

Chapter 1: Choosing a Paradigm for Disaster Recovery

Introduction and Overview

By

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1.1 Introduction

Disasters appear in newspaper headlines with regularity. The early January 2001 earthquake in El Salvador gets replaced with the late January earthquakes in India, only to be followed by the September attacks on New York City. Disasters are not solvable problems. They are physical, political, economic and social events to be mitigated, managed, and learned from. This research project is an attempt both to learn from disasters and to provide insight into mitigation measures that reduce loss of life and property, as well as reducing household vulnerability. This chapter weaves the multi-colored threads of different community experiences into a tapestry that tries to tell the story of four countries.

In Mexico and Central America disasters are woven into the fabric of community life. They are a component of the challenge faced by these countries in moving up the development scale. While many poorer and less affluent communities simply try to “return to normalcy” after an event, other communities choose to use the crisis to transform their social and development relations with society (donors, government, employers, social groups) in ways that are sustainable. That is, they choose a path of action that furthers their potential for positive internal development that helps to mitigate the impact of future disasters.



Honduras: The community sink, temporary shelter, March 2000

In the generic recovery model, a series of linked actions are programmed, ending in a return to normalcy (Siembieda and Baird 2001). This is an accepted paradigm used to organize and manage disaster recovery efforts. In South and Central America a second paradigm is emerging. This emerging paradigm views disaster recovery as a mechanism of social transformation at many levels, but predominantly local and regional.

When this project began, the conceptual framework was designed to examine the behavior of the communities in terms of how they choose between a return to normalcy path (paradigm A) or a transformative path (paradigm B). A set of variables was proposed as explanatory and deterministic (discussed in Study Design Section). As we learned about the communities themselves it became clear that a rigid choice of A or B was not entirely possible. Some communities were not recovering well at all, so there also had to be a less than 'A' paradigm type (a community that simply was trying not to fall too far behind). In reality, all communities are dynamic. They cannot truly be considered pure A nor B, but rather A-, or B+. They make some progress on a certain variable (local participation) but not on expansion of income or employment base.

The ability of a community to sustain any improvement over time is a function of both its internal capacities (the degree of horizontal integration) and its external capacity (vertical integration) to utilize the non-local resource within its sphere of influence (national and state cooperation and international cooperation).

Studies of fifteen communities (neighborhoods and villages) in four countries (Mexico, El Salvador, Honduras and Nicaragua) provide the data for this comparative paradigm analysis. Some are urban and others are rural communities, each with differing levels of involvement, coordination and participation on the part of national and international aid agencies and government emergency service agencies, including the military. For each community a profile has been made, a survey completed, local interviews conducted and a set of variables related to disaster recovery choices analyzed.

Organization of the Report

This study report contains this introduction and overview chapter, four country chapters, and appendices. Each country chapter is self-contained with an executive summary, the case studies, a conclusion section, an analytical matrix and appendices. The reports for El Salvador, Nicaragua and Mexico were written in Spanish, and translated into English in the U.S. The Honduras report was written in English. This chapter provides an overview and interpretation of the findings as a whole as related to the main research questions, the methodology used, the survey results, and universal matrices for each country.

Conceptual Framework

In the study the general conceptual model used is an elaboration on work done by other researchers on vulnerability, community assets, claims and access following disasters (Vasta and Krimgold, 2000; Blaikie 1994, Vasta, 2001). *Vulnerability* is primarily a function of a household's or a community's asset endowment, and the household's response to the severity of the disaster impact. *Assets* represent the stock of

wealth such as land, capital, savings, or such intangible assets as social capital, health and education facilities and internal empowerment. *Claims* can literally be defined as insurance claims, or a perceived right to an external resource such as government assistance to help rebuild the community. *Access* is the ability to obtain the use of assets in the recovery process and to lower household and community vulnerability. Claims and assets are closely related, assets being the outcome of claims and claims being the means or method by which some assets are acquired after disaster.

It makes practical sense that the more assets a family or community has the easier it is to recover from a disaster event, or to mitigate the impact of a future event. By adding the time variable (in the short, medium and long term) the asset approach becomes a more dynamic and robust analytic tool. In this manner we can look at immediate response activities (provision of food, temporary shelter, and medical attention) from longer-term responses such as reconstruction, employment, local training and capacity building. A generalized scheme for the model is provided in Table 1.1 below. Access itself is a relative term that requires some clarification. In a given circumstance there is a probability of access to an asset. For example, in stable economic circumstances a person can go to the bank with high probability of withdrawing small amounts of funds from his/her account. In a more collective example a community can be assigned probabilities of access to assets over time, as is shown in Table 1.1. The probabilities reflect the reality of a developing country where there can be varying state responses to civil needs and property rights. Probability is a term with a rational basis. In Central America and Mexico, the probability of access needs to be understood within a socially derived historical context, where rationality may be attenuated to other interests.

TABLE 1.1 ASSET-ACCESS MODEL—SAMPLE COMMUNITY PROBABILITY MATRIX

<i>Asset Classes</i>	<i>Period</i>	<i>Period</i>	<i>Period</i>
	<i>Short Term</i>	<i>Medium Term</i>	<i>Long Term</i>
Investments		High probability	
Claims	Low probability	Low	High
Reserves: materials or capacities to act		Moderate	
Social Capital – training, collective skills, linkages	High		

The list of asset classes in Table 1.1 is not fixed, but represents a system of organizing a set of valued resources. Mário Lungo (see the El Salvador chapter) uses only three asset classes: investments (human, individual and collective), demands (of different types) and reserves (material and monetary). He then simplifies the three into two components: *capacity* (access) and *assets*. These two components can include issues of much complexity as they relate to societal dynamic of a country. Thus, within *capacities* can be found human capital and social capital. The first can be associated with individual capacity or that of the family unit, while the second can be associated with collective

capacity. The complexity and analytical potential of these social capital concepts has been widely discussed in the development literature. Access to the assets can also be conceived in various ways, from the simple possession of a material object to the knowledge that people will help your community if so needed. Therefore social relations, the probability and the possibility of using an asset, are also meaningful components of analysis.

What factors influence a community's choice between paradigms A or B as a response to a disaster event? In responding to this question, the factors to be considered are: the level of organization (low, medium, high) existing prior to the disaster; how long this level has been in place; and the level of participation—broad and participatory organization (for example, people have participated in the design of an emergency response model and have active roles to play) versus a higher organized participation that relies solely on outside resources.

With the study's conceptual framework, two types of communities were identified as subjects for field research. The first, Type "A" communities, were those that focused their recovery on returning social, physical and economic systems to a pre-disaster level – we called this process "seeking normalcy." Many communities tend to return to normal following major disasters without considering options for improved hazard mitigation or finding opportunities presented by the disaster to meet other community development objectives. The second community, Type "B," attempted to use the disaster to transform its internal structure or relations with outside agencies and organizations to accomplish some type of physical, economic or social betterment. While there is an element of conscious improvement in every disaster-affected community, we hold that the Type B communities develop a strategic view of recovery operations, using the external assistance to accomplish goals beyond simply rebuilding.

1.2 Study Design

The methods used in this study include: (a) comparative analysis, (b) historical/political analysis, (c) informant interviews, and (d) field surveys. The cases presented in Table 1.2 form the basis of the comparative analysis. The cases chosen include rural and urban settings, and a range of disaster events (earthquakes, floods, mudslides, hurricanes). A profile of each community is provided that includes location, demographics, and relations with state and non-governmental organizations (domestic and international). All communities chosen were, and remain, working class or poor, with low income levels being more or less a constant. The community sample was chosen by the field research coordinator for each country in consultation with the Principal Investigator. The research team jointly developed the field study instrument.

TABLE 1.2 COMMUNITY SAMPLE

<i>Country</i>	<i>Urban</i>	<i>Rural</i>	<i>Community Name</i>
Mexico	X		Colonia Guerro
		X	Francisco I. Madero
		X	Colonia Morelos
		X	La Junta de Arroyo Zarco
El Salvador	X		José Cecilio del Valle
		X	San Carlos Lempa
	X		María Ostuma
Honduras		X	Colonia Lempira
		X	Cuaca
		X	Armenia
	X		La Joya
		X	Isletas Central
	X		Colonia Nueva Esperanza
Nicaragua	X		Tipitapa
	X		Ocotal

In our initial hypothesis, a community's choice of paradigm A or B, required us to assess how a community valued and utilized the variables listed in the Table 1.3. The choice of 'B' leads to improved levels of well being, greater use of prevention measures and contributes to transformative conditions within the community. The choice of 'A' leads to material needs replacement and a return to pre-existing societal relations. Each of these variables was to be measured, in part, through the field survey and the analysis of community efforts in field interviews and observations. The analytical model assumed that a low score on the vulnerability variable and high scores on the other variables would result in more transformative locally-based actions.

TABLE 1.3 ASSESSMENT FACTORS

Variable	Low Score	Medium Score	High Score
Level of Vulnerability			
Level of Community Based Participation - internal			
Level of Cooperation - external			
Access to Outside Resources- "Claims on Others"			
Level of Organization			

To gather information and score the assessment factors a field survey instrument was administered in each community. A discussion of the instrument is found in the Survey Summary Section. Field interviews with three different groups were conducted (community residents, local leaders and external assistance organizations); see Table 1.4 below.

TABLE 1.4 FIELD SURVEY BY COUNTRY

Country	External Organizations	Local Leaders	Local Residents
Honduras	19	30	35
Nicaragua	6	20	21
Mexico	11	18	16
El Salvador	10	15	15
Total by Group	46	83	82
Sample Total	211		

1.3 Findings

What have we learned? The classification of all study communities is set down in Table 1.5. We find, however, that there is a continuum of improvement and advances and occasionally a community regresses to prior conditions or struggles to simply maintain itself. In Honduras, Cuaca, a community in the municipality of Tocoa, strives to be a type 'B' but still struggles to gain resources, and thus is really a B- community. In Mexico, Colonia Morelos in the state of Puebla has not recovered to normalcy and due to its condition can be classified as a type A- or less community. The continuum finding reveals that sustaining disaster recovery improvements be they physical, economic, social or political is complex and non-linear. Communities can make progress in some ways, at the same time and regressing in other ways. Colonia Guerrero in Mexico City did well in recovering from an earthquake, but poorly over time as it could not sustain the loss of community leaders who left for work elsewhere. This was exacerbated by the lack of a long-term presence of outside support to help it through difficult periods.

TABLE 1.5 STUDY SAMPLE CHARACTERISTICS

<i>Country</i>	<i>Urban</i>	<i>Rural</i>	<i>Community Name</i>	<i>Paradigm Type*</i>
Mexico	X		Colonia Guererro	B-
		X	Francisco I. Madero	A
		X	Colonia Morelos	A-
		X	La Junta de Arroyo Zarco	A-
El Salvador	X		José Cecilio del Valle	B
		X	San Carlos Lempa	B
	X		Maria Ostuma	A
Honduras		X	Colonia Lempira	A
		X	Cuaca	B-
	X		Armenia	A
	X		La Joya	A
		X	Isletas Central	A
	X		Nueva Esperanza	B-
Nicaragua	X		Tipitapa	A
	X		Ocotal	B

* *Key: A=return to normalcy, A- =struggling to attain normalcy, B=transformative, B- =toward transformative*

Structural factors

Community disaster recovery does not occur in a vacuum, but always in a political context. From the case studies, it is clear that centralized systems (Mexico) exhibit different behavior than decentralized or less centralized systems (Central America in general). In all of the Central America countries there has been a continuous, though uneven, movement to bring communities into the disaster prevention and recovery process. This effort has resulted in advances in vulnerability reduction. The present

approach being taken in Nicaragua does build in disaster preparation and training at a community level. This does empower people with personal knowledge of how to address a disaster. These efforts lower vulnerability for poor communities by providing them a role in personal and collective actions to lower risk.

This ranges from significant changes in the national legislation in Nicaragua to revamping of Honduras's emergency preparedness program into a national agency that municipalizes emergency services. In the past decade El Salvador has begun to link emergency response to prevention and disaster mitigation. The national environmental law approved in 1998 calls for the state to draw up a national plan for prevention and environmental contingencies. El Salvador has been forging a three-part partnership between the local community, national government agencies and the municipal government level. For this to be an integrated effort, there still needs to be a role for social organizations and international cooperation agencies. Integration in El Salvador means a sharing of decisions with the communities. This can only occur if the assistance agencies see the community as a partner, not as an aid recipient, and the assistance sector listens and responds to the felt needs of the local community people.

In Mexico, the emergency recovery and disaster reconstruction effort is centralized, relying on national level agencies that provide resources to state counterparts and then distribute this down to the local level. Overall this provides a larger base of resources to draw upon. It also requires there be very good vertical integration of communications and delivery of services from the center to the periphery (from the top, down). In the Mexico case studies this system has had problems in providing local communities with what they need over the short and the long run. It is a politically based, rather than a service based system. Mexico's disaster response and recovery system has not seen, or used, disaster events as opportunities for transformation. Providing resources that create long-term betterment solutions are not integral to the present recovery effort.

Another difference between the Mexican and Central American experiences is that of international cooperation and the role of non-governmental organizations (NGOs). In Central America, international cooperation and aid is the norm during recovery. This is not true in Mexico, where only in the Mexico City case was international aid used, and for a short period of time. In Central America international aid is a major factor in the reconstruction process. This is certainly true in Honduras, where the central government provides few resources for housing reconstruction. The field survey indicated that in all Central American countries external cooperation has played an essential role in the emergency and reconstruction process.

Timing of Recovery

The concept of access is part of this study's overall framework. Access is the ability to utilize an asset (physical, legal, organizational or behavioral) in a timely manner. Being able to get use of what you need is important in bringing about a lower level of vulnerability. Based on the most recent disaster experience, the community leaders surveyed were asked to report when various types of assistance (emergency, rehabilitation, reconstruction and development) were received. Sixty-nine percent of the

respondents reported that emergency assistance was received within one week of the disaster. In terms of rehabilitation of the communities, fifty-five percent reported that this began one week to 2 months following the disaster. Reconstruction assistance was reported by 58 percent of respondents to have begun from two months to one year after the disaster, while 18 percent reported that this began after one year. Development was ranked as either not occurring at all (27 percent) or beginning more than one year following the disaster (45 percent). Large time lags impede progress for poor communities because they must survive before they improve their lives. Time and vulnerability are linked components.

A series of survey questions were designed to illicit responses from the different players in the disaster recovery process and to determine at what phase these agents were involved. The types of intervening institutions have been identified as: local government, national government, non-governmental organizations (NGOs), churches, and universities. The phases of disaster recovery were divided into the following periods: emergency, rehabilitation, reconstruction, and development. The question results are shown in Table 1.6.

TABLE 1.6 ORGANIZATIONAL AND INSTITUTIONAL INVOLVEMENT

	Emergency		Rehabilitation		Reconstruction		Development	
	%Yes	%No	%Yes	%No	%Yes	%No	%Yes	%No
National Government	43	57	37	63	37	63	22	78
Local Government	68	32	49	51	50	50	42	58
International NGO's	67	31	40	60	51	49	40	60
National NGO's	61	39	42	58	39	61	32	68
Churches	67	33	35	65	54	46	23	77
Universities	29	71	17	83	10	90	11	89

As demonstrated by the responses of community leaders in Table 1.6, during the emergency and rehabilitation phase local government, and national and international NGOs played the strongest role. Over time, local government and international assistance continues to be the most important forms of support, though the majority of responses show that little development is actually taking place. Churches play an important role in emergency response as well as during the reconstruction phase. National government is ranked very low during all phases, with the highest degree of involvement occurring immediately following the disaster. The role of universities is limited, with their presence noted primarily during the emergency phase.

Regional influence

In building an understanding of the status, conditions, and recovery strategies of the different communities we have come to appreciate how communities themselves require regional resources to overcome the challenges of a disaster and to pursue more

sustainable development strategies. Communities are impacted by what is happening at a larger spatial level. This limits the extent of local self-determination. For example, in Colonia Morelos, in the state of Puebla, Mexico, the community could not improve an altered river flood plain by itself. This was the task of a central government agency whose charge it is to take a regional view on river routing even at the expense of depriving local farmers of their productive croplands.

In Honduras, regional damages to Standard Fruit Company's banana plantations following 1998 Hurricane Mitch impacted the structure of local *patronatos* (municipally recognized community councils) in communities such as Isletas Central where unemployment forced many leaders to take jobs outside the area. In San Carlos Lempa, in El Salvador's Bajo Lempa region, the complex watershed management issues require an approach that balances nature with community needs (locationally and in social and economic development terms). We now realize that certain aspects of community transformation are limited by where they are located (spatial influences and constraints) and how the actors who provide the physical, economic and social capital linkages to other places (cities, transport nodes, educational facilities) impact the community potential.

In the present study we find that it is difficult, even for those communities that exhibit transformative practices, to maintain progress (at any level: household, community, etc.) over time. Due to its well-organized and active pre-earthquake community residents association, Colonial Guerrero in Mexico City was very successful in limiting death and injury from the 1985 earthquake. Over time however, economic conditions changed. Leaders left the community and new social problems such as youth gangs and displacement of residents due to increased land values eroded the community's solidarity. Colonial Guerrero's transformative strengths are now being challenged by a deterioration of family structure and loss of leaders to participate in collective efforts.

Another example is the community of José Cecilio del Valle in San Salvador, El Salvador. This irregular settlement (occupation of non-titled land) exhibits many transformative characteristics in terms of youth brigades for new construction, introduction of hazard mitigation drainage works and strong ties with international NGOs. The community, however, is now threatened by a proposed 'belt-highway' around the city that will impact its northern edge, change the drainage patterns and thus increase the community's level of vulnerability. This threat is external and regional in scope and intent. Thus far, the needs of José Cecilio del Valle have not been built into the highway location calculus. One of the findings that applies to at least 90 percent of the communities is that their level of poverty establishes a basic vulnerability that makes sustainable recovery a real challenge.

Survey Summary

The Field Survey

Introduction

The three groups provide information on common themes: disaster preparedness, stages of disaster recovery, and community involvement. There are community members, community leaders, and lastly, external agents. Community members are local residents living in the study areas. Community leaders are people holding a local post of authority, either elected or appointed (in the government or a social organization). “External agents” is a phrase used for all NGOs or assistance agencies operating in the community at the time of the survey.

This primary field data was collected in each country through a field survey, administered in Spanish. Initial questions for the survey were developed during a project conference in June 2001, refined and pretested in July. Field administration occurred between August-October 2001. An English translation of the interview schedule is provided as Report Attachment A. A total of 211 surveys were administered in Mexico, El Salvador, Honduras and Nicaragua. Eighty-three leaders, 82 community residents and 46 external agents were interviewed in 14 different communities. The distribution by country is shown in Table 1.7. This section reports responses to a group of selected questions. Summary tables of the survey data by county are found in Report Attachment B.

TABLE 1.7 FIELD SURVEY’S BY COUNTRY

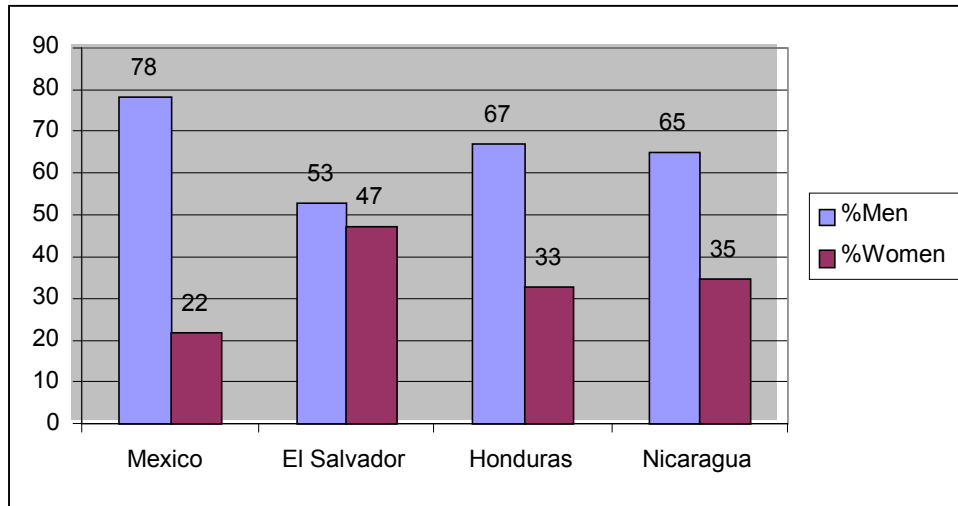
Country	External Organizations	Local Leaders	Local Residents	Number of Communities
Honduras	19	30	35	6
Nicaragua	6	20	21	2
El Salvador	10	15	15	3
Mexico	11	18	16	3
Totals	46	83	82	14

Community Leaders

Who are they demographically? Sixty-six percent of the leaders interviewed (n=55) were men, while 34 percent (28) were women. Table 1.8 shows the percentage of men and women interviewed in each country studied.

Age: In terms of age differentiation, 48 percent of those leaders interviewed were between the ages of 30-45; 42 percent were older than 45 years of age; and 10 percent were below the age of 30. The younger leaders interviewed all were from Central America.

TABLE 1.8 PERCENTAGES OF MALE VS. FEMALE LEADERS

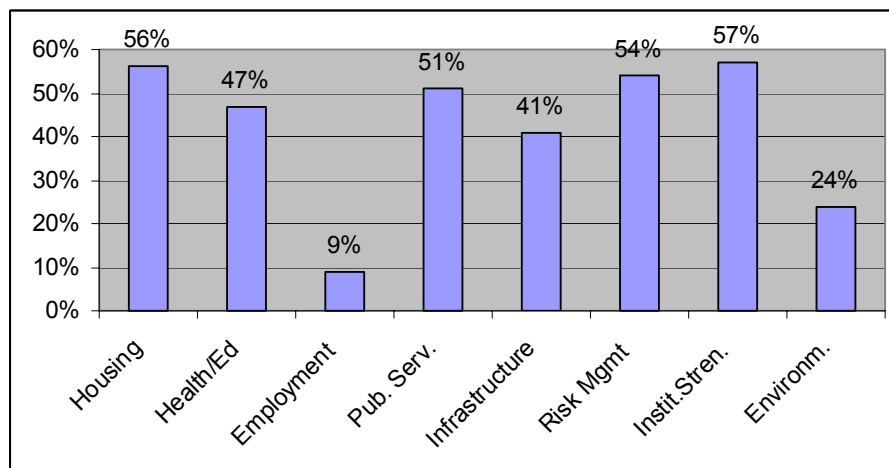


It is important to note that although male leaders clearly outnumber the women, the representation of women is significant in these communities and demonstrates their emergence in leadership roles. Due to traditional cultural practices, women’s roles were generally more prominent in urban areas than in rural areas.

The Nicaraguan respondents reported very high one-week emergency response rates (81 percent), with Mexico lagging behind (56 percent). Rehabilitation rates vary widely. Within two months, however, all countries reported to having received some assistance. Reconstruction, however, takes more time. The Central America leaders report that most assistance comes within two to 12 months. Yet, nearly 20 percent of the Nicaragua, Honduras and Mexico respondents report that reconstruction efforts took more than a year to begin, and in some cases, never began. Development is an area where a community makes advances and where economic and productive transformation activities begin. The leaders surveyed paint a mixed portrait. The highest rates of development activity, when it occurs, takes place at least a year after the disaster. In Mexico, 82 percent report no development activity at all occurring, regardless of the time period. This contrasts with the Nicaragua and Honduras, where development activities mostly occur after one year. El Salvador reports that most of such activity starts within two to 12 months after a disaster. Development, however, is a broad term, and disaster survivors may perceive ‘development’ relative to pre-disaster expectations and standards of living.

Leaders were asked to identify the level or degree to which community demands have been met in eight different sectors: housing, health and education, employment, public services, infrastructure, community risk management, institutional strengthening, and environmental recovery (*Leader Survey Question L.9.1-9.8*). The respondents were asked to rank the level of coverage in each of these sectors as being low, medium or high. Table 1.9 shows the percentage of respondents was ranked coverage as medium-high in each of the categories or sectors. Institutional strengthening, housing, and risk management were ranked the highest, while employment and environmental recovery were perceived to be the sectors with the lowest level of coverage.

TABLE 1.9 COMMUNITY NEEDS WITH A MEDIUM- HIGH LEVEL OF COVERAGE



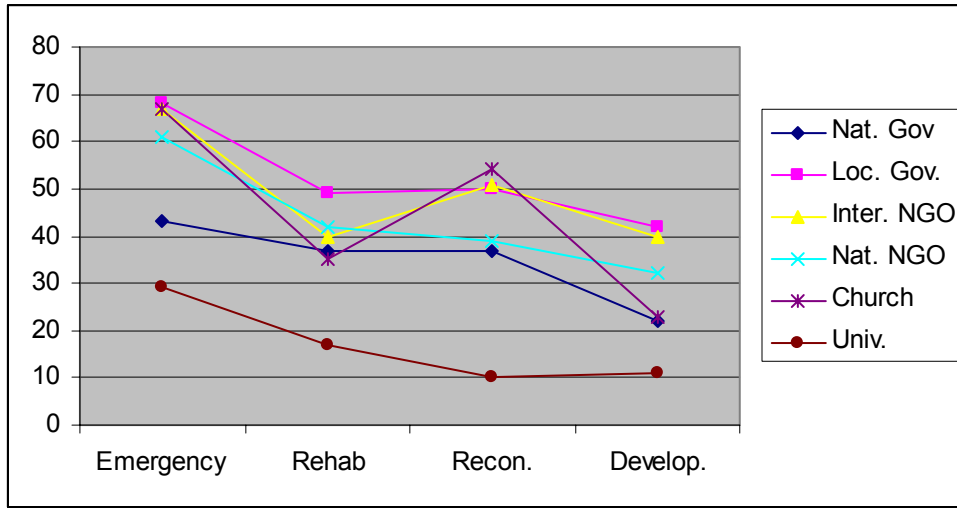
A series of survey questions were designed to identify the different institutional agents involved in the disaster recovery process and in what phase these agents were involved (*Leader Survey Questions L.13-17*). The types of intervening institutions have been identified as: local government, national government, NGOs, churches, and universities. As depicted in Table 1.10, the phases of disaster recovery were divided into the following periods: emergency, rehabilitation, reconstruction, and development.

TABLE 1.10 ORGANIZATIONAL AND INSTITUTIONAL INVOLVEMENT

	1. Emergency		2. Rehabilitation		3. Reconstruction		4. Development	
	%Yes	%No	%Yes	%No	%Yes	%No	%Yes	%No
National Government	43	57	37	63	37	63	22	78
Local Government	68	32	49	51	50	50	42	58
International NGO's	67	31	40	60	51	49	40	60
National NGO's	61	39	42	58	39	61	32	68
Churches	67	33	35	65	54	46	23	77
Universities	29	71	17	83	10	90	11	89

Over time, local communities are more on their own in the reconstruction and development processes. This is depicted in Fig. 1.1. This factor explains why local capacity building and local voice in decisions regarding disaster prevention and recovery are so highly valued.

FIGURE 1.1 INSTITUTIONAL INVOLVEMENT DURING RECOVERY STAGES



Support by External Agents: To gauge perception of community support and collaboration with outside assistance following the disaster, leaders were asked about the type of support offered to the local community by external agents (*Leader Survey Question L. 18.1-18.6*). The type of support was divided into 6 categories: land; goods (food, equipment); services (labor, technical support); funds; aptitude, ability and experience; and contacts (access to information). These assets reveal the communities' underlying ability to recover and transform their situation.

TABLE 1.11 COMMUNITY SUPPORT OFFERED BY TYPE OF ASSET

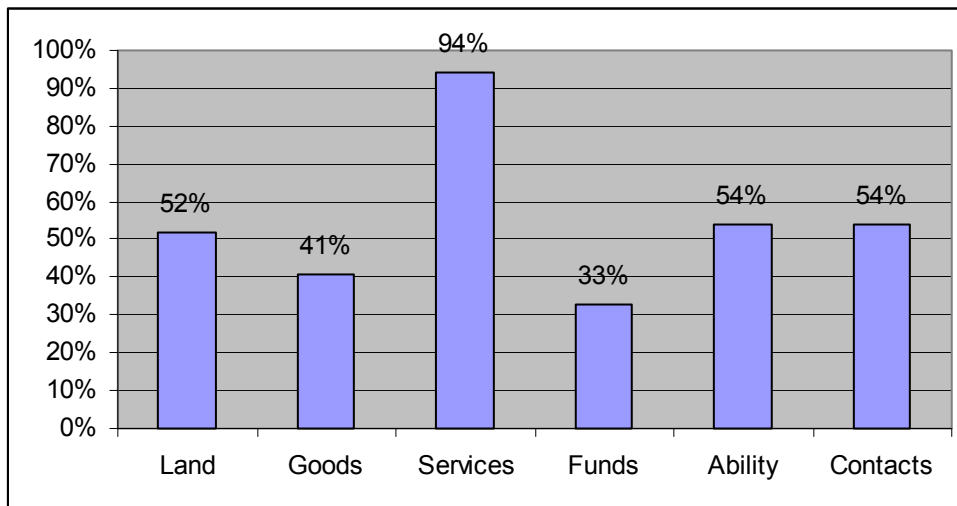


Table 1.11 shows that services, which consisted primarily of labor and technical advice, were the most important community contribution (94 percent) following the disaster. Roughly half of the respondents noted that the donation of land (52 percent), the

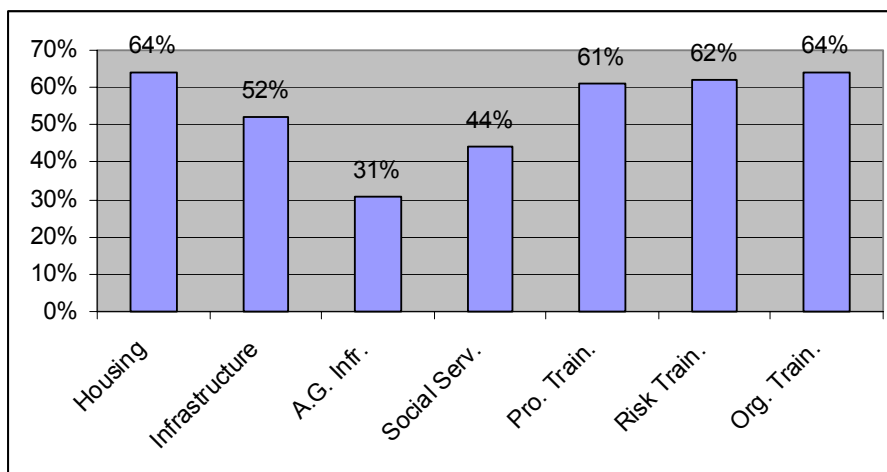
ability and aptitude of the population (54 percent), as well as contacts (54 percent), were an important contribution to their respective communities. Direct support through funds or grants were not provided widely, although a third of the Mexican and 40 percent of the Nicaraguan respondents did say such assistance was provided to them.

The leaders were asked to rank the levels of cooperation in terms of importance (*Survey Question L.22*). International cooperation was ranked the highest by 50 percent of the respondents followed by local (34 percent) and national (16 percent). Honduras (70 percent) and El Salvador (64.3 percent) placed the most importance on international cooperation, while Mexico gave it less importance, with only 11 percent first place responses.

External resources necessary to recover following a disaster were divided into three types: economic funds, training and organization, and materials and equipment (*Survey Question L.23*). Funding received the largest number of rank-one responses (43 percent), followed by training (38 percent) and materials (14 percent). Mexico’s and Nicaragua’s ranking were training, funds and materials. Honduras ranked funds before training, but only slightly. Only El Salvador has a high preference for funds before training.

To identify the perceived importance of community investments to rebuild following a disaster, the community leaders were asked to rank the various categories as either less important, important, or very important (*Survey Question L.27*). The investments were divided into seven categories: housing, infrastructure and public services, above-ground infrastructure, social services, productive training, risk-management training, and community organizational training. Most leaders interviewed considered housing and the three different types of training to be the most important investments their community can make to rebuild after a disaster. See Table 1.12. This is an asset-based question. The great importance placed on training categories reflects the desire for social capital formation and the strengthening of local ability to address disaster reconstruction. Local self-sufficiency is highly valued.

TABLE 1.12 RANKING THE IMPORTANT COMMUNITY INVESTMENTS

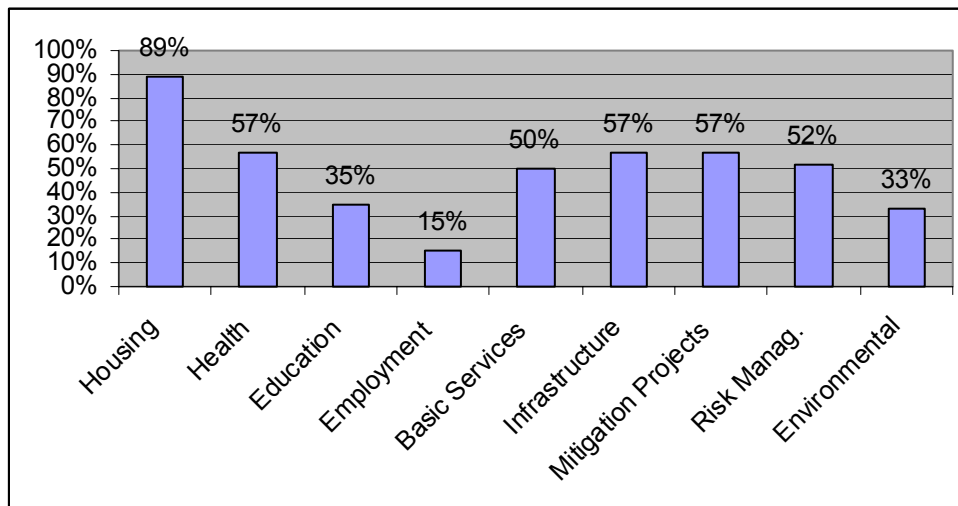


External Agents

The survey’s intent was to measure not only the perceptions of the community members themselves, but also those outside organizations that often play a major role in disaster recovery and reconstruction efforts. In the four countries, a total of 46 “External Agents” were interviewed. These individuals are either staff in national or international NGOs or national social organizations. In terms of gender 65 percent of outside agents interviewed were men, while the remaining 35 were women. In terms of age, 64 percent very between 30-44 years of age, and 18 percent less than 30 years old. The external agent provides some form of assistance to the community related to its mission. The responses do carry a bias that either reflects their organization mission or personal perspective.

The external agents were asked which types of assistance have most benefited the local community (*Survey Question E.1*). The categories of assistance were divided into the following: housing, health, education, employment, public services, vital infrastructure, community risk management, and environmental recovery. These responses mirror those of Leader Survey Question 27.

TABLE 1.13 EXTERNAL AGENT PERCEPTION OF RECEIVED BENEFIT ASSISTANCE



As is shown in Table 1.13, housing is the leading category considered by a large number of the external agents as having a significant benefit to the community. This high response carried through for all countries. Health investments ranked high in all countries except Nicaragua. The lowest number of the total respondents ranked employment, environmental recovery and education as having significant benefit. Honduras has the highest response rate for health services as a major benefit. Employment received the lowest benefit scores. The lack of emphasis on employment may be linked with the lags in development activities reported by community leaders. That is, development tasks take more time to implement and are not included in short-term efforts. Environmental

recovery has been virtually non-existent according to 100 percent of respondents in both Mexico and Nicaragua.

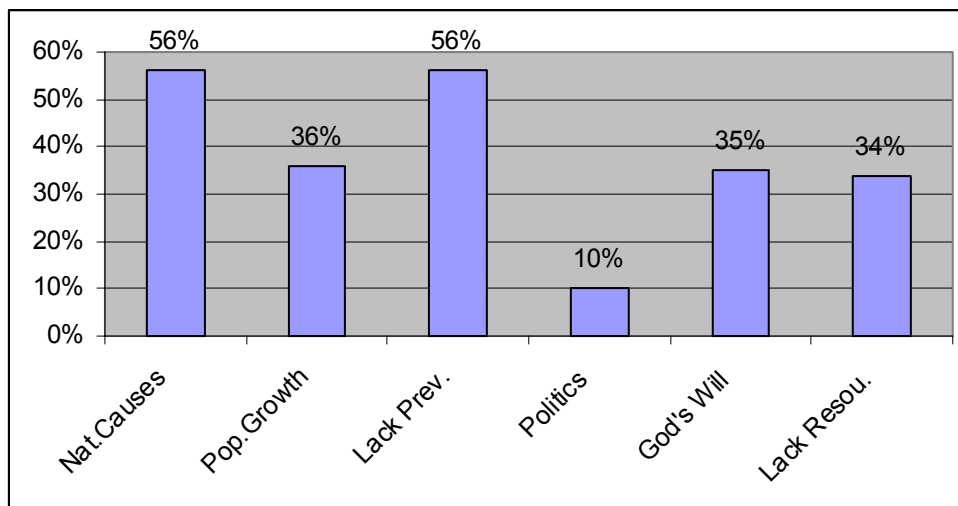
Honduras had the highest number of responses for both environmental recovery and community risk management. This can be explained by the risk management training that has been an important part of the community recovery process in the Aguan Valley where most of the case studies are located. Honduran responses were also much higher (84 percent) than the other countries in the categories of basic services and health. For infrastructure, Honduras (74 percent) and Nicaragua (67 percent) had the highest number of responses.

Community Members

The Community Members survey instrument was designed to measure the perception of risk and disaster recovery from the perspective of average citizens within the affected communities. Although community leaders and external agents may be more involved in the recovery process and are more aware of the type of assistance offered, it is the community members themselves that must ultimately be responsible for working toward a sustainable future in collaboration with these agents.

A total of 82 community members were interviewed in the 14 communities. Demographically, over 60 percent of those respondents were women. This is not surprising. In communities where men work in the fields, women are more likely to be at home and in the local community. In terms of age, 37 percent of those interviewed were less than 30 years old and 38 percent were between 30 and 45 years of age. Community members were asked to identify the three primary causes responsible for the disaster (*Community Survey Question P. 1*) These included: inevitable natural causes, disorderly population growth, lack of prevention programs, politics and corruption, “God’s will” or destiny, and lack of resources on the part of the local authority. Their responses are shown in Table 1.14.

TABLE 1.14 COMMUNITY PERSPECTIVES ON DISASTER CAUSES

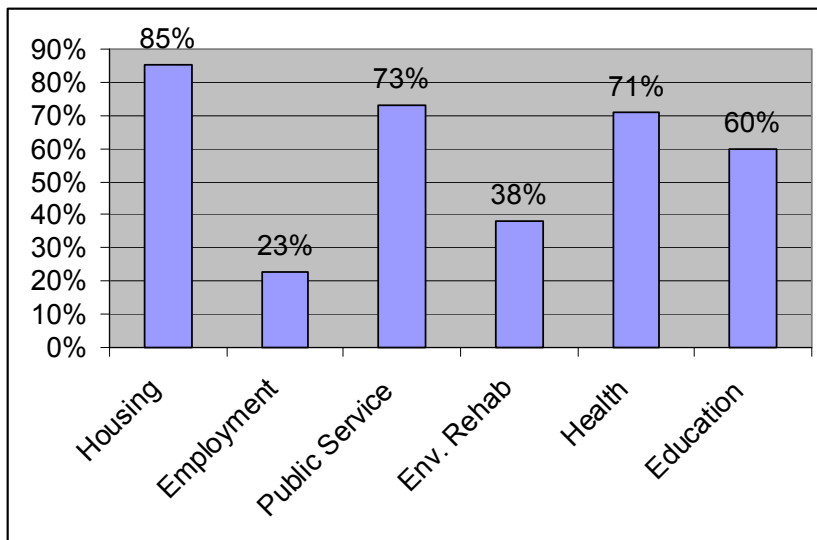


Inevitable natural causes and the lack of prevention programs were considered by the majority of respondents to be responsible for the disaster in their communities. The population growth responses reflect an acknowledgement that there are too many people living close to precarious areas. Central American response on disorderly growth as an issue exceeded that of Mexico five to one.

Persistence of risk: Half of those surveyed considered the level of risk in their communities as remaining high following the disaster, while 20 percent reported low risk (*Community Survey Question P. 3*). The Central America countries felt a much greater level of high community risk than did the Mexican respondents (82 percent vs. 17 percent).

Community members were asked to identify the type of projects that have been carried out following the disaster (*Survey Questions P. 5-6*). Their percentage responses are shown in Table 1.15. Not surprisingly, housing projects are the most common type of assistance offered following a disaster. Public services and health are also mentioned by a large number of respondents. The employment sector resulted in the lowest number of responses.

TABLE 1.15 REHABILITATION PROJECTS IDENTIFIED BY COMMUNITY MEMBERS



Fifty-eight percent considered that the risk for loss of human life has been reduced since the disaster. Eighty-two percent considered the risk to natural resources to be either the same (37 percent) or less (45 percent). Sixty-one percent found that the risk to housing has been reduced. Most respondents feel that the risk to material goods is the same or less (28 percent and 52 percent respectively). The risk to means-of-production is not clearly agreed upon by respondents: 27 percent said more at risk, 23 percent the same, and 43 percent less at risk. The means of production was ranked by the highest number of respondents as being more at risk than any of the other categories. This employment variable tracks well with the field analysis of the research teams where the

loss of work heightens vulnerability. This is clearly reported in the cases of Mexico (rural), Honduras (rural) and Nicaragua (urban).

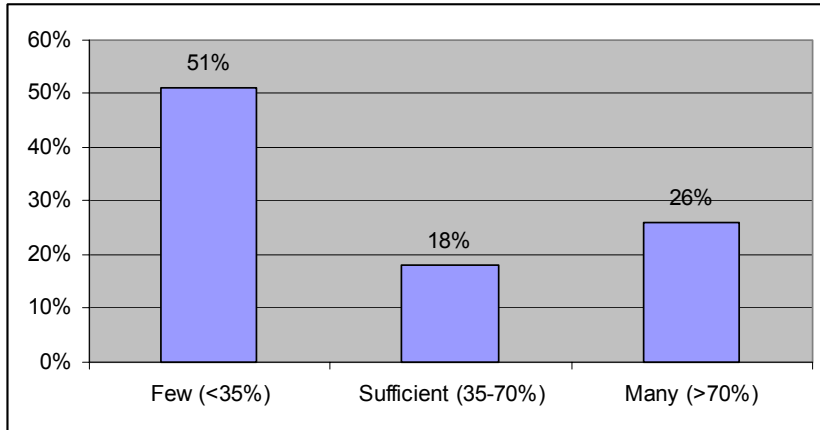
Ninety-four percent of those respondents whose communities have received assistance in the form of housing projects consider the risk of losing housing to be lowered as a result. Interestingly, 77 percent of those whose communities have received health programs still feel that they are at a high level of risk to human life. Only 57 percent of respondents from communities with environmental rehabilitation projects feel that the risk to environmental resources has been reduced. This is a low indicator for environmental sustainability. No respondent in the Mexico survey said there had been any environmental rehabilitation projects in his or her community.

A level of risk (more, less, equal now) question was included to gauge reconstruction attitudes for human life, housing, buildings, means of production and natural resources. In Mexico the risk to loss of human life was equally divided between more, less and equal. This contrasts with Central America where risk of loss of human life is seen as much less than prior to the most recent disaster. Much of this can be attributed to a more active role taken by local people to take steps of protection at the community level to mitigate future impacts. In terms of loss of production and subsistence, nearly 30 percent of the sample felt that the risk was greater now (29 percent greater, 25 percent equal to before and 46 percent less than before). Nearly half of the Central America sample said risk was less than before.

A series of survey questions were designed to measure the level and type of participation on the part of the different gender groups, as well as the involvement of young people in post-disaster community recovery and prevention programs (*Survey Questions P.9-19*). These are social capital questions and reflect the extent of this type of asset. Seventy-five percent of respondents noted that they have seen differences in the manner in which women are participating in the community since the disaster. Central America respondents said there were changes in women's participation, whereas only one-third of the Mexico sample noted changes in women's roles. Of those who have noted the changes, 78 percent consider the power of women in the community to be moderate (33 percent) to high (45 percent). Sixty-eight percent of respondents noted that there have been changes in the manner in which men participate in the community, and 60 percent have noticed changes in participation of young people. Here again, Central America responses are two to one in noting changes in youth participation, whereas only one-third of the Mexico samples noted such changes. In Central America nearly two-thirds thought there had been changes in young peoples participation, while only one-third of the Mexican sample thought this was the case.

When asked what percentage of the population participates in disaster prevention activities, the majority of respondents (54 percent) thought that fewer than 30 percent of the people were involved (*Survey Question P. 21*), and 26 percent thought that many people were getting involved. See Table 1.16.

TABLE 1.16 LEVEL OF PARTICIPATION



1.4 Cases and Countries

This section provides a profile of the four countries, each having a long history of addressing wide ranging disasters (including civil wars).

Honduras

Honduras was devastated by Hurricane Mitch. The extent of the damage can be gauged by the fact that all of the country's bridges were damaged and for three days the national government could not provide any support to municipalities. The Honduran cases focus mainly on in the Aguan River Valley near the northern coast. The valley includes portions of the departments (states) of Colón, Olancho and Yoro. Hurricane Mitch caused widespread riverine, alluvial and urban flood damage. Two urban communities, one within and one on the outer-edge of Tegucigalpa, the capital city, were also surveyed.

The communities reflect the general progress of post-Hurricane Mitch recovery mainly in the Aguan Valley. Each had (and has) major long-term recovery and risk reduction needs which were not fully met in the first three years following Mitch. There was unanimous concern about shortfalls in flood protection furnished by government reconstruction programs, especially the levees built adjacent to each community following the disaster. While internal leadership in disaster preparedness was reported to be considerably stronger than before 1998, physical assets such as food and equipment inventories had not significantly increased and there were few new permanent claims on sources of outside assistance. Yet residents felt their community was now better prepared to cope with disasters and that they, as citizens, were much more inclined than before Hurricane Mitch to participate in mitigation activities. The communities demonstrated definite improvement in hazard reduction activities.

Due to tradition, development history, and general attitudes about disasters following Hurricane Mitch, these communities have undergone a subtle transformation based on *existing internal* rather than *new external* linkages. Conservative by nature, and with a tendency to view outside linkages as transient, each of the communities accepted, utilized and then separated itself from major external cooperation (national and international), preferring local to regional or national relationships in the long term. Rather than falling into the Type A (returning to normalcy) or Type B (transformative) paradigm, the Aguan Valley communities struck a middle ground in their recovery, accepting beneficial changes in internal structure, while pressing for full recovery of lost services and facilities. The Tegucigalpa suburban community of La Joya remains dependent upon external cooperation (assistance) as it has not established strong enough internal structures (residents organizations, elected representatives, etc.) to be self-managing or self directed. Outside linkages were valued to the extent they could produce tangible results and be of direct benefit to the community in preparing for future disasters. The communities are now in a better position to accept and utilize outside assistance and have new leadership capable of setting emergency response priorities.

Two sets of skills were articulated in the survey as being most important for coping with loss and change following Hurricane Mitch. Skills in self-diagnosis, including hazards vulnerability analysis, knowledge of types of flooding, and awareness of existing community resources and how they can be applied in disasters, were very important for developing a recovery organization in each community. Second, skills in external collaboration reflect an acquired ability following disasters to understand, receive and support the assistance being offered, and to link the aid to specific development objectives. Opportunities unseen prior to the disaster can be effectively managed when they surface if both of these skill sets—self-diagnosis and collaboration—are developed.

In Colonia Lempira, self-diagnosis was based on the early question as to whether to relocate away from the Tocoa River. Declining the relocation offer from the central government, the community then engaged in intensive self-evaluation and weighed its flood control options in ways it had not considered before. This self-help approach to flood hazard mitigation consisting of simple retention walls built in front of homes expresses well the community's self-image as flood-prone, but immovable. Collaborative skills were less developed in Col. Lempira than in other communities studied, due to its more limited pool of leadership. In Cuaca, self-diagnostic skills were well developed in the relationship that formed between the *CODEL* (the local emergency committee and *PROMSAT* (the municipal early alert warning system) staff for installation of the local alert and evacuation system. The Cuaca leadership strongly emphasized organizational development for evacuation and rescue operations. This self-awareness as a poor, but potentially safer community also enhanced its collaborative outreach and helped develop a stronger relationship with the Municipality of Tocoa than existed before the disaster. Cuaca's reputation is such that it is designated in the emergency plans of several adjacent communities as serving as their disaster evacuation center.

In Armenia, the self-diagnosis associated with flood hazard evaluation involved almost all of the community, and especially members of the *patronato* (local community council) and the *CODEL*, in examining response and recovery resources to support the logistics of evacuation. The planning process associated with developing the community risk map prompted intensive involvement of virtually all social sectors and community groups and elevated the *CODEL* to a special status. Armenia's collaborative skill development included improved long term relations with the Municipality of Olanchito and unique work in the upper watershed of the river. Strong horizontal integration is now a benchmark of this community.

In Isletas Central, the self-diagnosis included both hazards analysis and ongoing consideration of employment alternatives in light of Standard Fruit Company's permanent layoff of 60 percent of its workforce. Many families sent a member out of the area to work. Outmigration disrupts the social balance of the community as a whole and creates an unusual matriarchal decision-making structure in the *patronato*. Collaborative skills developed as a result of Hurricane Mitch included improved relations with the Municipality of Sonaguera for disaster planning and some additional networking with the *FHIS* (national trust for social investment) for additions to the school.

In summary, a disaster recovery paradigm that characterizes the Aguan Valley experience includes the following important elements:

1. Acquisition of community disaster planning skills.
2. Understanding the priorities for new investment, where claims on others can be most usefully applied.
3. Making the most of chronically limited supplies-at-hand.

Sustaining a flexible internal organization which can access outside resources in times of disaster requires leadership and insight for which training, education and, above all, establishment of priorities “between disasters” will spell the difference between progress and merely returning to pre-disaster conditions. Using the assessment factor variables list, the Honduras general case can be ranked as shown in Table 1.17. Overall, Honduras reports a positive post-disaster experience.

TABLE 1.17 ASSESSMENT FACTORS

Variable	Low	Medium	High
Level of Vulnerability		X	
Level of Community Based Participation - internal			X
Level of Cooperation -external		X	
Access to Outside Resources- "Claims on Others"	X		
Level of Organization			X

Mexico

Mexico is the largest country (in area and population) in the study. It also has the greatest vulnerability to natural disasters, and is one of the most disaster-prone countries in the region (e.g. earthquakes, floods, mudslides, deforestation, hurricanes). All the cases included in the study are from Central Mexico; thus some caution needs to be taken in making countrywide generalizations from the data collected. The fact, however, that Mexico does have a centralized disaster response system with controls at the national level allows us to view the case experience presented as more typical than atypical.

Mexico City experienced its worst disaster with the earthquake in 1985, principally in the central area of the Federal District (DF). The central city neighborhood of Colonia Guerrero is the urban case; all others are rural. In the northeast corner of the state of Puebla, the communities of Colonia Morelos and La Junta de Arroyo Zarco, located inside the town of Tenempulco, experienced severe damage to local agricultural production and loss of life from the 1999 landslides and floods. These were the most severe mudslides in recent times. The community of Francisco I. Madero is located in the

town of Papantla in the state of Veracruz. This mountainous region, populated in great part by indigenous people, was devastated by landslides and floods in 1999 and the community was isolated from aid for many days.

In these communities the level of vulnerability differs in various ways. Colonia Guerrero's vulnerability decreased with reconstruction; however, its basic civil participation level declined over time, thus reversing earlier gains. Francisco I. Madero's vulnerability remained the same. Colonia Morelos and La Junta's vulnerability increased as well (although its population relocated from the flood zone). In Francisco I. Madero, the overall community participation remained the same, although women's participation increased. In Colonia Morelos the poor ability to meet community needs resulted in a decrease in peoples' participation. La Junta's condition is uncertain. While it did obtain new housing, its productive activities have been halted.

Colonia Guerrero's status as an urban community has been a defining factor in its recovery, as urban settlements in Mexico are much different than those in Central America. It received the highest level of external cooperation during its recovery stage including national and international resources. Its access to external resources was greater due to a widespread social mobilization that occurred in Mexico City. The community organizational structure includes high participation level of women, and is greater than that seen in the three rural communities. This is due, in part, to the social support structure established in Mexico City and experiences of citizen grass-roots organizing to improve conditions in the rental buildings most residents occupy.

In the Francisco I. Madero, national assistance was present during the early emergency stage, particularly with federal and state government resources. The Colonia Morelos' (Puebla state) case was identical to that of Madero's and in La Junta, with government reconstruction assistance limited to the providing access to new homes in resettlement areas. Madero's community demand for assistance is weaker as a result of the isolation they underwent for several days during and after the rains and floods. The assistance petitions of Colonia Morelos' residents have not been answered, and La Junta presently does not have the capability to create a solution to its economic problems. In La Junta, resources and homes were lost. Residents now live a 3 hour-walk away from jobs and services (most people do not have cars).

The internal community organization in each one of the communities is less than efficient in terms of integrating improvements at the group or community levels. This is a consequence of the economic crisis and the difficult task of improving their living conditions. It is difficult to sustain collective efforts over time, due to weak employment bases and the struggle to regain use of productive local farmlands.

In general, reconstruction efforts and resources in Mexico were channeled to support physical recovery needs. Community requests for social, economic and productive assistance have not progressed favorably. This reflects, in part, a national policy directed more toward emergency response than to recovery and development. Rehabilitation efforts have more to do with housing elements than with the communities'

socio-economic improvement. Addressing the emergency and early recovery stages are the prime interest of government policy and funding. On rare occasions, the federal dominance requires international assistance, as was the case after the 1985 earthquake. In Mexico, the international cooperation (assistance) is present less often than in other Latin American countries. The Mexican government has greater economic, logistic and operative resources to respond to an emergency, and has established a national emergency fund to address disaster events. This cannot be said for state and municipal governments where prevention and emergency efforts are weak.

The *asset* and *access* framework is far more complex in Mexico's rural areas than in the cities. It appears, from these cases, that the civil protection policy provides less for the rural areas than for the urban areas. After a disaster, the agrarian sector faces more survival challenges because its productive activities (fields and grazing lands) are impacted. In the urban setting, the primary concern is usually housing. While immediate job disruption may occur, urban jobs are less impacted than are the field-based production resources.

Social management in Colonia Guerrero is oriented toward obtaining mortgage credits to solve housing problems. The community exhibits paradigm "B" characteristics. Community participation played a key role in reconstruction, along with the participation of other actors: foreign donors, NGOs, universities and the federal government. The residents' pre-earthquake organizing experience was decisive. They were already working to decrease vulnerability in the deteriorated apartment building through reinforcement of walls, floors and ceilings. However, other community development and risk mitigation projects have not been followed. This area is officially considered a high vulnerability zone, particularly during earthquakes, and residents affirm that an earthquake similar to that of 1985 would cause severe damage. Residents know that improved community organization could decrease its impact on homes, since no significant damage was done to local public buildings (schools and clinics) and public services. The decline in economic opportunities and the rise of youth gangs and drugs, coupled with leaders leaving the community, have turned the people from acting collectively to acting individually (focused inward).

Vulnerability is still present in Francisco I. Madero, and the community can be classified as paradigm type "A." Most of internal and external resources responded to the emergency without achieving full recuperation after the disaster. The community lacks the prevention and mitigation projects that involve production and environmental aspects. While the government's main concern was to address emergency needs, other aspects such as structural problems of territorial disorganization, poverty, and an unarticulated set of public policies related to disaster mitigation and recovery have not been addressed. An improvement in planning and reforestation aspects is not likely in the near future. Due to the difficult living conditions, the young men of the community are looking for better opportunities. They are migrating to other cities in Mexico and in some cases, to the United States.

The communities of Colonia Morelos and La Junta can be classified as a modified version of paradigm “A.” Colonia Morelos still suffers the aftermaths of the disaster. There are no long-term recovery projects that provide a solution to the main problem: lack of farming land. The changing course of a flooding river continues to threaten the community. These communities could be typed as paradigm “A-,” defined by the possibility of worsening the population’s situation. In October 2001, after the rains, the river had increased two meters since September. Community participation is necessary to overcome such a crisis. There is a “will” to move forward, but unfortunately the community lost most of its productive resources and its traditional settlement location. The social-cultural organization has been severely disrupted. In contrast to the 1992 gas line explosions in Guadalajara, people have not returned to their traditional locations (Aguirre, 1994). In these communities, we may observe that productive policies are not linked to a community and regional development strategy. There is no government-directed recovery strategy.

Mexico is a country affected by inequality, where politics to confront disaster do not meet the socioeconomic risk conditions. This is partially due to the generalized vision that natural phenomenon (defined as an active agent) is the only element responsible for disasters that doesn’t guarantee the population’s security. By omitting the study of territorial vulnerability, the creation and application of policies, and risk mitigation programs, the reduction of vulnerability is extremely difficult. If the citizens demonstrate an interest and organize to influence and participate in public matters, there is a possibility of long-term recovery. Such an approach would be based in preventive strategies and risk context adaptation, which must be the guideline for civil protection policy (Rodríguez, 1999).

El Salvador

While El Salvador is small in area, it has experienced a great number of disaster events in recent decades (hurricanes, earthquakes, floods and civil war). The three communities studied varied greatly in terms of their scale, geography and socio-economic context. San Carlos Lempa is located in the Bajo Lempa region, a coastal plain exposed to frequent flooding that was greatly affected by Hurricane Mitch. This zone was also highly affected by the armed conflicts of the 1980s and has been recently re-settled, beginning in 1992. Santa María Ostuma is a small city located in the central mountains of the country, in an area that has been dedicated to coffee growing for more than 100 years. The major portion of this community was destroyed as a result of the earthquakes of 2001. The community of José Cecilio del Valle arose as an illegal settlement in the western side of San Salvador. This community developed as a result of the 1965 earthquake and has been impacted by annual flooding and the recent earthquakes.

These three communities present differences in terms of threats, vulnerabilities, capacity, and their assets and access to resources. This study demonstrates that those communities that have the most access and assets have greater possibilities to direct reconstruction processes toward a paradigm of development. The communities of José Cecilio del Valle and San Carlos Lempa are considered paradigm “B” types, while Santa María Ostuma is a type A.

The results of this study reaffirm previous field and documentary work (Lungo 2001). The conclusions indicate the importance of social organization and internal capacity prior to the events. Also important are the roles played by the NGOs and international aid in the creation of assets and access; the importance of shared values; and the necessity for risk management to be developed at a small scale or micro-region to guarantee its sustainability. The internal organizational strengths of the community prior to a disaster provide the strongest indicator of post-disaster recovery.

In José Cecilio del Valle the organizational behavior stems from its origin as an illegal squatter settlement, situated on geologically unstable land. In San Carlos Lempa the existing organizational framework has arisen from a re-established population (a mix of war participants and previous farmers) who were displaced by the 1980's civil war. Extensive efforts at establishing working organizational agencies at the social and civil levels were in place prior to the disaster event. In contrast, Santa María Ostuma is a stable settlement that has existed for centuries, situated in a coffee-growing region that was not greatly affected by the military conflicts of the 1980s. These inhabitants lacked a strong organizational tradition prior to the earthquakes of 2001. This largely explains the different attitudes taken by the communities when confronting risk, which could not completely be captured by the survey instrument, but that do appear in as part of the historical variable in the universal matrix in section 1.5, page 54.

San Carlos Lempa, with a mostly rural population of approximately 25,000, is located in the municipality of Tecoluca, in the *department* (state) of San Vicente, in the zone of Bajo Lempa. The residents and their productive activities are exposed to a high degree of annual flooding. In comparison with other zones of Bajo Lempa, the families of San Carlos Lempa are less vulnerable, have a greater collective capacity to resistance, access to formal institutional mechanisms for immediate rehabilitation and permanent communication and do not remain isolated during a disaster. Nevertheless, the situation changed during Hurricane Mitch, and this area was completely affected and flooded to a level of three meters. This made it impossible for the community to take action to counteract the hurricane impact.

Since 1992, a number of distinct institutions have developed to assist the population in its relocation process, collaborating with goods and materials to construct houses. These organizations have consolidated and are pivotal to development in the entire region, concentrating their own consolidation in the success obtained in these areas. Such has been the case of CORDES, which created the Women's Association (ASMUR) and the Sistema Económico y Social (SES), among others.

The settlement of Santa María Ostuma is located in the department of La Paz in the central mountains of the country. Most of the residents are dedicated to the cultivation of basic grains, coffee and citrus. Generally, the economic condition of the population is precarious. Santa María Ostuma was one of the localities most affected by the January and February 2001 earthquakes, primarily in the urban center, where 90 percent of the homes were destroyed. Its location in a steep stream zone has intensified the risk of landslides, which occur frequently even during periods of drought. The practice of slash

and burn agriculture has eliminated much of the natural vegetation that serves to stabilize steep hillsides and increases landslide risk.

The residents who live in the municipal districts are settled in small *caserios* (clusters) made up of groups of houses. This type of settlement arose from the initiative of the landowners to assure a certain number of people to work the land as well as to serve as guardians for the property. These settlements are quite isolated and, in some cases, difficult to access. As a result of the earthquakes, social organizations (emergency committees) have formed, to direct disaster recovery and prevention efforts. The institutional presence of NGOs that support these committees was virtually non-existent before the earthquake. For a long time, other forms of traditional associations, primarily religious, have played a minor role. In the surveys, 20 percent of the population admitted to having excellent access to planning and organizational training to confront disasters. Access to environmental recovery or education was considered “moderate, although recognized as necessary to reduce risk.

The community of José Cecilio del Valle, first settled as the result of an earthquake in 1965, is located in the capital city of San Salvador. It is the one clearly urban case in El Salvador. As in many other Latin American cities, San Salvador has experienced large-scale population growth as a result of rural to urban migration as many people seek improved living conditions. Many of these residents have settled illegally along railroad tracks, riversides and creek beds. José Cecilio del Valle is one example of such settlement. Most of the inhabitants come from neighboring zones of the city. Many of these are former *colonos* of coffee plantations that were incorporated into the city over the years. Other family members arrived, appropriated land, and then built homes. For a number of years many community-focused institutions have been present. The community is organized in a *Junta Directiva* (directive council), which obtained its legal standing on April 5, 1991. The *Junta* has the support of committees including health, emergency, risk management, and youth ecology. The community has well-established horizontal integration between working groups and external cooperation (assistance). This provides support for disaster preparation training, which is provided down to the household level.

The levels of internal and external cooperation are among the paradigm assessment factors adopted for this study. The El Salvador cases strongly focus on the role of public institutions, NGOs, private institutions, and international cooperation. The intervention most important in moving the community toward a post-disaster Paradigm type B is the involvement of NGOs and international cooperation. Public institutions, including local governments, appear to be lacking and behind as part of the transformation process, while private institutions are absent in this effort. In all cases, in order for Paradigm B to be viable, it is necessary to work on a micro-regional scale. Limitations of the local-scale efforts impede the sustainability of transformation. This again may be due to the level of asset base in these communities. Their ability, however, to access and utilize external cooperation as an asset source is strong and provides an alternative path from working with the government.

This study also sought to explore the importance of shared values and aspirations within each community following a disaster (the level of organization assessment variable). The survey and field results affirm that the existence of shared values, a situation created historically, can compensate for the absence or weakness of formal government-sponsored organizational support and programs. This is an asset that should be taken into consideration, as it is part of the social capital (collective capacity for advancement and stabilization) stock.

Nicaragua

While Nicaragua has the lowest population density in Central America, nearly half of its population is exposed to some degree of risk. Since 1970, Nicaragua has experienced a series of disasters resulting in extreme loss of life and material goods; it is a country where 44 percent of the population subsist on less than one US dollar a day. The two types of urban areas are studied: one is located in a rural region and the other in a suburb of the Managua metropolitan area. The chosen municipalities are Tipitapa and Ocotal.

Since Hurricane Mitch, Nicaragua has passed new laws that have required a highly centralized civil defense ministry to implement an extensive decentralized process that includes disaster prevention actions. There is a national disaster center that links recovery effort resources to the municipalities through the mayors. The mayor's and city staff is then charged with organizing and working with community organizations and NGOs to enhance and implement disaster prevention efforts. These efforts, however, depend on a series of local political acts and inclusion of a wide range of diverse groups that hold varying perspectives on decision making and training. Here, the historical context of the civil war has operational meaning and consequences.

Tipitapa (population 109,000) is located in the Pacific region, in the *department* (state) of Managua. An urbanizing city (57 percent urban), it borders the western zone of Xolotlán Lake, whose natural drainage is the Tipitapa River that carries waters from north to south, depositing them in Lake Nicaragua. Its location near the Pacific coast places it in a highly active seismic zone. The municipality is a rapidly growing suburb (6 percent annual growth rate 1971-1995) of Managua, the capital city. Three settlements within Tipitapa form the basis the of this study: Juan Pablo II, Lomas de Esquipulas and San Francisco de Tipitapa.

Ocotal (population 31,000) is located in the north-central region, and was affected by Hurricane Mitch as well. Ocotal, capital of the State of Nueva Segovia, is located 24 kilometers from the northern border and next to the Pan-American Highway, through which all traffic headed to northern Central America passes. It is a predominantly urban settlement (97 percent) and this has increased in recent years due to migration from rural areas as a result of the wars of the 1980s, the droughts, and Hurricane Mitch.

In terms of assets and investments, both communities have acquired land, housing and services for the relocation of families affected by Hurricane Mitch. Their strategies for recovery however, are different. In Ocotal, the success of the land management was facilitated by the existence of a vision and tools for the city's urban plan that allowed the

relocation of a settlement in an adequate site and close to the urban context. The attention to housing demands was facilitated by the strategic use of local materials (adobe), thus lowering costs and enabling the acquisition of more spacious and comfortable land lots and for construction of homes, generating a municipal investment in an adobe and tile factory. A key mechanism enabling the neighborhood's construction was the relationship between the municipality and the decentralized international cooperation that existed prior to Hurricane Mitch.

International organizations have assisted in Ocotal by financing the land, the housing design and construction, the health center, an adobe factory and the pre-school building. The attainment of access to public services such as potable water, electricity, latrines, and street drainage on the part of the government has been less successful. Although all housing demands have not been met (230 built out of the 498 proposed) and those already built require major maintenance from its inhabitants to avoid their deterioration, the efforts on the part of the mayor's office (or municipality) have been recognized and praised. These efforts include planning management with a land-use vision and the installation of efficient technical and administrative systems. The housing proposal considered habitability, neighborhood identity, volunteerism and generational land ownership issues.

Nonetheless, the efficient management of the physical and social asset base in Ocotal is challenged by the need for the continuity of advancements, such as the administration of the adobe factory, the provision of services and the construction of new homes. There are also continuity needs in addressing unsolved problems, such as employment, local and municipal organizational training, psychological and social support and technical training. The government's structural weakness is manifested in Ocotal in terms of the difficulty of applying regulations, (such as prohibiting the construction of homes in high risk areas) which might result in a weakening of municipal authority. The association between the Mayor and local civic organizations has strengthened the municipal technical capacity and the momentum of risk management tools (the elaboration of Prevention and Preparation Plans), which constitutes one step ahead in the *PMAD* (Municipal Development Committee's) work agenda. Ocotal can be classified as a type B paradigm community. There are strong shared values and a collective capacity to act, which is a strong asset.

In Tipitapa three new settlements: Lomas de Esquipulas, Juan Pablo II and San Francisco were developed at different times and with distinct intervening and constructive models. Juan Pablo II utilized land previously illegally occupied, while Lomas de Esquipulas was established by using public lands. San Francisco de Tipitapa was developed by a national NGO. Being located in the high property value sector of the Managua metropolitan area, it influenced the already complex process of negotiating the land designated for housing. Its proximity to the city of Managua enabled the arrival of an endless number of external NGOs, each bringing resources and wanting to help.

This resulted in a large number of resettlement housing units (730 homes were built), but with little or no local regulation of the proposals and intervention models that would allow a more balanced distribution of assistance. The initiatives followed one after

another, in some cases with little coordination in the provision of services, delivery mechanisms and payment methods, resulting in unequal benefits from the population's point of view. There were few mechanisms for dissemination of the information learned by one community that could prove useful to another. So the possibility of access to the asset of project experience was not well articulated in the recovery process. The political management styles were problematic due to the social dynamic (mixed cultural perspectives) that was influenced by the high migration from the country's interior in search of better living conditions.

A favorable aspect of management in Tipitapa is the link between local and national government that provided flexibility in the meeting of needs during the emergency and rehabilitation phases. Vertical integration of effort is in place. Nonetheless, the supporting nature of this association presents problems of continuity due to staffing changes occurring in the municipality's administration. This situation must be contextualized within the political reality of the conflicts that still remains in the peoples' historic memory. There exists an institutional fragility in the establishment and operation of long lasting relations that will allow the needs and priorities of the impacted communities to benefit from efficient and opportune assistance.

The local leaders interviewed in Ocotal placed a high value on local cooperation and efforts offered by national and international entities. On the other hand, in Tipitapa, national and international aid is more valued than local assistance. This points out the importance of a foresighted investment in local training. Such training provides the possibility of access to management capacities, social capital, and the formation of internal and vertical alliances that can continue major national and international assistance. In Ocotal, financial resources were considered important to the recovery process, while in Tipitapa, technical assistance was considered essential. Based on the analysis, a summary of assessment factors for Ocotal is provided in Table 1.18.

TABLE 1.18 ASSESSMENT FACTORS – OCOTAL

Variable	Low	Medium	High
Level of Vulnerability			X
Level of Community Based Participation - internal		x	
Level of Cooperation - external	X		
Access to Outside Resources- "Claims on Others"		x	
Level of Organization			x

1.5 Universal Matrices

For each country we have developed a universal matrix. These matrices combine analytical variables and descriptive characteristics of the communities by country. They are at the same time thumbnail sketches as well as diagnostic tools for determining future actions. They allow for comparison along common variables, as well as scenarios of possible futures.

HONDURAS UNIVERSAL MATRIX

Honduras Communities	Col. Lempira <i>Paradigm Type A</i>	Cuaca <i>Paradigm Type B</i>	Armenia <i>Paradigm Type B</i>	Isleta <i>Paradigm Type A</i>
Rural or Urban	Urban	Rural	Rural	Rural
Recent Disaster Type	Flooding as a result of Hurricane Mitch	Flooding as a result of Hurricane Mitch	Flooding as a result of Hurricane Mitch	Flooding as a result of Hurricane Mitch
Historic factors	Not fully incorporated into Tocoa community life; blue-collar outpost with little representation.	Strongly influenced by campesino cooperative movements of late 70s including immigration	Site of considerable in-migration due to local banana company jobs.	Standard Fruit Company plantation headquarters since 1930s.
Geography and Demography	Most flood-prone barrio in Tocoa; 90 percent below base flood elevation. Adjacent to river. Pop. 250 with 67 housing units.	Spread out on both sides of river. Community center is flood refuge area (high ground) for nearby communities. Pop. 1,100 with 180 housing units.	Pop. 3,800 with 366 housing units. School that could serve as disaster shelter is in high-hazard zone.	Good set-back levee protection system on river. Well-maintained local infrastructure. Pop. 3,500 with 400 housing units.
Actors	Strong Mayor (Tocoa) not a supporter of community; nascent CODEL and emergent <i>patronato</i> at odds with municipal gov't demand to relocate.	Tocoa Mayor donated land for post-Mitch housing. Samaritan's Purse, COOPI, FHIS very active.	Strong <i>patronato</i> and CODEL, presided over by the same woman. Olanchito Mayor a strong supporter of upper watershed reforestation.	Local networks link banana company assets and residents based on need. SOPTRAVI, Catholic Church, FHIS major contributors.
Assets	Strong local citizen spirit in opposing relocation. Resident contractors willing to donate materials for flood proofing; adopted by local Centro Tecnico as pilot project for elevating school. Small but useful disaster shelter on higher ground.	Strong internal leadership in <i>patronato</i> and agri. cooperatives. Improvements to school are asset for evacuation plan. Youth and women play increasing role in disaster preparedness.	Some local warehousing and storage capability in public works yard. Very active involvement and participation in PROMSAT. Site of local health clinic. Exceptional leadership and local volunteerism.	Well-developed roads and communication for evacuation. COE is elevated above base flood level. Many equipment resources available from Standard. Good local PROMSAT committees.

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<p>Access/ linkages Claims on others</p>	<p>Red Cross instrumental in relief. Good access to SOPTRAVI for levee work. PROMSAT a unifying factor in training, community involvement. Limited access to municipal resources. Centro Tecnico a strong partner for school flood proofing.</p>	<p>Mid-term relationship with NGOs especially Samaritan's Purse proved fruitful for housing recovery. PROMSAT has strengthened role of CODEL in the <i>patronato</i>. Good relationship with municipality.</p>	<p>Strong linkage with municipality through the CODEM. A priority site for fire dept. rescue/ response in floods. Personal vehicles are inventoried in the local plan as logistical assets. Communal land was donated for flood project.</p>	<p>Strong linkage with municipality through PROMSAT. Some degree of informal linkage between local <i>patronato</i> and Standard for basic response resources.</p>
<p>Alternative futures</p>	<p>Residential flood hazard reduction through porch wall construction. Possible improvement in relations with Tocoa if change of Mayor. Relocation most cost-effective alternative but highly unlikely.</p>	<p>Enhancement of local evacuation and shelter plan as centerpiece of community's disaster plan. Likely a growing role as host to other communities.</p>	<p>Continued environmental work on Juguaca R. including tree-planting and upstream soil protection. Additional health center wing may attract even more new residents.</p>	<p>Continued dependence on Standard as major source of employment. Additional work in upper watershed flood control through municipality.</p>
<p>Challenges</p>	<p>Full and effective flood control including storm drainage does not appear likely. Elevation of school could raise issue of flood proofing for residences. Maintain community morale and evacuation plan.</p>	<p>Physical assets very limited; reliance on external mutual aid for rescue activities (fire dept.). Must assure that school facilities including mass feeding remain adequate for expected number of evacuees. Drinking water system needs upgrading.</p>	<p>No local shelter outside high-risk zone, making final elaboration of the plan very difficult. Drinking water supply proved vulnerable after Mitch; no service for six months. Long-term solution required.</p>	<p>No local disaster shelter outside high-risk zone. Chronic unemployment due to post-Mitch decline in banana sales and production. Flood control on Sonaguera R. considered to be inadequate.</p>

NICARAGUA UNIVERSAL MATRIX

Nicaragua Communities	Ocotal Paradigm Type	Tipitapa Paradigm Type
Rural/Urban	Urban	Urban
Recent Disaster	Flooding as a result of Hurricane Mitch	Flooding as a result of Hurricane Mitch
Background/ History	Territorial Planning.	Absence of a vision and the tools needed for territorial planning.
Geography and Demographics	Capital city, urban municipality in 1998. Intermediate city located in the northern part of the country, pop. 31,000.	Peripheral city, located near the country's capital, and having pop. 109,000.
Participants	Mayor and technical team of Pueblos Unidos, national and international NGOs (Handicap International, World Vision). Government organizations.	Mayor. National and International NGOs. Governmental organizations.
Assets	Land purchased by the mayor suitable for housing located in the urban periphery, pending legalization in favor of the users. Good quality housing, to be purchased from the municipality through a series of long term payments; with infrastructure, equipment and social services, not completely covered. Municipal investment – adobe factory. Ability for community and local environmental risk management. Community and social organization levels. Social assets.	Land: state, bartered, not always purchased, in its majority completely suitable for housing, integrated to the urban context, pending of legalization in favor of the users. Good and satisfactory quality housing, generally free, with partially covered infrastructure, equipment and social services. Ability for community and local environmental risk management. Community and social organization levels. Social assets.
Accesses	Access to land. Access to housing, infrastructure, equipment and basic services. Access to knowledge, information, training and organization for environmental risk management. Access to ways of strengthening or rebuilding the community's social assets.	Access to land. Access to housing, infrastructure, equipment and basic services. Access to knowledge, information, training and organization for environmental risk management. Access to ways of strengthening or rebuilding the community's social assets.
Links Assets-Accesses	The agile municipality's management before an averagely active land market. Social promotion for housing,	Municipal heritage, compromises between the private sectors and the central government and purchase from the private sector in a very

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	<p>assumed by the municipality with the aid of external agents: social organizations and international aid.</p> <p>Organized and assisted auto-construction of the settlement promoted by the municipality along with the community's participation in the control process.</p> <p>Early technical training in risk management for the municipality and community promoted by external agents: social organizations and the university.</p> <p>The PMAD Municipal's Committee organization in the SNPMAD's implementation law, relating to an important municipal experience.</p> <p>Municipal planning with emphasis on prevention of disaster with support of external agents; social organizations and international cooperation.</p>	<p>active land market.</p> <p>Social promotion for housing assumed by more than 10 external agents: social organizations and aid with a low level of coordination.</p> <p>Delayed and insufficient training in risk management provided by external agents: international cooperation.</p> <p>The PMAD Municipal's Committee organization in the SNPMAD's implementation law, relating to an important municipal experience.</p>
Future scenarios	<p>Continuity of initiated processes?</p> <p>Will it be possible to complete the settlement projects and preserve what was built?</p> <p>Will the organized and assisted social production of homes survive?</p> <p>Will the users pay for the land provided to them under those conditions?</p> <p>Will external financing be continued or will there be alternatives to keep providing answers in this respect?</p> <p>Sustainable social entrepreneurs in risk management?</p>	<p>Continuity of initiated processes?</p> <p>Will it be possible to complete the settlement projects and preserve what was built?</p> <p>Will there be social production of homes in the future?</p> <p>Will the users pay for the land provided to them under those conditions?</p> <p>Sustainable social entrepreneurs in risk management?</p> <p>Will the population be attached to their homes?</p>
Challenges	<p>The economic recovery of the families through an improvement of income and access to decent jobs; local and national politics of job promotions; strengthening of links between local and central governments without conditioning terms; strategies for leadership relay to maintain a continuity in the already-in-progress processes; politics for the regulation of the land market in the municipalities and management tools of land suitable for human settlements, which makes this asset affordable for the population with lower income and organizes urban growth; thus preventing future disasters; financing provided for the housing sector in the municipalities; municipal planning: territorial organization with an emphasis in risk management and citizen participation in decision-making; a system that provides social services (health, education).</p>	

MEXICO UNIVERSAL MATRIX

Mexico Communities	Colonia Guerrero <i>Paradigm type A</i>	Francisco I. Madero <i>Paradigm type B</i>	Colonia Morelos <i>Paradigm type A</i>	La Junta de Arroyo Zarco <i>Paradigm type A</i>
Rural or Urban	Urban	Rural	Rural	Rural
Recent Disaster Type	Earthquake	Flooding/Landslide	Flooding	Flooding
History	<p>-The first housing was built near the end of the XIX century.</p> <p>-Due to the potential risk of landslides, the UVCG was created in 1976.</p> <p>-The 1985 earthquake did not cause major damage due to the UVCG's ability to confront the disaster.</p> <p>-The reconstruction of living facilities accomplished through community participation.</p>	<p>-In 1936, the <i>ejido</i> system was put into place and in 1942 their farmlands were restored.</p> <p>-In 1999, heavy rains resulted in major flooding.</p> <p>-The clearing of roads was possible through the assistance of external agents. Immediate necessities were also met.</p> <p>-There were no existing recovery programs.</p>	<p>-In 1935, the <i>ejido</i> Colonia Morelos was created.</p> <p>-In 1955 intense rain, forced the Apulco River to overflow without changing its course, but in on smaller scale than in 1999.</p> <p>- In October of 1999 "the decade's "biggest tragedy," the worst disaster ever in the history of the state of Puebla occurred.</p>	<p>-In 1950, the <i>ejido</i> La Junta de Arroyo Zarco was created.</p> <p>-In 1955 torrential rains caused major flooding, however, they did not reach the magnitude of the 1999 floods.</p> <p>-In October 1999, the greatest disaster ever to hit the region of Totoncapán occurred.</p>
Geography	<p>-This neighborhood is located in an area of marshy subsoil; a geological fault runs underneath it.</p>	<p>-The community is located in an area surrounded by numerous streams and hills. The region has a mild climate and is under permanent risk of flooding.</p>	<p>-The community is surrounded by hills with 15-degree slope and a small valley, where the Apulco River flows. Its climate is mild and humid.</p>	<p>-The community is located in a small valley, where the Apulco and the Zempoala rivers meet, in an area where the climate is mild and humid.</p> <p>-Relocation housing built 4 kms east of its previous location.</p>
Demography	<p>-Since 1970 an interrupted process of depopulation has taken place. It was mostly caused by sudden changes in land use, infrastructure, and the loss of buying power. The reconstruction process minimized its effect, but wasn't enough to prevent it from happening.</p> <p>Population: 65,000</p>	<p>-Young people immigrate to the United States and to other Mexican cities. The disaster and a drop in product prices derived from oranges, contributed to the gradual depopulation.</p> <p>Population: 1,500</p>	<p>-After the disaster, there was an increase in immigration. Job opportunities abroad draw the residents mainly to México City and Puebla.</p> <p>Population: 350</p>	<p>-Despite reallocation of new housing in the entire community, some families still have immigrated after the disaster.</p> <p>Population: 300</p>

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Mexico Communities cont.	Colonia Guerrero <i>Paradigm type A</i>	Francisco I. Madero <i>Paradigm type B</i>	Colonia Morelos <i>Paradigm type A</i>	La Junta de Arroyo Zarco <i>Paradigm type A</i>
Participants	-Different participants took part in the emergency and recovery process: neighboring countries, NGOs, the government, foreign donors, the Catholic church and other social organizations. -The reconstruction process was centered around the organized participation of the community, with counseling proceeding from NGOs and academics.	-During the emergency, the federal government, the army, the state government, and the municipal government, participated as external agents. -The community carried out the immediate task of responding to the disaster, through the Ejidal commissioner.	-Municipal and state authorities have intervened in the emergency and recovery process from the beginning. So has the Universidad Autónoma de Puebla; Internally, the Comisariado Ejidal, the Municipal Inspector and family representatives have participated in the initial solicitations for mitigation measures, but these have not been realized.	-Municipal and state authorities participated in the emergency and recovery process. -The federal government also participated in the relocation and construction of the new settlement. -The community has received help with very little participation.
Assets -tangibles -intangibles	-Community Organization. -Training. -Financing. - Income levels. -Employment. -Provide land for housing. -Urban infrastructure. -Equipment. -Public Services. -Sistemas de ahorro.	- Community Organization. -Farming lands. -Stock farming. -Tools for plowing. -Training. - Income levels. -Productive Infrastructure. -Rural roads. -Equipment. -Public Services. -Collective Saving Systems.	- Community Organization. - Farming lands. -Stock Farming. -Tools for plowing. -Training. - Income levels. -Productive Infrastructure. -Rural roads. -Equipment. -Public services. -Cooperative banking	- Community Organization. - Farming lands. -Stock Farming. -Tools for plowing. -Training. - Income levels. -Productive infrastructure. -Rural roads. -Equipment. -Public services. -Cooperative banking
Access Availability and probability -high -medium -low -short term -mid term -long term	-High organizational access. -Lack of training. -Lack of preparation resources. -Low income levels. -Unstable employment. -Sufficient infrastructure. -Sufficient equipment. -Sufficient services. -No cooperative banking systems	-Average organizational access. -Land availability. -Lack of technology. -Lack of training. -Low income. -Juvenile unemployment. -Poor infrastructure. -Inaccessible roads. -Services meet average standards. -There are three schools and a medical center. -The <i>ejido</i> owns a small savings fund.	-Inefficient organization. -Loss of farming lands. -Loss of collectively owned livestock. -Lack technology. -Training available but rare. -Low income levels. -Employment loss. -Loss of infrastructure for production. - Inaccessible roads. -Two schools. -Services in precarious conditions. -El <i>ejido</i> lost investments.	- Inefficient organization. - Loss of farming lands. -Loss of livestock. - Lack technology. - Lack of training. - Low income levels. - Employment loss. - Loss of infrastructure for production. -Improvement in land transportation. -Lack of equipment. -Services in precarious conditions. -El <i>ejido</i> lost investments.
Instruments	-Community Organization with more than 25 years experience. -Premises for organizing meetings and assemblies. -Contacts with other organizations and NGOs.	-Community Organization based on traditional ties. -Premises for organizational meeting places. -Tools for production. -Transportation vehicles.	-Community Organization based on traditional ties. -School building for assemblies. - Lack of tools for production.	-Community Organization. -Lack of tools for production.

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Mexico Communities cont.	Colonia Guerrero <i>Paradigm type A</i>	Francisco I. Madero <i>Paradigm type B</i>	Colonia Morelos <i>Paradigm type A</i>	La Junta de Arroyo Zarco <i>Paradigm type A</i>
Future Scenarios / processes that go from Types A to B and to other forms	<ul style="list-style-type: none"> -The community organization could guarantee an effective response mechanism, similar to that of 1985. -There won't be enough preparation programs. -Vulnerability and risk analysis needed. 	<ul style="list-style-type: none"> -The present economic and geographic situation will make the community more vulnerable. -There will be a lack of preparation programs. -Production recovery won't be viable in the near future. 	<ul style="list-style-type: none"> -Community organization will face difficulties in consolidating. -Vulnerability won't be reduced. - Extensive damage is a possibility, if no mitigation works are available. 	<ul style="list-style-type: none"> -Due to family relocation, organization will change. -Housing vulnerability will be reduced, but there will be an increase in socioeconomic and productive vulnerability.
Challenges	<ul style="list-style-type: none"> -Develop community programs for prevention and recovery. -Emphasize the importance of training. -Improving living conditions. -Unify and reorganize the communities' participation. 	<ul style="list-style-type: none"> -Develop community programs for prevention and recovery. -Emphasize the importance of training. -Improve production conditions. -Build better roads and develop an efficient public transportation system. 	<ul style="list-style-type: none"> -Own farming land. - Develop community programs for prevention and recovery. -Emphasize the importance of training. -Rebuild production and commercialization conditions. -Creation of mitigation works in the Apulco River. - Build better roads and develop an efficient public transportation system. 	<ul style="list-style-type: none"> - Own farming land. - Develop community programs for prevention and recovery. -Emphasize the importance of training. - Rebuild production and commercialization conditions. -Reorganize el <i>ejido</i>. - Build better roads and develop an efficient public transportation system.

EL SALVADOR UNIVERSAL MATRIX

<i>El Salvador Communities</i>	San Carlos Lempa <i>Paradigm type B</i>	Santa Maria Ostuma <i>Paradigm Type A</i>	José Cecilio del Valle <i>Paradigm Type B</i>
Rural or Urban	Rural	Rural	Urban
Recent Disaster Type/Major threats	Flooding Earthquakes	Earthquakes, Landslides	Earthquakes, Landslides
Principle Vulnerabilities	Poverty; low level of education	Lack of organization; weak management capacity; poverty; low level of education	Poverty; Low education level
Historic Factors	Large scale cotton plantation and cattle grazing area since 1980 Military conflict zone since the 1980s; Repopulation since 1992 of area by former residents and former guerilla soldiers	Small coffee growing region populated by campesinos and small business owners. Indirectly affected by the military conflicts of the 1980s	Illegal squatter settlements arose after the 1965 earthquake. Settlements recently legalized and occupied by residents employed primarily in the informal workforce.
Geography	Coastal Plain	Mountainous zone –mid elevations	Rocky urban hillsides
Demographics	25,500 inhabitants	5,000 inhabitants	1,000 inhabitants
Principal Social Actors	Community organizations linked with sub-regional organizations NGO's International Cooperation	Religious associations	Community organization NGOs Private landowners
Assets	Broad social organization; Capacity to confront risk	Strong religious organization	Important social organization; Capacity to confront risks; Material resources to confront flooding
Access/ Linkages Claims on others	International Cooperation initiated in the 1990's; Local government support	Absence of relationships with international cooperation; Local government support	Support from the civil establishment; Access to municipal resources; Access to international cooperation
Alternative futures	Community integrated with sub-regional development plan based in agriculture Dependent upon the feasibility of this relationship	Population migration; Conversion to a commercial center dependent upon agricultural exchange rate	Partial relocation due to construction of peripheral zones; Economy dependent upon small business development
Challenges	Fulfill the existing land potential within a risk management plan at the sub-regional level. Organize a set of minor assets. Strengthen the local capacity for risk management. Extend the linkages to accessing existing resources	Territorial definition of neighboring municipalities within a sub-regional risk management plan; Organize a set of minor assets; Create local capacity for risk management; Diversify the access link to existing resources	Need to incorporate the factors that caused the construction of the peripheral ring; Insert plans within overall urban risk management plan; Substantially increase existing assets, Strengthen the existing capacity for risk management.

1.6 The Research Team

This project was carried out by a multi-country research team with a lead coordinator for each country. Mario Lungo, based in El Salvador, led his country's team. Paulina Chaverri, based in Costa Rica, led the Nicaragua team in association with Ninette Morelas who lives in Managua. Daniel Rodríguez, based in Mexico, led his country's team. Bruce Baird, based in the United States, led the Honduras team. Each country coordinator organized a local field team to conduct the surveys and assemble documents and materials. The names of the entire country field teams are found in the individual country reports. While country coordinators were tasked with providing similar information for the country reports, they provided their own perspective in describing the local communities and the important dynamics related to disaster recovery and transformation. William Siembieda, Principal Investigator, based in the United States, was the project's overall coordinator. Rebecca Cremeen, David Fernández and Melanie Reese Senn assisted him.

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