: Fruits Farming Development Project (Proyecto para el Desarrollo de la Fruticultura)
PRONADE	: National Education Programme (Programa Nacional de Educación)
PROTIERRA	: Institutional Committee for the Development and Strengthening of the Property of Land (Comisión Institucional para el Desarrollo y Fortalecimiento de la Tierra)
PROZACHI	: Chixoy River Project (Proyecto del Río Chixoy)
RADEAS	: Network of Agents for Sustainable Agriculture and Livestock Development (Redes de Agentes de Desarrollo Agropecuario Sostenible)
RENICAM	: National Network of Institutions of Training for Municipal Reinforcement (Red Nacional de Instituciones de Capacitación para el Fortalecimiento Institucional)
S/W	: Scope of Work (Alcances del Trabajo)
SEGEPLAN	: Secretary for Planning (Secretaría de Planificación)
SEPAZ	: Secretaría de la Paz
SIAS	: Integrated System of Health Care (Sistema Integral de Atención en Salud)
TBA	: Traditional Birth Attendant (Comadrona)
TFR	: Total Fertility Rate
UNDP	: United Nations Development Program (Programa de Naciones Unidas para el Desarrollo)
USAID	: US Agency for International Development (Agencia para el Desarrollo Internacional)
USDA	: US Department of Agriculture
WFP (PMA)	: World Food Programme (Programa Mundial de Alimentos)