SOCIAL ASPECTS OF POST-DISASTER HOUSING: IMPLICATIONS FOR PROGRAM PLANNING

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ABSTRACT: This paper grows out of several studies of persons who received new houses after Hurricane Fifi in Honduras (1974). We evaluate such issues as housing site, materials, available services, etc., from the vantage point of the housing recipient. We found that in these Projects the recipients were very satisfied, but that several contextual factors and potential problems are often overlooked in such undertakings.

Introduction

In constructing permanent post-disaster housing one must pay particular attention to the geography, building materials, and disaster risk, but one must not overlook social and cultural factors. As many of us know, the 'best laid plans' after disasters and even without disasters have failed because they did not take into account the reconstruction plans and processes from the vantage point of the users or recipients. Although user input does not assure success, it diminishes the possibility of costly and unnecessary decisions. This is particularly true in the third world.

This paper summarizes the study of nearly four hundred houses built for the victims of Hurricane Fifi (1974) on the north coast of Honduras. The data is the result of interviews with the occupants of these houses in 1976, 1977, and 1978. The first interviews (1976) were conducted in order to collect base data; the second (1977) to determine occupant satisfaction with the various facets of the housing projects; and the third to probe housing improvement and continued occupancy. The housing projects were sponsored by a North American voluntary agency which received some financial and material assistance from other agencies. Although the sponsoring agency had participated in building houses for victims of the Managua earthquake (1972), the Honduran work lacked systematic feedback from that experience.

The houses were built on three different sites not previously occupied by houses. The recipients had previously occupied houses on hillsides vulnerable to landslides or on the floodplane near rivers. These locations are indicative of these people's low socio-economic status and their vulnerability. Most of the recipients lived in temporary quarters (makeshift houses, in public buildings, or with friends or relatives) while the houses were being built and approximately ninety percent assisted in the actual construction for which they received food. Thus, the lives of these people were dramatically interrupted for some months by the disaster, until the houses were completed.

In order to emphasize the importance and breadth of social, cultural, and economic conditions we begin with a brief description of Honduras, the Sula Valley, and the people who received the houses. Although this might appear impertinent, we are convinced the total context of reconstruction needs to be known. Some of the data we have collected is not applicable to other situations, but the questions and issues are important. The people served by these housing Projects share many characteristics with other peoples throughout the third world whose vulnerability to disasters grows from year to year. These are not tribal people who still adhere to the traditions of their precursors and to whom western ideas and technology are foreign. They are, as are hundreds of millions of others in the world, peasants and semi-peasants who are pushed or drawn to the regional urban centers in hopes of a better life.

The National Context

Honduras, commonly referred to as one of the Central American 'Banana Republics,' is poor and certainly one of the world's less developed nations. Its population of 3,500,000 is increasing at an annual rate of 3.5% which means that it doubles approximately every twenty years. The total fertility rate is 6.9 per woman. It is one of the two or three poorest countries in Latin America, approximately comparable to Guatemala, but not as poor as Haiti. Its literacy rate is 57%, life expectancy is fifty-four years and nearly 47% of its population is under fifteen years of age.

Two-thirds of its active working population is in the primary industries (farming, fishing, and forestry) and 20% live in cities of twenty thousand or more. Honduras is one of the forty-three "food-priority countries" so identified by the United Nations due to its especially low income, inadequate diet and large projected cereal-grain deficits.(1) Approximately one in five households have piped water, one in six electric, one in five toilets and slightly fewer have electric lighting. The average number of persons per household is 5.7. Commercial agriculture has increased its hold on much of the best land in the country at the expense of land available to the peasantry. During the earlier part of this century bananas were the major crop, but cattle and cotton have emerged more recently.(2)

The Regional Context

Much of the north coast of Honduras was devastated by Hurricane Fifi, but our study is concentrated in the rich Sula Valley in the north west sector of the country. The early part of this century saw an economic boom in the area and more recently an important industrial expansion. This development is reflected in the growth of San Pedro Sula, the capital of the Department of Cortez. "The population has increased from roughly 20,000 persons in 1950 to about 120,000 in 1970. Almost overnight San Pedro has become Honduras' leading manufacturing center, and the rising skyline of its central business district is indicative of its increasing importance as a seat of commerce. . .San Pedro Sula's growth has made it the largest non-capital city in Central America and it can now claim importance as a regional center for that geographical

area."*

As the above indicates, the economic environment of the Sula Valley is promising. The permanent housing we have studied and are reporting on herein is in the context of an expanding labor market for the populace. Not surprisingly, the authors have found that living in an economically depressed area after a natural disaster is very difficult for victims and non-victims.(3) Researchers found a similar situation after the Managua earthquake.(4) Thus, in the Sula Valley, unlike the usual post-disaster situation in less developed countries, the economy for those we studied held some promise.

Housing Recipients

The persons receiving the housing at the three sites were undoubtedly typical of the mass of peasants and semi-peasants living in the general area of San Pedro Sula. Of those employed, 53.1% were in agriculture (essentially subsistence,) 34.2 were unskilled workers, 9.8% were either employed as skilled or commercial workers, and 2.9% were unemployed. They have been a relatively mobile population with 36.4% living at their previous home three years or less, 32.4% living there from four to six years, 15.1% residing there from seven to ten years and the remaining 16.1% living there more than ten years. This mobility is undoubtedly related to reported mobility to the city of San Pedro Sula in recent years and documented by Croner. He states that, "Internal migration, particularly during the past two decades, has generated phenomenal rates of population growth for the city of San Pedro Sula. The fact that the city has grown nearly sixfold in twenty-one years, and that 79.9% of all heads of household are nationals born outside of the city, illustrates the profound and sudden impact of population movement upon the urban environment."** He goes on to say that, "With increasing industrialization in and around the city, internal population movement to San Pedro Sula could attain unprecedented proportions through the next three decades."*** Although very few

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*William Kenneth Crowley, San Pedro Sula, Honduras: The Order and Disorder of the Pubescent Period in Central America's Most Rapidly Growing City, A Dissertation at the University of Oregon, 1972, p.1.

**Charles Marc Croner, Spatial Characteristics of Internal Migration to San Pedro Sula, Honduras, A Dissertation at Michigan State University, 1972, p. 137.

***Ibid.

of the housing recipients lived in San Pedro Sula, they are undoubtedly part of the ongoing populations' movement to the general area. As Croner indicates, migration to large urban centers is often a stair step process for the migrants rather than a direct move to the big city.

The average years of formal education by the heads of household was 2.2 years. Approximately 10% of the houses were headed by women and the average household size was 5.3 persons. Household sizes were distributed as follows: 1-2 persons, 7.5%; 3-4 persons, 26.2%; 5-6 persons, 35.7%; 7-8, 25.2%; nine or more persons, 5.3%. Those under fifteen years of age account for 51.6% of the total population. Future residents were given the opportunity to participate in the construction of the houses and a full 91.2% did so. In addition, they were able to receive food for work and 89.5% of the total interviewed said they did.

As previously mentioned, these people are not recent migrants from a tribal past, but are oriented to the rapidly emerging urban-industrial sector. To measure their exposure to and integration in the national life we asked them three questions. First, we asked how many had voted in a public election and 57.5% said they had. Second, we asked how many could name all five of the Central American republics and 63.1% were able. Finally, we asked how many knew the name of the President of Honduras and 80.2% were able to name him. Thus, we were convinced of their national awareness and orientation.

Although it appears trite and unnecessary to ask how many of the post-disaster housing recipients were victims, it is an important consideration in light of the housing deficit that existed before the disaster as well as afterwards. In a statement on the housing situation prior to the disaster and in reference to new construction, "In Honduras a five-year plan called for 9,500 houses to be built in the public sector between 1965 and 1969, although population increase alone required 64,000 new houses in this period, and the housing deficit of 1965 was estimated 263,000."* We found that 82.8% of the persons living in the houses in 1976 had had their houses destroyed by the storm. We also asked how many of the occupants were owners of the houses they were inhabiting and 89.8% indicated that they were. The remaining occupants were either caring for houses for friends or relatives, had recently purchased the houses, or were renting them.(5)

The housing in which the recipients lived prior to the disaster was primarily traditional. Traditional houses or 'champas' are constructed by the owners and utilize indigenous materials such as thatch, bamboo, and mud plaster. Modern homes are constructed of either cement block or sawn lumber. Of those interviewed in the

*"To Shelter Humanity" Summary Report of A Symposium on World Housing Needs and Environment, The American University, Washington, D.C., 1975, p. 34.

new housing 78.7% had lived in the traditional housing. The flooring of their previous houses was primarily dirt (75.8%) and only 20.9% had electricity. A total of 27.3% had running water (not necessarily inside their houses) and 6.2% had baths. As will be seen, moving into the post-disaster housing was a step up for most of these people.

Project Descriptions

Following are descriptions of the three projects discussed in this paper: San José, Flores de Oriente, and Santa Rita. They can be located on the maps provided.

San José contains 121 houses and is located on the primary highway between San Pedro Sula and the north coast near the city of Choloma. It has an excellent location with reference to the existing transportation net. Proximity to the highway permits easy access for the interior street system. The portion of the project near the highway is quite flat but considerable slope exists at the extremities of the site. Serious erosion has already affected the streets within the project. Houses are constructed of either concrete block or concrete panels which were poured on the ground and lifted into place and subsequently bolted together. The latter construction was found to be problematic, and abandoned. Houses contain approximately twenty-five square meters of space. Lots (approximately twenty by twenty-five meters) are large enough to provide space for gardens. Water and sanitary facilities are provided externally. The provision for a piped external water supply to each yard alleviates some of the potential health hazards posed by pit latrines.

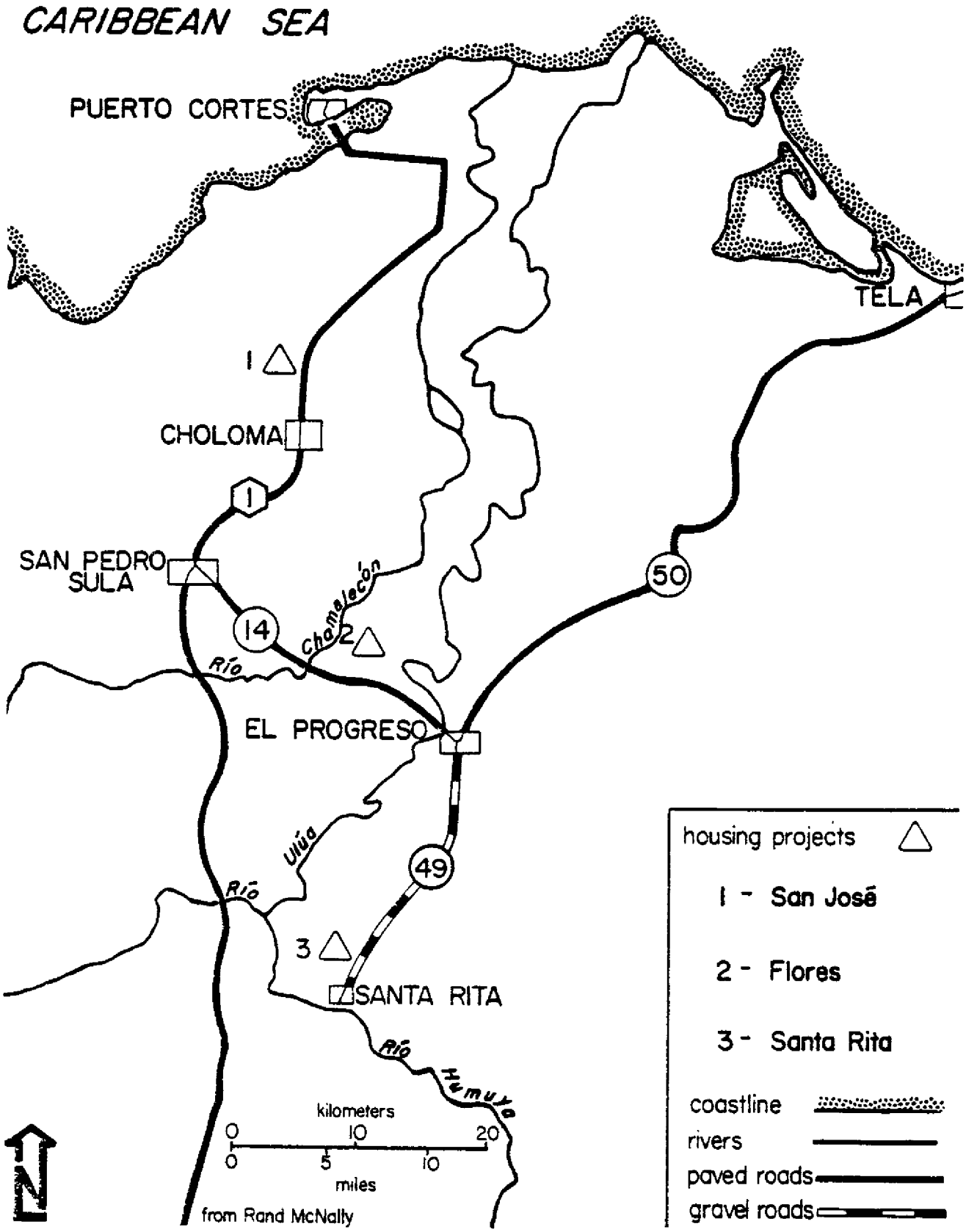
The household heads have the lowest mean age (33.2) and have the second lowest mean formal educational level (1.9 years). The large majority of the residents formerly lived in "champas" (83%) and only one in three had hard floors. In their pre-disaster houses they had fewer basic services than other project residents (only 2% had electricity, 4% had baths, and 10% lived in houses with water). Thus, compared to the other projects, residents of San Jose come from poor backgrounds, but have received very good houses in a well sited location.

Flores de Oriente contains 127 houses and is approximately two kilometers off the old San Pedro-El Progreso highway on an unimproved road. While this distance might not appear excessive, from a relative distance point-of-view it is perceived as being poorly

CENTRAL AMERICA


HONDURAS
STUDY AREA
N

Sula Valley


CARIBBEAN SEA
PUERTO CORTES
TELA
1
CHOLOMA
1
SAN PEDRO SULA
14
Chamelecón
2
Río
50
EL PROGRESO
Ulúa
Río
49
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SANTA RITA
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kilometers
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miles
from Rand McNally
housing projects
1 - San José
2 - Flores
3 - Santa Rita
coastline
rivers
paved roads
gravel roads

sited by the residents. The site is completely flat, occupying land formerly used for banana cultivation. It is often flooded during the rainy season and was inundated by two to three meters of water during Fifi. All houses were constructed of wood with earthen floors and contain approximately twenty-four square meters of interior space. The project provides ample space around the houses for garden plots, plus considerable farm land is available to the residents. Water was provided by eight wells and sanitary facilities were provided externally. Poor drainage characteristics, high water table, and the use of pit latrines pose a potentially serious health problem. This project was established to house persons from the general area as no village existed here prior to Fifi.

Our survey found that Flores had the highest percentage of single household heads and that more were engaged in agriculture (40%) than any of the other projects. It also had the lowest educational level per household head which is undoubtedly related to the large percentage in agriculture. More than 80% of the residents formerly lived in houses lacking hard floors and classified as champas. Over 90% lacked electricity and bathing facilities and 37% had water. Thus, the families were poorly housed prior to Fifi and have received comparatively small, minimal housing at the poorest site.

Santa Rita contains ninety-two houses and is the most remote project from the regional urban center, San Pedro Sula. It is located on a poorly maintained gravel road which provides regular bus transportation to El Progreso during all but the worst part of the rainy season. The project is adjacent to the town of Santa Rita which provides most urban functions (excluding water). The site is relatively level and the lots are adequate for garden plots. The most serious physical problem is the low water table. It is impossible for the residents to reach water by hand-dug wells. The availability of a regular market located at the edge of the project alleviates most of the transportation needs. All houses are of concrete block with concrete floors and contain approximately forty square meters of floor space. Sanitation facilities are provided externally, but no water is provided. Some of the pit latrines have proven inadequate due to poor construction; approximately one-fourth have been rendered useless due to collapsing of the pits' walls. This is the only project where a community center was built as part of the project.

This project has the highest rate of unemployment (19.4%) and contains the lowest percentage of female household heads. Compared to the other projects resident characteristics were very average. Prior to Fifi, residents lived primarily in champas with dirt floors. They also came from houses that rarely contained water, electricity, and baths.

Thus, residents came from rather poor housing and have received good housing with mixed advantages (adjacent to city services and market, good housing, but lacking an adequate water supply).

User Response To New Housing

In June, 1977, two years after the houses were completed, we interviewed a random sample of approximately forty percent in the three housing sites. The net completion rate in each project was in excess of 75%. Since more than two years had lapsed since the completion of the Projects the newness of the houses had faded and residents were well established in the routines of living. Responses to the new housing was elicited at three levels in order to evoke the most representative and valid responses. First, residents were asked two open-ended questions related to what they like most and least about living in their new residences. Second, they were asked to compare their present situation with their previous housing in terms of the ease of adjustment, the house itself, its location and neighborhood. Finally, they were asked 23 specific questions about various facets of their new residence and locations. Responses to these questions were either "Satisfactory," "Acceptable," or "Unsatisfactory."(6)

For both of the open-ended questions respondents were instructed to give what they considered the single most important response. Table I contains the responses to, "What do you like most about living in this Project. "Everything," reflects the wording of the respondents while "Quality of life" includes such statements as tranquility, security, and atmosphere. The more specific responses such as "Houses," "Water," and "Location" undoubtedly reflect significant improvements over their previous housing situations a very small percentage in Flores and Santa Rita found "Nothing" to like in their projects.

1
TABLE

What Do You Like Most
About Living In This Project?

	No.	Every-thing (%)	Quality Of Life (%)	Water (%)	House (%)	Loca-tion (%)	Nothing (%)
San José	(50)	4.0	32.0	10.0	28.0	26.0	None
Flores	(41)	9.8	51.2	2.4	26.8	4.9	4.9
Santa Rita	(34)	11.8	26.5	2.3	41.2	14.7	5.9
Total	(125)	8.0	36.8	4.8	31.2	16.0	3.2

Table 2 reports what the residents like least about their Project and these negative answers are undoubtedly more revealing for evaluative purposes. A number of categories in the Table stand out. First, the large number of persons in San José that have no complaints whatsoever. Second, the large percentage of persons in Flores and Santa Rita that indicate "water" as the central problem. In San José, 31.0% found that inadequate "Lights" were problematic. In each Project there were a very few who found "House Construction" to be that which they liked least.

2
TABLE

What Do You Like Least
About Living In This Project?

	No.	No Complaint (%)	Lights (%)	Water (%)	Location (%)	Streets (%)	House Const. (%)
San José	(45)	51.0	31.0	None	8.9	4.4	4.4
Flores	(35)	11.4	11.4	54.3	None	14.3	8.6
Santa Rita	(37)	11.1	11.1	75.0	None	2.8	2.8
Total	(117)	25.5	18.8	39.3	3.4	6.8	5.1

The four comparative questions are approximately mid-way between the previous open-ended questions and the specific questions that follow in terms of generality and focus. The first question asks, "Have you found settling and adaptation to the mode of life in this Project better, equal or worse than in previous places of residence?" Table 3 contains responses and it is clear that for most residents adaptation has been better or at least equal as compared to previous times. Only in Santa Rita (18.9%) have more than 10% of the residents found such adjustments more difficult.

3
TABLE

Adaption To The Way Of Life In
Present Residence As Compared To Previous Ones

	No.	Better (%)	Equal (%)	Worse (%)
San José	(50)	72.0	18.0	10.0
Flores	(42)	78.6	14.2	7.1
Santa Rita	(37)	62.2	18.9	18.9
Total	(129)	71.3	17.1	11.6

Table 4 contains responses to the question, "Is this house better than the one you previously lived in?" Generally, the response is very positive. Only in Flores de Oriente was the dissatisfaction level near ten percent.

4
TABLE

Is This House Better Than
The One You Previously Lived In?

	No.	Better (%)	Equal (%)	Worse (%)
San José	(50)	98.0	2.0	None
Flores	(42)	85.7	4.8	9.5
Santa Rita	(36)	91.7	5.6	2.8
Total	(128)	92.2	3.9	3.9

The quality of present and past house location is compared in Table 5. Satisfaction in this case is more widespread than in the two previous questions. Although it is clear that Flores de Oriente

and Santa Rita are remote by any measure, their location is better than where the residents previously lived.

5
TABLE

Is This Location Better Than
Where You Previously Lived?

	No.	Better (%)	Equal (%)	Worse (%)
San José	(50)	98.0	2.0	None
Flores	(42)	88.1	4.8	7.1
Santa Rita	(37)	91.9	5.4	2.7
Total	(129)	93.0	3.9	3.1

Neighborhoods of previous and present house locations are compared in Table 6. Satisfaction is again very high, only 4.8% in Flores de Oriente find it worse.

6
TABLE

Is This Neighborhood Better Than
Where You Previously Lived?

	No.	Better (%)	Equal (%)	Worse (%)
San José	(50)	98.0	2.0	None
Flores	(42)	83.3	11.9	4.8
Santa Rita	(37)	86.5	13.5	None
Total	(129)	89.9	8.5	1.6

On these comparative questions the new residences are clearly perceived as better than their pre-disaster housing situation. This is strong evidence that these people have improved their standard of housing, a situation one cannot generally expect in housing third world people after disasters.

In order to focus on the more specific facets of satisfaction among residents questions were asked concerning the following topics: (1) institutional services, (2) work, (3) housing, (4) housing facilities, (5) site characteristics, and (6) social environment. Responses to these questions were either "Satisfactory," "Acceptable," "Unsatisfactory," or "Do not know." "Satisfactory" and "Acceptable" have been combined and treated as positive responses. This was done due to the small number of respondents answering "acceptable." "Do not know" responses were omitted from our analysis. The Tables contain the percentage of persons responding "Satisfactory" and "Acceptable."

In order to provide a frame of reference for the responses and to maintain consistency of terminology we established four categories of answers ranging from positive to negative. These categories are: (1) "positive" when 85 to 100% respond affirmatively, (2) "moderately positive" for 70 to 84% affirmative answers, (3) 50 to 69% positive responses are labelled "moderately negative", and fewer than 50% positive answers are defined as "negative".

Institutional services include the availability and adequacy of churches, schools, markets and public transportation. The response concerning availability of church was negative at Flores. San José's positive response probably relates to the existence of churches within the project proper while Santa Rita's location next to an existing village makes church facilities readily available. All projects were positive in their response concerning the question of school.

Nearness to market was not problematic for residents of Santa Rita since a new market has recently been built at the edge of the Project. The situation is quite different for Flores and San José. Transportation does not pose a problem for residents of San José and Santa Rita, but is very negative for those in Flores. This is due to the Project's poor siting, at some distance from the main road.

Table 8 contains responses to two facets of work. Both categories indicate some problems in all three Projects. The percentage of persons indicating that there is sufficient work ranges from 61.9% to 76.0%. With reference to nearness to work the range is from 46.0% to 65.9%. The problems of adequate work are endemic in much of the third world and following disasters the situation is exacerbated. Seventeen months after the earthquake in Managua a survey indicated that, "Forty-six percent felt that their job situation

was worse than it had been before the quake."*

7
TABLE
Institutional Services

	Church		School		Market		Transportation	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
San José	(50)	96.0	(50)	100	(50)	26.0	(50)	94.0
Flores	(42)	40.5	(42)	100	(42)	2.4	(42)	31.0
Santa Rita	(37)	89.2	(36)	100	(37)	100	(37)	89.2
Total	(129)	76.0	(128)	100	(129)	39.5	(129)	72.1

8
TABLE
Work

	Sufficient Work		Nearness To Work	
	No.	(%)	No.	(%)
San José	(50)	76.0	(50)	46.0
Flores	(42)	61.9	(41)	65.9
Santa Rita	(37)	66.7	(37)	51.4
Total	(129)	69.0	(128)	53.9

Table 9 contains responses to house materials (walls, floors, and roof) and interior space. With the exception of flooring in Flores

*Patricia B. Trainer, Robert Bolin and Reyes Ramos, "Reestablishing Homes and Jobs: Families" in J. Eugene Haas, et. al., Reconstruction Following Disasters, The MIT Press, Cambridge, 1977, p. 198.

de Oriente the assessments are very positive (all above 90%). The new houses included walls of sawn lumber (Flores), cement block and reinforced concrete walls (in Santa Rita and San José), corregated tin roofs on all houses, and cement floors in Santa Rita and San José. The negative response in Flores is due to the earthen floors. Interior space, which ranged from twenty-five (San José and Flores) to forty square meters in Santa Rita, was also sufficient for these people. There were no partitions provided in any of the houses.

9
TABLE

Housing

	House Material		Floor Material		Roof Material		Interior Space	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
San José	(50)	98.0	(50)	98.0	(50)	98.0	(50)	96.0
Flores	(42)	90.5	(42)	31.0	(42)	92.9	(42)	95.2
Santa Rita	(37)	97.2	(37)	91.9	(37)	94.6	(37)	100
Total	(129)	95.4	(129)	74.4	(129)	95.4	(129)	96.9

What we call "Housing Facilities" is contained in Table 10. "Fresh air" or ventilation was provided through the doors, windows, and approximately two inches of space between the roof and the walls. Generally, this amount of ventilation was adequate. This was true also of toilets which were provided outside of the house itself. This was true even when many of them were beginning to sink or fall down when this survey was done. Provisions for "Baths" were simply not satisfactory. There was not specific provision for such in any of the Projects, but the response was not so negative in San José where piped water was available in the yards and bathing was made possible, at least for some of the family members. Interestingly enough there was no "Cooking space" provided at any of the sights, but the response was not overwhelmingly negative. The reason for this is that cooking is almost always done under a separate roof and usually constructed of traditional materials. In cities this situation is different, but in these Projects on the urban fringe and with people from traditional backgrounds it was, essentially, adequate.

10
TABLE

Housing Facilities

	Fresh Air		Toilets		Bath		Cooking Space	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
San José	(49)	85.7	(50)	98.0	(49)	38.0	(49)	86.0
Flores	(42)	83.3	(42)	92.9	(42)	4.8	(42)	71.4
Santa Rita	(37)	100	(37)	81.1	(37)	0.0	(36)	61.1
Total	(128)	89.1	(129)	91.5	(128)	16.4	(127)	74.0

"Site Characteristics" refers to "Garden Space," "Space between houses," and "General cleanliness." The availability of space on both counts is satisfactory. We felt they might want space for gardens, but that was not true. They use their yards for fruit trees and sometimes for pigs and chickens, but the available space was adequate as the responses indicate. Land is not actually scarce in this part of Honduras, but it is expensive due to commercial agriculture. Cleanliness was only a problem with some residents in Santa Rita.

11
TABLE

Site Characteristics

	Garden Space		Space Between Houses		General Cleanliness	
	No.	(%)	No.	(%)	No.	(%)
San José	(50)	92.0	(49)	95.9	(50)	98.0
Flores	(42)	85.7	(42)	92.9	(42)	95.2
Santa Rita	(37)	94.6	(37)	100	(37)	83.8
Total	(129)	90.7	(128)	96.1	(129)	93.0

Items under "Social environment" cover a variety of items we thought might identify areas of difficulty. Certainly, residents

are happy with the "Class of people" who live there (100%) and with neighborly interaction (99.2%). "Outsider's impression" of the Projects is very high (98.4%) and "Personal security" is not problematic for more than a very few (93.8%). They are certainly located sufficiently near to friends (96.1%), but many could be nearer to their relatives. These responses correspond directly to how far the residents are presently located from their previous domeciles. This is not something that is easy or even possible to control under these circumstances.

12
TABLE

Social environment

	Class of People No. (%)	Neighbor Interaction No. (%)	Outsider's Impression No. (%)	Personal Security No. (%)	Nearness of Friends No. (%)	Nearness/ Relatives No. (%)
S.J.	(50) 100	(50) 100	(50) 100	(50) 96.0	(50) 98.0	(50) 80.0
Flo.	(41) 100	(42) 97.6	(41) 97.6	(42) 95.1	(42) 92.9	(42) 69.1
S.R.	(37) 100	(37) 100	(37) 97.3	(36) 91.7	(37) 97.3	(37) 62.2
Tot.	(128) 100	(129) 99.2	(128) 98.4	(128) 93.8	(129) 96.1	(129) 71.3

The twenty-three questions referring to specific facets of permanent post-disaster housing reconstruction are generally very positive. Of the four categories of resident responses that we constructed 68.1% (47) were "Positive," 8.7% (6) were "Moderately Positive," 10.2% (7) were "Moderately Negative," and 13.0% (9) were "Negative."(Table 13) The problem areas that were identified are: siting and the availability of services to the Projects; work, which is also related to location; the exclusion of certain housing amenities; and a few site specific complaints. Siting or location problems include the availability markets, transportation, church, and to a certain degree resident's relatives. Work, aside from being to some degree locational, is associated with development in general. The exclusion of bathing facilities, floors at Flores, and to a lesser degree cooking facilities and adequate toilets created varying degrees of difficulty for the occupants. Some minor site specific issues were cleanliness and insufficient ventilation at Flores.

TABLE

Summary Of Responses By Projects

	San José	Flores	Santa Rita
Church	P	N	P
School	P	P	P
Market	N	N	P
Transportation	P	N	P
Sufficient work	MP	MN	MN
Near work	N	MN	MN
House material	P	P	P
Floor	P	N	P
Roof	P	P	P
Interior space	P	P	P
Fresh air	P	MP	P
Toilet	P	P	MP
Bath	N	N	N
Cooking space	P	MP	MN
Garden space	P	P	P
Between houses	P	P	P
Cleanliness	P	P	MP
Class of people	P	P	P
Interaction	P	P	P
Outsider/Impression	P	P	P
Security	P	P	P
Near-friends	P	P	P
Near relatives	MP	MN	MN

P = Positive.
MP = Moderately positive.
MN = Moderately negative.
N = Negative.

Implications For Post-Disaster Planning

This paper has assumed that satisfactory housing, in general or after disasters, demands more than appropriately constructed buildings. It also assumes that an essential ingredient in planning such satisfactory housing is continuous input from those most familiar with the recipients' needs and interests - the recipients themselves. This input should not begin with a post-disaster survey of how satisfied they are with what they have received, but continuously from conception through construction and completion. Hastily constructed housing without user participation may become temporary and/or residents may feel little commitment.(7)

After looking at nearly four hundred houses built in the Sula Valley for victims of Hurricane Fifi, in light of the interviews and other information we have gathered, we feel there are a number of things that can be said about planning post-disaster housing. Some suggestions, it must be mentioned, did not emerge in the interviews. Post-disaster interviews like the above and user input prior to construction are essential as we say, but other forms and sources of information are also important and not available from the recipients.

First, it is imperative that a thorough knowledge of the economic and developmental trends of the nation and region be known. (And/or a knowledge of the national development plans if they exist and are being consistently and reasonably implemented.) The three Projects we studied were successful in large part because they were in an economically healthy region. In a more recent study of victims of the same hurricane, but in a region of the country that was experiencing economic decline, recipients and non-recipients of aid were generally not better off than before the storm.(8) This is not to say these people should not be assisted, but the priorities and approach would be different. Less resources might be spent on housing materials and more on work generating activities. It is very possible that corregated tin and nails plus tools and cement would be provided and that other available resources be spent on developing a cooperative work place and/or enterprise. The cost of the structural houses at San Jose was $658, in Flores de Oriente $322, and in Santa Rita $759 and in a post facto evaluation of the effort by the architect-engineer, indicated that they spent more money per building in San Jose and Santa Rita than was necessary.

Such national and regional information must come from national or international experts who are thoroughly knowledgable about said countries. It is often difficult information to attain and equally problematic to determine who can provide it objectively and within a reasonable amount of time.

Second, it is necessary that information about the immediate area be known. Be sure, of course, that the site is not vulnerable to future disasters. Nearly half of those built in the three Projects we studied are vulnerable to future flooding.(9) Also, (as an example) be certain that the land you intend to build on has clear title and that it actually belongs to the sponsoring agency. The residents at San Jose and Santa Rita apparently own their houses, but as of 1978 the issue of land ownership had not yet been settled. We feel confident that it was being settled equitably in San Jose, but we are not certain in the case of Santa Rita. The land upon which Flores de Oriente was built belongs to the National Agrarian Institute and the residents cannot own the property. The arrangement, however, seems to be satisfactory as the residents are told they can live there as long as they wish, but if they move, the houses will be assigned to other families (in 1978 we found that some had already sold their houses to other families and left.)

Another related issue is how committed will the local government be to incorporating the Project into the local service net and infrastructure? Within a year after our survey the government authorities in the region of Santa Rita had provided water to each household and solved the major problem of that Project. They also improved the local roads which was very beneficial. In a locale experiencing economic decline this type of assistance cannot be expected. (It must be mentioned that in this case it was not expected either. The sponsoring agency had simply failed in its efforts to provide adequate water to this Project.)

The information necessary for this type of local knowledge is difficult to gather. Local persons with long term experience will need to be utilized unless the information is available from a reliable, local, regional, or national planning office. We have serious doubts about the latter possibility. This constitutes a particularly difficult problem to solve and takes more time than the average agency or agency representative wants to spend. But, as we are arguing, it is essential for a satisfactory post-disaster housing plan. The post-disaster period is a particularly difficult time to gather reliable information and to make reasonable business transactions. Prices for goods and the problems of fraud undoubtedly increase and outsiders are particularly vulnerable to these risks.

Finally, as we have been arguing, input at the level of recipients is an essential ingredient. They must be actively involved in planning, construction, and they should be expected to pay for some of the expenses incurred. In our study we found that, generally speaking, the housing materials, location, space(10), etc., were not problematic for the users. They fit their cultural and social experience in terms of being acceptable, familiar and useable. Their houses are sufficiently repair intensive, alterable, safe, and appropriate. We know of a case in the Dominican Republic where, after the hurricanes of 1979, post-disaster housing was constructed with plastic roofs. This was unacceptable in the short run because it did not provide sufficient protection from

the sun's rays and was unacceptable in the long run because it was not durable. We have asked over six hundred persons on the north coast of Honduras what they think about corrigated tin roofs and all but two like it and those two had previously lived in much more expensive houses. Part of the preference is due to the unavailability of traditional materials after storms, the fact that they must be replaced every two years, that they house insects and snakes, and that they present a fire hazard: A few good reasons for peasants preferring the material.

Recipients must also be expected to pay a reasonable amount of the costs incurred in such undertakings. Payments must not constitute a financial hardship for the recipients, however. Payments, also, may need to be spaced in relation to the recipients' income fluctuations. Those who depend on income from agriculture will be able to pay most during the harvest season. Turning over the responsibility for payment collection to a local agency may be a wise decision or it may not.

In closing we would like to quote from a report to the President of Guatemala two years after an earthquake devasted that country. It was written by representatives of a Committee of volunteer agencies and lists the five most important mistakes that had been made in their assistance effort.

> . . . too much aid was given away; too many of the houses constructed were merely of an emergency type; some organizations used large numbers of foreign volunteers; too much was done under pressure and without proper consultation, so that the victims became mere spectators of the work carried out rather than participants; a lot of reconstruction work was undertaken without first consulting the Government's Reconstruction Committee.*

*Reggie Norton, "Disasters and Settlements," Disasters 4/3, 1980, p. 339.

References

1. This is mentioned by S. Wortman, "Food and Agriculture," Scientific American 235 (3):31-39.

2. This point is made in William H. Durham, Scarcity and Survival in Central America, Stanford University Press, Stanford, Cal., 1979.

3. See D. N. Snarr and E. L. Brown, "The Impact of Post-disaster Aid: An Evaluation after Five Years," mimeographed, Wilmington College, Wilmington, Ohio 45177, 1981.

4. See J. E. Hass, et. al., Reconstruction Following Disaster, The MIT Press, Cambridge, 1977.

5. See D. N. Snarr and E. L. Brown, "Post-disaster Housing: Attrition & Housing Improvement," mimeographed, Wilmington College, Wilmington, Ohio 45177, 1979.

6. Much of this information is contained in two articles by D. N. Snarr and E. L. Brown, "Post-disaster Housing in Honduras after Hurricane Fifi: An Assessment of Some Objectives," Mass Emergencies 3 (1978), pp. 239-250 and "User Satisfaction with Permanent Post-disaster Housing: Two Years After Hurricane Fifi in Honduras," Disasters 4/1 (1980), pp. 83-92.

7. See No. 5 above.

8. See No. 3 above.

9. See E. L. Brown and D. N. Snarr, "Permanent Post-disaster Housing in Honduras: Aspects of Vulnerability to Future Disasters," Disasters 3/3 (1979), pp. 287-292.

10. See D. N. Snarr and E. L. Brown, "Spatial Aspects of Post-disaster Housing Satisfaction," Ohio Geographer Vol. 7, 1979, pp. 13-21.