


**Study Report
on
The Project for
Improvement of Housing
for Low Income Households
in
The Republic of Guatemala**

March 1996

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PREFACE

In response to a request from the Government of the Republic of Guatemala, the Government of Japan decided to conduct a basic design study on the Project for Improvement of Housing for Low Income Households and entrusted the Japan International Cooperation Agency (JICA) to conduct the study with the assistance of the Japan International Cooperation System (JICS).

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

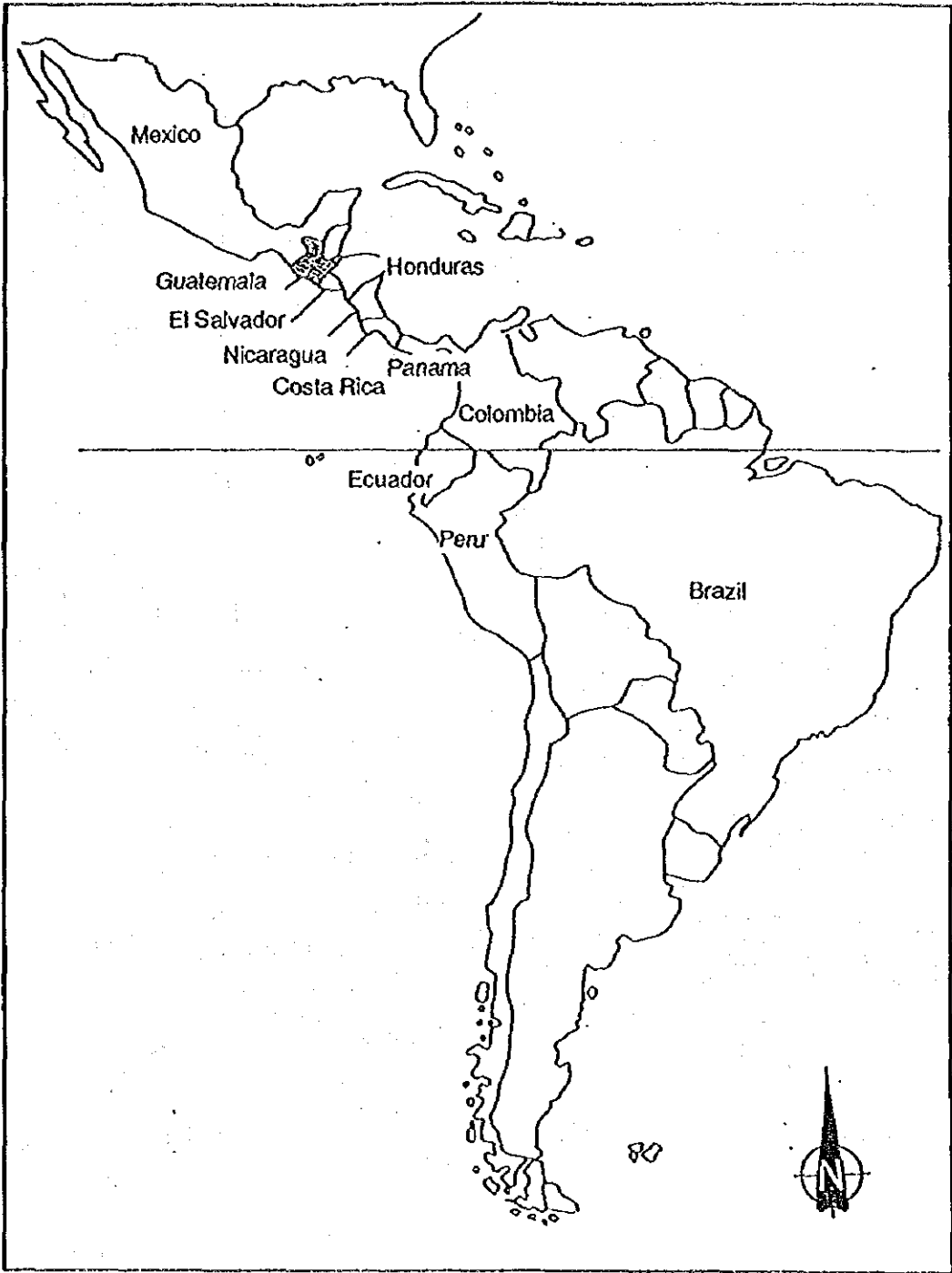
I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Guatemala for their close cooperation extended to the team.

March 1996

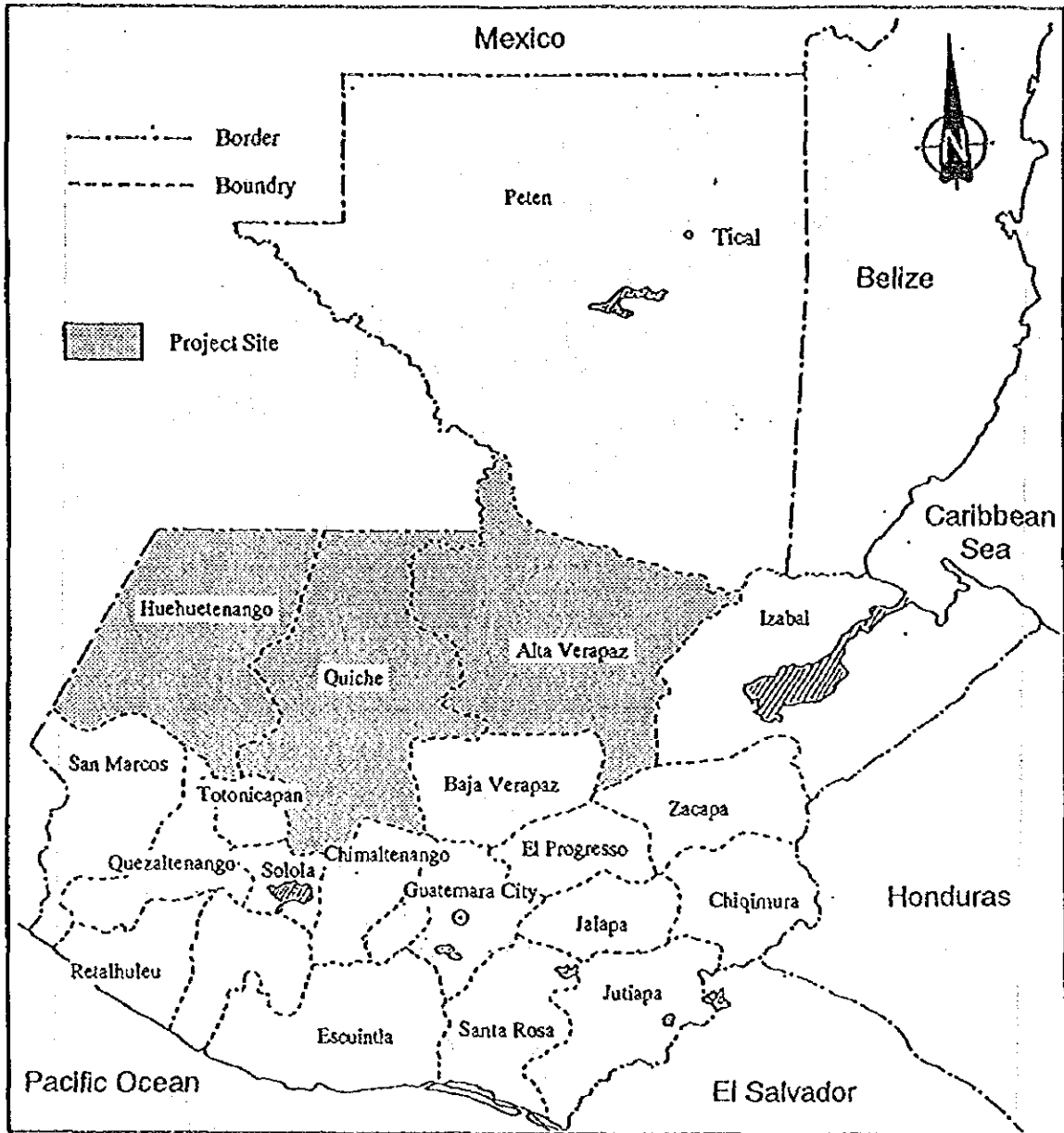
Kimio Fujita

President

Japan International Cooperation Agency



Location Map



Project Site

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Chapter 1. Background of the Project

The Government of Guatemala set up FONAPAZ with the aims of promoting peace and raising the living standard of residents who had suffered from the civil war. As one part of the activities entailed in this, the government compiled a project for the supply of housing in Quiche Province, Huehuetenango Province, Totonicapan Province and five other provinces where influences of the civil war have been particularly severe. The goals are providing permanent residences to citizens who have been made refugees as a result of the war, and improving the state of existing housing available to low income groups.

The Project intends to build or renovate low cost housing for low income earners who have no home or live in dilapidated housing, and aims to achieve this by supplying some of the necessary materials but at the same time encouraging the maximum degree of self aid by the beneficiaries themselves. It would, however, be practically impossible for the beneficiaries and the Government of Guatemala to raise all the materials required for the building and renovation work.

For this reason, the Government of Guatemala made a request to the Government of Japan for the provision of grant aid in 1993, and this resulted in the Government of Japan procuring approximately 176,000 sheets (enough for approximately 6,300 houses) of corrugated galvanized iron sheet (GI sheet) for roofing purposes. These materials were used to build or renovate some 3,000 houses in the period between October 1994 and March 1995. Following this in 1994, a further 296,000 GI sheets plus 2,340,000 umbrella nails were provided, and in the two years of this grant aid implementation, 10,448 houses have either been newly built or renovated. These two phases of grant aid implementation have satisfied the housing needs of some

50,000 refugees who have returned from Mexico. However, measures are still required to deal with the remaining refugees, for whom it is estimated some 300,000 housing units are required.

The Project mainly targets the northern and central parts of Quiche Province and the north of Huehuetenango Province areas which have suffered particularly badly from the civil war, and intends to construct new housing and renovate existing housing in order to advance the policy of relocating refugees returning from abroad and other low income groups such as the native Guatemalans who have been driven off their land. The current request is the third phase of the Project and is for housing materials (GI sheet) to build or renovate 11,600 houses.

Chapter 2. Contents of the Project

2-1 Objectives of the Project

FONAPAZ was set up with the intention of improving the living environment of returning refugees, native Guatemalans who have been driven off their land, and other low income classes who have suffered as a result of the civil war by supplying the materials needed to build and renovate houses. Moreover, by encouraging the participation of residents in these improvement activities, it aims to promote the restoration of districts through the rebuilding of local communities which were broken up during the civil war.

The previous two phases of grant aid implemented by the Government of Japan have satisfied the housing needs of some 50,000 refugees who have returned from Mexico. However,

measures are still required to deal with the remaining refugees, who are estimated to be in need of around 300,000 housing units.

The Project on this occasion mainly targets the northern and central parts of Quiche Province, the north of Huehuetenango Province, and the north-west of Alta Verapaz Province. It aims to procure GI sheets and umbrella nails as roofing materials for 11,600 houses, in order to promote the permanent relocation of internal refugees and improve the living environments within the said areas.

2-2 Basic Concept of the Project

GI sheet is widely used as a roofing material due to its lightweight and ease of transportation, the fact that its fitting requires no special technology, and its ability to withstand earthquakes. By procuring GI sheets in continuation of phase 1 and 2, the Project will contribute to the further improvement of housing facilities, which are faced with appalling conditions due to the shortage of roofing materials.

The Project will target the following three provinces:

Quiche Province

Huehuetenango Province

Alta Verapaz Province.

The central and northern parts of Quiche Province and the north of Huehuetenango Province are located within the mountainous interior of the country. These areas are home to many native Guatemalans, and guerrillas were extremely active here in the past. Of the approximately 45,000 refugees who fled to Mexico as a result of the civil war, almost all have returned to these two provinces.

2-3 Basic Design

2-3-1 Design Concept

Corrugated hot dip galvanized iron sheet shall be procured. Such GI sheet is suited to the purposes of the Project in that its low cost, lightweight and also resistant to corrosion, etc. The specifications of materials were not detailed in the request form, however, these shall be the same as those adopted in Phase 2. The basis for selecting each of these specifications is described below.

[GI sheet]

- 1) Sheet thickness: this shall be BWG26 (0.45 mm). This is an ample thickness of GI sheet for general roofing purpose.
- 2) Galvanize: this shall be Z18 (0.034 mm). This may seem relatively thin compared to the sheet thickness, however, it is within the bounds of standard galvanizing thickness and should not be a problem.
- 3) Corrugation: this shall be W1 (wide corrugation pitch). Narrow corrugation pitch type is also available, but the W1 type is common in Guatemala.
- 4) Hardness: this shall be SGCC (general soft) and/or SGCH (general hard). When using thin sheets for roofing purposes, the hard type possesses the advantage in terms of strength, however, enough sheet thickness is to be used in the Project, there should be no problem in using the soft type. Sheeting of the same specifications was used in the previous two stages of the Project, and no particular problems were experienced. In consideration of the production setups at the suppliers, both types shall be used to make the procurement process go smoother.

5)Size: Sheet length of 6 feet and 8 feet shall be used in equal quantities. Both types are of standard dimensions, and there should be no problems regarding the procurement.

[Umbrella Nails]

Length of 2.5 inch nails shall be used. This length is appropriate because the roof underlay thickness is 3 inches. Diameter shall be a standard 3.4 mm and the umbrella diameter shall be 22 mm.

[Target Households]

11,600 houses shall either be newly built or renovated. The criteria set by the Guatemala side for selecting the target households are as follows.

- 1)Households shall be in economic difficulty as a result of the civil war.
- 2)Households shall possess land where the building or renovation can take place.
- 3)The households shall be able to supply manpower to aid the building or renovation.
- 4)The households shall be able to secure locally procurable materials (sand, gravel, etc.).

[Necessary Materials]

The main work will involve the laying or repair of roofs, for which GI sheets and nails are the main materials. Overall, the building and renovation work will require the materials indicated below.

1) Materials requested to the Government of Japan:

GI sheet, umbrella nails

2) Building materials:

cement, timber, nails, etc.

3) Other materials:

sand, stones, gravel, wall clay, limestone, straw, etc.

The items listed under 2) and 3) above will need to be procured by the beneficiaries themselves, and this is considered to be reasonable from the viewpoint of resident participation.

GI sheet is widely used as a roofing material due its lightweight and ease of transportation, the fact that its fitting requires no special technology, and its ability to withstand earthquakes. This is not a permanent roofing material, however, its low cost will make it possible to widen the beneficial effect. The umbrella nails are to be used in the fitting of the GI sheet and are more suitable than general nails in that they prevent rain leaks and have excellent bearing power and resistance to corrosion.

[Quantities]

According to the Guatemala side, 28 GI sheets are required in order to roof one standard house. In the case of house renovation, the same number is required because it is assumed that all roofing will be replaced. In the Second Phase of the Project, 3 feet x 6 feet sheets and 3 feet x 8 feet sheets were used in equal quantities (14 sheets of each type per house). Assuming that the same system will be adopted on this Project. It works out that

162,400 sheets of each type (324,800 sheets in all) will be required as the roofing materials for 11,600 housing units.

GI sheet is usually bought and sold by weight, and it works out here that 156 sheets of the 3 feet x 6 feet type and 117 sheets of the 3 feet x 8 feet type are equivalent to one ton. From this, it can be calculated that 1,041 tons of the 3 feet x 6 feet sheeting and 1,388 tons of the 3 feet x 8 feet sheeting will be required for the purposes of the Project.

As for the umbrella nails, as eight nails are used to fit one GI sheet in the standard fitting process, a total of 2,598,000 nails (approximately 20.3 tons in weight) will be required.

[Approach to Project Implementation]

The important factor in determining whether or not the Project is implemented smoothly is the participation of the local residents. FONAPAZ proposes to expedite implementation through the process described below.

- 1) Site selection: the benefiting communities and households will be selected upon first consulting with local governments. This will be carried out by the Project Promoter.
- 2) Organization of residents: the concerted participation of the targeted communities will be ensured through arousing public awareness and organizing residents.
- 3) Training of beneficiaries: training shall be carried out to enable the beneficiaries to perform the building and renovation work themselves. 15 technical instructors will be employed for this purpose.

4) Distribution of materials: FONAPAZ will be responsible for the transportation of the roofing materials from customs through to delivery at the sites.

2-3-2 Basic Design

The following table indicates the quantities and specifications of the roofing materials required for 11,600 housing units.

Table 1. Specifications of Materials

Material	Specification	Quantity	Purpose
Galvanized Iron Sheet	Spec. JIS G3302-1987 JIS G3316-1987	1,041 tons (162,400 sheet)	Roofing material
	Hardness SGCC and/or SGCH Corrugation W1 Thickness BWG26 Galvanize Z18 Size width 3ft x length 6ft		
Galvanized Iron Sheet	Spec. JIS G3302-1987 JIS G3316-1987	1,388 tons (162,400 sheet)	Roofing material
	Hardness SGCC and/or SGCH Corrugation W1 Thickness BWG26 Galvanize Z18 Size width 3ft x length 8ft		
Umbrella Nail	Size dia. 3.4mm length 2.5 inch	20.3 tons (2,598,000 pcs.)	fitting for GI sheet

Chapter 3. Implementation Plan

3-1 Implementation Plan

3-1-1 Implementation Schedule

As the Project will only involve the procurement of GI sheet, design supervision work will not be necessary. After the materials supplier, which has been successful in the tendering process, has concluded a materials supply contract with the Government of Guatemala, and after the Government of Japan has authorized this contract, the materials supplier will manufacture the GI sheet, marine transport the completed materials to Puerto Quezal Port, and there hand them over. The implementation schedule up until handing over of the materials is as shown below.

Table 2. Project Schedule

		Month	1	2	3	4	5	6	7	8	9	10	11	12
Total Project Period	Tender (approx. 2 months)	Tenderwork	□											
	Procurement (approx. 5 months)			Evaluation and Contract □	Production of Equipment, Procurement □			Inspection □	Transportation □					

3-1-2 Obligations of the Recipient Country

As the Project is a materials procurement project, the Government of Japan will bear all the materials costs and the cost of materials transportation to Puerto Quezal Port. However, the Government of Guatemala shall be responsible for customs clearance, storage in bond and internal transportation of the materials to each destination following handing over at Puerto Quezal Port.

3-2 Operation and Maintenance Plan

[Operation and Maintenance Capacity]

Implementation of Phase 1 in 1993 proceeded smoothly, and it is reported that the building or renovation of approximately 3,000 housing units had been completed as of March 1995. The actual work didn't start until October 1994 due to the preparation time required for procurement and transportation, etc.. However, judging from the fact that the first 3,000 houses were completed in less than six months, it is considered that FONAPAZ, the implementing agency, is well capable of completing the necessary work on 11,600 houses within the two years of this phase of the Project.

[Staffing]

The Project staff will be 38 members, which represents an increase of 12 over the 26 members who were involved in the implementation of Phase 1 in 1993.

[Operation and Maintenance Costs]

As the Project only involves the procurement of materials, no operation and maintenance costs will arise, however, the Project running costs will be as shown in Table 3.

Table 3. Running Costs of the Project

Items	Amount (US\$)
Personnel Expenses	357,595
Equipment and Maintenance Fees	
Office Supply	9,017
Transportation Equipment	155,517
Communication Equipment	3,448
Administrative Fee	138,965
Construction Material (include GI sheet)	6,547,293
Local Labor Force	994,773
Total	8,206,608

Chapter 4. Project Evaluation and Recommendation

4-1 Project Effect

As a result of supplying roofing materials (GI sheets and umbrella nails) for house building and renovation to native Guatemalans, who have been driven off their land, and other low income groups, the Project will contribute to the improvement of the living environment of those people. This will also prove effective in reducing the size of slum areas and relocating internal refugees. Moreover, in the longer term, it is thought that the Project will aid the rebuilding of communities, which were broken up during the civil war, through encouraging the participation of local residents in the building and renovation work. In this way, the Project highly values basic human needs and resident participation and is seen to be appropriate for implementation under the grant aid scheme of the Government of Japan.

[Direct Beneficial Effect]

- 1) Through contributing to the rebuilding and renovation of 11,600 housing units, the Project will secure housing for approximately 50,000 low income earners, mainly native Guatemalans who have been driven away from their homes as a result of the civil war.
- 2) The supply of new housing will help improve the various problems that result from the current cramped and disorderly living conditions of the low income groups (adverse effects on health and the character development of children).

[Indirect Beneficial Effect]

- 1) Through encouraging the organized cooperation of benefiting communities, the Project will contribute to the rebuilding and strengthening of local communities.
- 2) The rebirth of local communities will indirectly benefit all people living in the target municipalities.
- 3) By relocating slum dwellers and illegal squatters in their original districts, the environmental and land problems currently existing within cities will be improved to some degree.

4-2 Recommendation

As described in the previous section, the Project can be expected to have enormous effects and also widely contribute to answering the basic human needs of local residents. In view of this, it is confirmed that implementing the Project under the grant aid scheme of the Government of Japan is appropriate. Concerning Project running and operation, too, the implementing agency on the Guatemala side is considered to be well capable in terms of both staff and budget, and there should be no problems here. Having said that, if the following points could be improved on, the Project could probably be implemented more smoothly and to greater effect.

- 1) Smooth advancement of the Project is desired through the speedy clearance of customs and internal transportation of the procured materials.
- 2) Judging from the Phase 1 implementation schedule and the plans of the implementing agency in Guatemala, it is

estimated that the implementation schedule will be something like shown in the table below. 1995 poses no problems because there is no overlapping of the building and renovation work between different phases, however, from around the middle of 1996, when the procurement of materials under this phase will commence, work on the 11,600 houses, which was originally scheduled to take place over two years, will actually need to be done in one year. For this reason, the organization, training and guidance of the local residents will need to be carried out quickly and efficiently.

Table 4. Estimated Project Schedule

1994/5 *	1995/6	1996/7	1997/8	1998/9
Proc. Imp. ○ ██████████ 3,000houses	Imp. ██████████ Phase 1 3,300houses			
Phase 2	Proc. Imp. ○ ██████████ 2,625houses	Imp. ██████████ 5,250houses	Imp. ██████████ 2,625houses	
	This Project	Proc. Imp. ○ ██████████ 2,625houses	Imp. ██████████ 5,250houses	Imp. ██████████ 3,725houses
Total 3,000houses	Total 5,925houses	Total 8,750houses	Total 8,750houses	Total 3,725houses

Proc. : Procurement , Imp. : Implementation , * : Japanese Fiscal Year (1994.4 ~ 1995.3)

3) Handling in the event where costs being requested to other donors cannot be covered may be a problem. In order to satisfy the demand for 300,000 new houses, it will be necessary to maximize the ratio of newly built houses over renovations, however, this will obviously incur large materials costs and increase the burden of the implementing agency.

