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Reducing the Vulnerability to Natural Disasters: Hurricane Mitch and Central America

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Introduction

Hurricane Mitch chose a particularly cruel moment to unleash its fury on Central America. After years of widespread conflict, the region was at peace. Democratically elected governments had gained basic macroeconomic stability and, in several cases, notable growth, and instituted programs geared toward sustainable development. In its fury, Hurricane Mitch highlighted the region's propensity for disaster and its vulnerability to shocks, which lie in part in weak and inequitable social structures and in past environmental damage. Central America can choose simply to reconstruct with resignation or use Mitch as a catalyst to transform its conception of social and economic development, to mitigate past events and to reduce its vulnerability to future disasters.

An expanded safety net is needed, including stronger basic social resources. An environmental safety net would address natural resource management, land use and infrastructure planning, and construction practices. An economic and productive safety net would imply the redirection of fresh funds to micro, small, and medium-sized businesses as well as increased access to international markets. An examination of the lessons learned from Hurricane Mitch suggests that explicitly building capacity, reducing social, environmental, and economic vulnerability, and improving inclusion and equity through

an extended safety net will be a fundamental part of a meaningful equation for sustainable development and competitiveness.

Social Debt and Environmental Debt: The Achilles Heel

Social conditions for Central Americans deteriorated during previous decades as a consequence of structural conditions in the region's economies, the economic crisis, and the long period of political instability. The share of the population incapable of satisfying basic human needs increased; the absence of basic social services, such as health and education, also grew; and the choices for training the economically active population to fill more qualified and better-paid jobs decreased. In the mid to late 1990s, once peace was consolidated the situation looked as shown in Table 18-1.[1]

Over half of Central American households live in poverty (Secretaría de Integración Social de Centroamérica 1995),[2] 40 percent do not have access to health services, and more than 25 percent are illiterate.[3] In addition, there are disparities in gender, mainly affecting women who live in rural areas.

As of 1992, inhabited watersheds had high pollution and deterioration levels that limited water use and increased the severity and frequency of floods.[4] Thousands of tons of fertile soils had eroded. Central American forests were disappearing at the rate of 388,000 hectares/year. It is estimated that in 1996, forest cover accounted for 35 percent of total territory, approximately 60 percent of what it should be, according to the Central American Commission for Environment and Development (CCAD). These figures imply that at least 13 million hectares of land suitable for forests were being underused in other activities or were turned into pastures, underbrush, or degraded lands. Most of them were not targeted for logging operations or cleared for agriculture. "Poverty in the region's countries, together with underdevelopment and demographic growth without employment and production alternatives and opportunities, are the greatest agents of this reduction" (CCAD 1998).

1. For a more detailed analysis of the situation in terms of poverty and social policies in the region, see Chapter 16 in this volume.

2. As explained in Chapter 16, poverty measures vary according to the method used.

3. School drop-out rate is a serious problem in some of the countries in the region, particularly Guatemala and Honduras, where only 41 percent of children reach the fifth grade (UNDP 1997, *Report on Human Development*).

4. In Central America, from 60 percent to 80 percent of all diseases may be attributed to poor water supply and sanitation. (CCAD 1992, *Agenda Centroamericana de Ambiente y Desarrollo*, PNUD; WRI; UICN-CI, quoted in CCAD 1998).

Table 18-1.

	Guatemala	*El Salvador*	*Honduras*	*Nicaragua*	*Costa Rica*
Population, 1998 (millions)[a]	11	6.	6	5.	4
GNP per capita (US$, 1996)[b]	1,640	1,850	730	410[b]	2,780
Poverty (% of households)[c]	86.0	50.0	65.0	74.0	17.0
Unemployment (%)	6.0	10.0	8.6	23.5	4.2
Underemployment (%)	33.4	45.0	31.4	36.5	16.8
Life expectancy (years)[d]					
Male	64	66	65	65	75
Female	69	72	69	70	79
Literacy (%)	55.7	70.9	72.0	65.3	94.7
Child mortality (per 1000 babies born)	40.0	51.0	53.0	30.0	13.0

[a]World Bank 1999, 2000.
[b]Refers to 1997.
[c]CCAD 1998.
[d]Programa de Naciones Unidas para Desarrollo 1998.

Likewise, biodiversity and coastal resources were threatened in the region. There were no accurate measurements of environmental damage in any Central American country, but if figures for El Salvador and Costa Rica are used, the region reduced its GDP growth by 1.5 to 5 percentage points per year due to these reasons.[5] A new way at looking these issues was needed.

In the mid-1990s there were, then, baseline conditions and a political environment conducive to addressing the social and environmental agenda. This circumstance was recognized at the highest governmental levels and indicated by the drafting and acceptance of the Guácimo Declaration and the Alliance for Sustainable Development of Central America, signed by five presidents of the region, in 1994:

> We conceive economic growth with equity, without degrading natural resources, but at the same time capable of creating genuine progress opportunities for the most vulnerable groups of Central American populations. We firmly believe that intelligent insertion in world trade should be based on improved labor quality, skills, and competence, as well as on modernized businesses. . . . (Declaración de Guácimo 1994.)

5. See World Resources Institute and Tropical Science Center, *Accounts Overdue: Natural Resource Depreciation in Costa Rica*, 1991, for estimates on Costa Rica, and Panayotou, Faris, and Restrepo 1997, for data on El Salvador.

Central America's Propensity for Disasters

Because of its geological and climatic make-up, Central America is susceptible to a variety of potential disasters, the most important being earthquakes, droughts (both seasonal and long-term), landslides, forest fires, floods, and hurricanes. It is also worth mentioning that Central America is vulnerable to potential man-made disasters. For instance, chemical accidents and oil spills could become serious risks to population centers and natural resources.

Human development patterns inconsistent with natural cycles and forces lead to the so-called natural disasters. More properly, these should be considered as *human* disasters, occurring when extreme natural events create situations exceeding a society's capacity to absorb and survive the shock of the event.

Fundamentally, disasters result from an incompatibility between human activities and the natural environment. The impact of a natural disaster depends not only on nature; it results from threats imposed by natural phenomena and a country's vulnerability. Disasters in poor countries, as in Central America, often lead to deterioration in economic and social development. Because of scarce resources and lack of long-term planning, the recovery process must take place without mitigation measures. Consequently, the region's vulnerability increases and, years later, when another natural disaster occurs, the impact is cumulative. The idea is to break this cycle of disaster (see Figure 18-1) in Central America.

Social conditions of poverty and inequality, as well as pressure on natural resources, increase and catalyze personal, social, and economic damages from geological and climatic events impinging on Central American territory. Reversing these conditions must be a central element of any economic growth or catastrophe recovery strategy. In late 1998, events related to Hurricane Mitch highlighted the issue of geographic vulnerability and its relationship to poverty and development as a factor relevant to the regional agenda.

The Fury of Hurricane Mitch

On October 24, 1998, tropical storm Mitch reached hurricane category, and by October 26, Mitch had gained strength and become a Class 5 hurricane[6] (the highest on the Saffir-Simpson scale), one of the strongest hurricanes in the last 200 years in the Caribbean. Pressure at the center of this hurricane went down to a minimum of 904 mb, the fourth-lowest pressure

6. Only four hurricanes have reached this category in this region during the 20th century.

Figure 18-1. Disaster Cycle

recorded in an Atlantic hurricane in this century. At the moment of top intensity, the wind had sustained speeds of 288 km/h and gusts of up to 340 km/h.[7] By then, Mitch was north of the Honduran coast. Measured on the Saffir-Simpson scale, Mitch was a stronger hurricane than Hurricane Andrew, which devastated the southeastern coast of the United States in 1992[8] (see Table 18-2).

Hurricane Mitch's subsequent behavior, however, caused most of the devastation. The hurricane changed course and started moving slowly toward the southwest, crossing Honduras diagonally and reaching El Salvador. In the five days from October 26 to 31, Mitch generated torrential rains, overflowing rivers, and huge floods in the five countries of the Central American region.

7. Data from the National Hurricane Center's Web Site, U.S. NOAA.

8. Andrew was a Class 4 hurricane on the Saffir-Simpson scale. In 1992, it caused damages estimated at US$26.5 billion in Florida and Louisiana (NHC–NOAA).

Table 18-2. Hurricane Comparison—Andrew, George, and Mitch

Hurricane	*Duration (days)*	*Maximum speed (km/h)*	*Gust speed (km/h)*	*Translation speed[a] (km/h)*	*Minimum pressure (mb)*	*Intensity (Saffir-Simpson)*	*Damages ($billions)[b]*	*Dead/Missing*
Andrew	13	248	278	37	922	4	29.5	40
George	16	240	275	34	946	4	2.2	412
Mitch	15	298	340	6	905	5	6.0	18,383

[a]Translation speed at maximum intensity.
[b]ECLAC based on official information, 1999.

More so than hurricane winds, the largest factors contributing to disaster were torrential rainfall and the extreme vulnerability of the population. In Choluteca, Honduras, 914 mm (36") of rain were registered between October 25 and 31, 42 times the normal rainfall expected at this time of the year (the amount of water falling in five days was equivalent to 212 days in an average year). Similar amounts of rainfall were recorded in Tela and La Ceiba, on the Honduran northern coast. Nature's extraordinary force, decades of natural resource exploitation, and extreme conditions of poverty combined to cause an unprecedented disaster in the region's recent history. The first and most unfortunate direct impact was the loss of human lives, particularly poor people, whose poverty magnified their vulnerability.

ECLAC (1999) estimated total damage at US$6 billion.[9] Compared with 1997 data, this amount is equivalent to 1/6 of the region's GDP, 2/5 of the region's exports, and 1/3 of the total external debt.[10] But the highest cost is the loss of almost 20,000 lives and the direct effect on 3.5 million Central Americans.

In developed societies with better economic and social infrastructure, and generally higher wealth and standards of living, most losses are material and the loss of human lives tends to be minimal. In poor societies the loss of lives is very significant, and although relatively smaller, material losses are proportionally very important. This event has deeply impacted the perception of linkages between economic-social growth and natural disasters.

The Need for Transformation and a Reconstruction Agenda in Central America

The pre-October 1998 foundation for designing, discussing, and agreeing on a regional and national strategy, which opened with peace and democracy, was severely shaken by Hurricane Mitch. In the days following the disaster, rehabilitation tasks required immediate attention and drew most of the societies' resources, particularly in Honduras and Nicaragua. Central Americans, however, face the challenge of also continuing to work on their development model's definition and implementation. The way reconstruction is proposed

9. According to ECLAC the distribution by country is as follows: Costa Rica 2 percent, El Salvador 6 percent, Guatemala 12 percent, Honduras 64 percent, and Nicaragua 16 percent.

10. The methodology followed by ECLAC is based on direct costs (including depreciation of lost goods) and on indirect costs related to the impact of the disaster on the economic flows for the next two years. If the estimation is made using the reposition cost, the figure will be much higher, and even higher if we take into account the need to improve what existed through actions aimed at reducing vulnerability.

and carried out will be a determining factor in future well-being. The primary lesson from Mitch, of multidimensional and interconnected vulnerabilities, should be oriented toward building upon the concept of vulnerability in all personal, family, community, business, organizational, or government planning. The relationship between vulnerability and sustainable development, competitiveness, and productivity should be explored.

The region's growth can be catalyzed through agreements on an intelligent development agenda, such as the Alliance for Central American Sustainable Development (ADS). However, the achievements of such an agreement can be minimized by natural disasters if no measures are taken to mitigate and reduce vulnerability and to decrease loss in terms of lives, capital, and natural resources (see Figure 18-2). Economic growth and, therefore, increased productivity are indispensable to enhance social investment and decrease or reverse environmental deterioration; conversely, lack of social investment and destruction of natural resources threaten or limit productivity and economic growth—there is no sequential relationship among these factors. Central America's challenge is to propose a realistic, albeit ambitious, agenda integrating and articulating a set of actions to upgrade quality of life, through investments and policies that increase productivity and decrease vulnerability.

A first effort in this sense is seen in the document "Strategy for Central America Reconstruction and Transformation after Hurricane Mitch," developed within the context of the Project for Central American Competitiveness and Sustainable Development, together with the Secretariat General for Economic Integration, upon request of the presidents of the five Central Ameri-

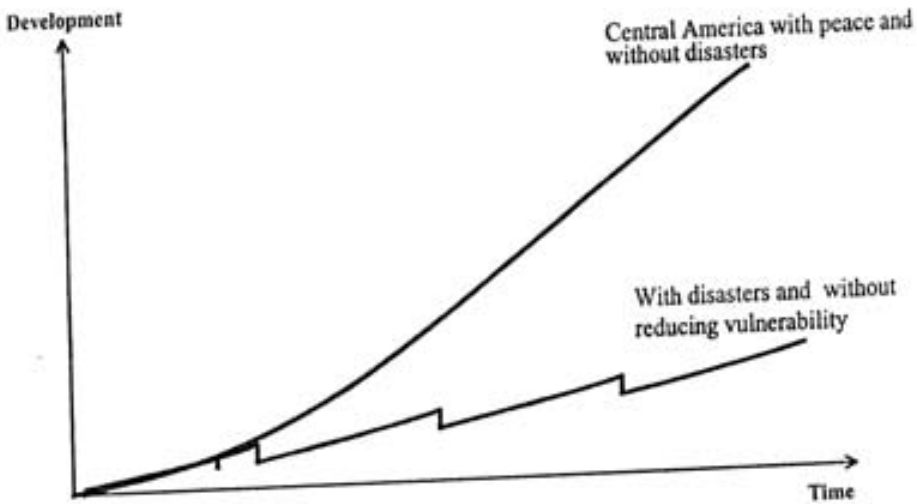

Figure 18-2. Economic Growth and Natural Disasters

can countries and with involvement and collaboration by a large number of regional and extra-regional people and institutions. The proposed strategy gathers major goals for Central America, grouped under three needs identified in the region after Mitch:

- Re-establishing economic and social stability.
- Catalyzing growth, integration, and well being.
- Reducing vulnerability.

This chapter takes many ideas proposed in this strategy and develops them from the perspective of safety nets that need to be either built or strengthened in Central America to protect weaker families and businesses. Furthermore, the authors describe the role these nets play in abating vulnerability and increasing productivity.

Expanded Safety Net

Introducing the vulnerability concept into Central America and acknowledging the close links between the poorest populations and the environment, and the fact that basic social safety often depends on wages or salary earned by a family member that provides for all, it is necessary to explicitly include the roles of what we propose as the environmental and the economic/productive safety nets. Considering the three goals listed above, the last two complement the first in forming what could be known as the expanded safety net (see Figure 18-3). Together, the three areas would have the effect of protecting the most vulnerable people from the impact of external shocks. In addition they create the synergy needed to improve natural resource and capital returns. Returns on investment in human capital would generate productivity and growth, which in the long term are required to survive and improve in time.

Measures aimed at the poorest members of the population have the potential to reduce their vulnerability. These can also be means to improve equity, due to their potential redistributive effect. In combination with a variety of environmental and productive actions, they can improve the ability of both individuals and families to quickly recover from catastrophic events. In the process, these population groups can obtain the tools and skills required to make them more productive and able to live in society.

In relation to natural disasters, minimizing the loss of human lives is an objective in and of itself. One more objective is preserving the ability of individuals and families to recover quickly and in the best possible fashion. A unidimensional view of the problem, focusing exclusively on social matters,

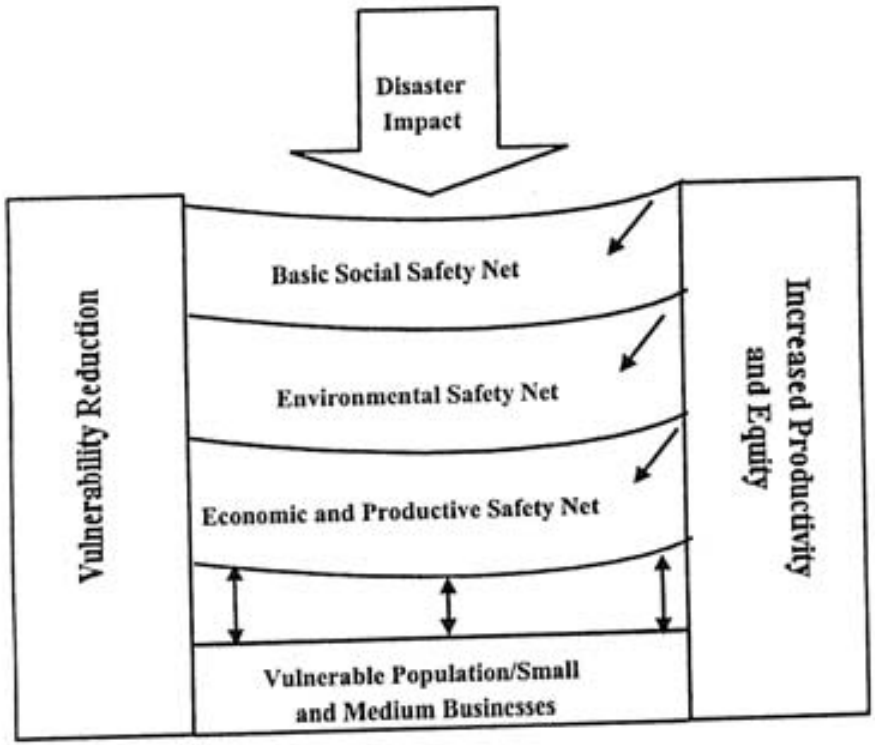

Figure 18-3. Expanded Safety Net

can lead to loosing sight of an important fact: the solution of the problems of these groups also has productive economic and environmental aspects.

Understanding the roles these nets play in their relationship to vulnerability reduction and resource productivity in Central America leads to the conclusion that they are a priority within any sustainable development strategy implemented in the region. Establishing the right dimension of the problem should contribute to building a long-term vision, targeting reconstruction efforts, and influencing resource allocation. Similarly, upon understanding the interrelationships among elements in the net, it is evident this is not only a problem for governments, but for society as a whole. Therefore, civil society, particularly communities organized through local or municipal governments and the private sector, should be proactively involved in the search for solutions.

Basic Social Safety Net

Natural disasters are related to poverty in two ways. (1) Lack of resources creates little capacity for responding to and anticipating risks, and (2) the

Table 18-3. Mitch's Impact on Population by Country

	Killed	*Missing*	*Injured*	*Directly affected**	*Affected (% of total population)*
Honduras	6,600	8,052	11,998	1,500,000	24
Nicaragua	2,863	970	388	867,752	19
El Salvador	239	29	—	346,910	6
Guatemala	268	121	280	730,000	6
Costa Rica	5	4	—	20,000	1
Total	9,975	9,176	12,942	3,464,662	11

Source: Panamerican Health Organization. *Boletín Epimediológico.* December, 1998.
* Estimated by ECLAC.

a vicious cycle, further marginalizing those who are already vulnerable. Only through sustained and sustainable *social investment*, beginning with guaranteed basic services focused on the most needy, can the vulnerability be reversed—that is to say, target the strongest instruments on the weakest groups.

Strengthening national and regional social safety nets requires national decisions reflected by budgetary reallocations, institutional capacity, and fresh funds from multilateral agencies and donors. The effects of Hurricane Mitch, suffered directly by 10 percent of the total population, weakened the social infrastructure (see Tables 18-3 and 18-4), and amplified preexisting social disparities. Because of their previous and actual vulnerability and the weakness of social institutions, the resilience of most people was extremely reduced. The few resources destined to improve social safety nets will need to be partially reallocated to the reconstruction efforts.

Especially after a major disaster like Mitch, there is an even greater need to strengthen national programs for extreme poverty mitigation, basic education, and health care. The main weaknesses in the face of these extremes are lack of funds, poor institutional capacity, and sometimes corruption. If funds are to come from outside, these weaknesses should be taken into account. Part of the funds must first be used in building social-institutional capacity, and the problems of corruption must be addressed early.

Table 18-4. Mitch's Impact on Social Infrastructure Damaged/Destroyed

	Homes	*Bridges*	*Schools*	*Drinking water services*	*Health centers*
Honduras	70,000	99	2,624	1,683	68
Nicaragua	41,430	63	328	88	506
El Salvador	10,372	10	326	10	15
Guatemala	21,000	121	311	60	—
Costa Rica	965	69	39	—	1
Total	143,767	362	3,628	1,841	590

In general, after a disaster strikes, international aid begins pouring into the affected countries in the form of funds from different sources. Due to the urgency of distribution, many controls are lacking. Thus, it is better to take early measures in order to minimize the impact of corruption on these funds and to contribute to their effectiveness. A way to do this is to decentralize and involve nongovernmental organizations (NGOs) and local governments so that they can have adequate control systems and knowledge of their beneficiaries. Although this implies more complexity from the government's and the donor's point of view, it can lessen the trend toward corruption. Some of the money must be devoted to improving or developing control, identification, and participation systems for beneficiaries, as well as to ameliorate the ability to give account of such funds. An important consideration is the ability of institutions to prosecute and punish those involved in corruption.

As the poorest sectors who are the target of this resources find it harder to file and follow up charges, it is convenient to encourage and support the role some regional or international organizations (the Catholic Church, the Red Cross, etc.) can play. Two projects currently under discussion in the region can be of particular interest: (1) strengthening current comptrollers' offices (a proposal supported by CABEI), and (2) creating an ombudsman for humanitarian assistance (this proposal is supported by Red Cross International, among others.)[11]

There is plenty of literature on the inconveniences of charity. Most of these funds are not earmarked for reconstruction but rather to direct relief for victims. However, mechanisms must be sought to involve beneficiaries in activities related to the aid given. For example, they can be hired to perform the required distribution tasks and support sales of highly subsidized foods instead of giving them away, thus increasing nonproductive activities. Figure 18-4 illustrates a system of activities that could be applied to any social program that includes funds and aid transfers for the poor. Such funds should include the following five elements: (1) sufficient quantity; (2) focus on the poorest and most vulnerable families; (3) institutional capacity to identify the target population and make sure resources actually reach them and are used properly; (4) accountability to beneficiaries and to the rest of society; (5) avoidance of charity.[12]

11. In this regard, see the report by Umaña 1999, written in the context of institutional support to the region for the development of a reconstruction strategy and the transformation of Central America in the wake of Hurricane Mitch.

12. There is a regional initiative called "Central American Social Investment Program Against Poverty," established on instructions from the XVI Central American Presidents Summit, with the purpose of mobilizing resources from the donor community, in such a way that for every US$3 contributed, the Regional Development Bank (CABEI) should contribute US$1, with projects targeted on integrated rural development, integrated urban development, professional training and education, health and hygiene, nutrition, and environmental preservation.

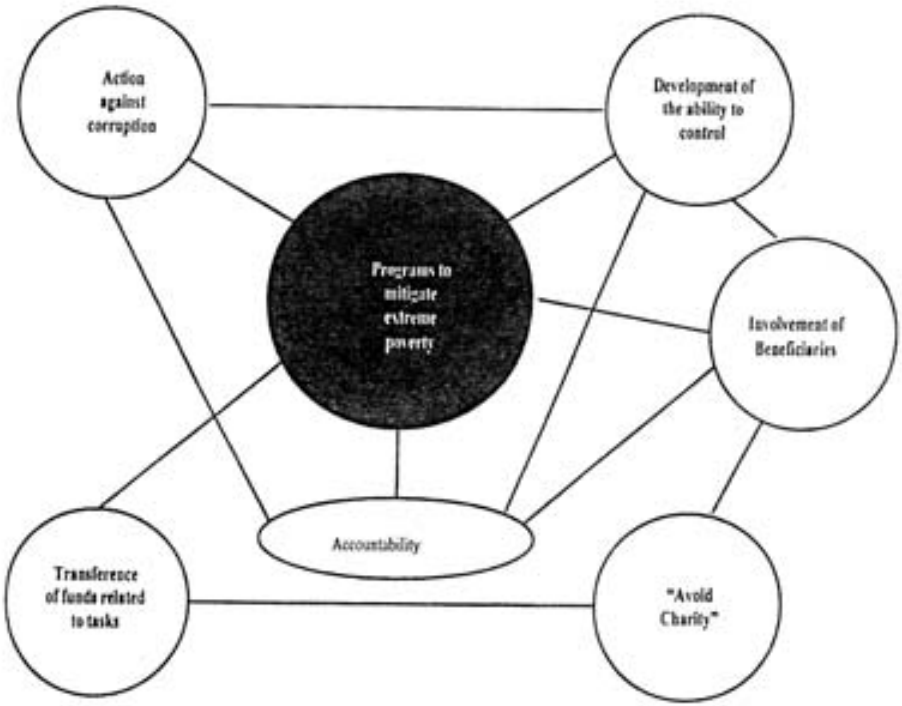

Figure 18-4. Extreme Poverty Alleviation Program Systems

Social Organization in Preventing and Caring for Disasters

Vulnerability to disasters is reduced when a society is able to anticipate threats, prevent them, and rebuild after the disaster. Central America does not yet have strong and resistant structures in this area, nor a good institutional base to start reconstruction with a built-in concept of vulnerability reduction and expanded safety nets. Developing the institutions needed to create an orderly and sustainable momentum requires, at least, a specialized agency to govern and control actions in this field. It also needs community organizations—together with the private sector and local, regional, and international NGOs—in charge of implementing the different actions required. The Central American local governments or municipalities are the logistical structures that need to be rescued and strengthened by giving them economic and decision-making power.

Currently, national emergency committees' mandates and resources place too much emphasis on *responding* to disasters and should be expanded to include disaster planning and mitigation. These committees have years of experience in responding to emergencies, many of which were predictable or

could have had a significantly reduced impact. Such committees should prioritize their resources and then perform broader functions (advice and implementation), including citizen warning, evacuation, and risk detection systems, health system planning, and other critical areas, to reduce vulnerability to an impending threat. Although there is a regional entity in charge of coordinating national commissions, this entity is as weak as the commissions it coordinates. Investments to create a strong organization with sufficient financial, intellectual, and technical resources should be considered as part of a national social or safety policy. Such organization can also be a mechanism for attracting and promoting productive investment.

Similarly, local government institutional capacity must be secured to provide disaster reduction and emergency care policies and programs, through increased investment and management training. Local government institutional strengthening should, among other things, create formal mechanisms for conflict negotiation and resolution and facilitate the direct involvement of target groups and the private sector. Resources should be transferred from communities or governments with more resources to the weaker ones, whether directly or through central government appropriations. These resources would be destined to strengthen municipal capacity to be involved in processes and decisions affecting their population's well being, to restore a sense of self-control. The Hemispheric Congress on Disaster Reduction and Sustainable Development declared that it must be "insured that national disaster management and reduction systems have the capacity not only to handle emergencies, but also programs, projects, and activities aimed at a relevant, effective, and efficient disaster reduction. Such systems should involve local organizations and governments to better respond to the risks faced by vulnerable communities."

The basic social safety net must be sustainable in the long term. As described below, it has to be complemented by an environmental safety net that will contribute to minimizing the eventual harmful impacts of nature on population and social infrastructure, while protecting natural resources and their capacity to generate wealth.

Environmental Safety Net

From an anthropocentric perspective, disasters are socially built and are the result of political, social, and economic processes magnified by natural impacts. Poverty, then, is the accumulation of political, social, and economic processes that diminish a person's or population's ability to anticipate, face, resist, and recover from an onslaught of nature.

Additionally, as mentioned before, because of its geological and climatic make-up, Central America is prone to a variety of potential disasters. Thus, thinking about a social safety net is inadequate unless it includes consideration of the multiple threats posed by national disasters and the mechanisms needed to mitigate against their impacts and increase population resiliency.

At the regional level there is general consensus on which environment-related vulnerabilities exist in Central America:

- Inadequate management of natural resources.
- Ineffective land-use planning.
- Inadequate infrastructure design and planning and inappropriate design and construction techniques.

Although boundaries between these categories may be fuzzy, their ranking is logical. Without a well-managed base of natural resources, for instance, infrastructure planning will not succeed in reducing long-term vulnerability. Even a well-constructed building will be vulnerable if it is erected on a flood plain or a geological fault.

Strategic investments in the environmental safety net will produce long-term, tangible value and achieve sustainability by building risk-based planning into development decisions, improving natural resource quality and productivity, building more resistant infrastructure, and insuring higher financial and social resistance to extreme events. In other words, careful investments improve returns and reduce the likelihood of loss on investments in human development, nature, and production infrastructure, particularly in the poorest sectors where higher investment levels will need to be targeted in the coming years.

Natural Resource Management

The relationship between natural resources and disasters is well known. Inefficient management increases vulnerability to extreme natural events and may considerably influence a disaster's impact. Floods and landslides, for instance, are largely the result of excess rainfall, previous deforestation, river sedimentation, lower soil absorption capacity, inadequate urban infrastructure, and reduction of natural water reservoirs, such as wetlands and mangroves.

Good resource management, which must be addressed and built into long-term sustainable development strategies, offers the first and foremost line of defense against extreme natural events.

Critical Basin Management and Reforestation

There is a need to reforest, manage, and protect critical areas in major regional watersheds, such as the Lempa and Choluteca Rivers. Protecting, maintaining, and providing value to regional basins will help reduce sedimentation, improve soil absorption capacity, decrease floods and landslides in agricultural areas, reduce losses from forest fires, and guard against droughts and desertification. Additionally, taking care of regional basins will increase drinking water quality and quantity, protect hydroelectric power generation potential, buffer damages to coastal ecosystems, protect the unique and valuable biodiversity in the region, and maintain a natural balance between agriculture and forestry. The report of the XII RESSCA, held in Panama in August 1996[13] and called "Environmental Health in Central America: A Future Vision in the Framework of Integration," points out that, despite efforts by Central American governments, "there are currently over 15 million people in the region without any sanitarily safe and systematic water supply, this being the reason why diarrheas from intestinal infections continue to be among the top five causes of disease and death in Central America."

It is possible to create the necessary conditions for private sector management of forests in convenient areas and for public (or nonprofit) management of critical protected areas. Activities may be based on the long-term field work and policy recommendations submitted for the Mesoamerican Biological Corridor project, conducted by the Central American Commission on Environment and Development. The Corridor was created by the Alliance for Sustainable Development (ALIDES) to foster development and consolidation of activities that strike a new balance among the region's population sustenance needs, the prevailing economic dynamics, and natural resource potential, in accordance with ecological, economic, and social criteria.

The idea is for the Corridor to be "a land use planning system consisting of wilderness areas under special management plans, core, buffer, multiple use, and interconnection zones, organized and consolidated to provide a set of environmental goods and services to the Central American and global society . . . (promoting) investment in natural resources conservation and sustainable use . . . " (adopted as a resolution of the XIX Regular Central American Presidents Meeting).

Wetland and Coastal Area Recovery and Management

Mechanisms must be created to protect, manage, and restore priority wetlands and coastal ecosystems, such as mangroves. These ecosystems, natural barriers against floods and coastal rainy spells, offer effective protection from sudden rainy spells and floods by acting as a major buffer for coastal infrastructure, agriculture, and human settlements. They are also critical to the health and well being of aquatic ecosystems that support fisheries, tourism on the coasts, and migrant species. These essential areas are being rapidly destroyed (directly and indirectly) by a variety of commercial activities, physical changes in river courses, river sedimentation, and agrochemical run-off.

13. The meeting of the Central American Health Sector (Reunión del Sector Salud de Centroamérica) involved political and technical authorities of the region's health sector.

Land-Use Planning

Planning land use by man goes hand in hand with natural resource management. By combining risk mitigation and land-use planning, vulnerability to disasters will be reduced and the short- and long-term feasibility of investments and communities will be improved. Fragile areas need to be protected against disasters through respecting, managing, and declaring them as reserves. In many instances, this will require investment of financial and human resources, in addition to political will. State powers, at both the national and local levels, should convey "positive" signals and show a willingness to fulfill plans.

Such effort has resulted in a number of guidelines and criteria to make sure land-use will be optimal in the long term. Current land-use patterns and practices leave people and property subject to risks. Significant implementation of land-use planning will lead to better natural resources management, safer human settlements, and a more widespread risk management consideration in development decisions.

Resources should be applied to include a more complex vulnerability analysis in national plan design and to train national planning officials to take vulnerability into account. Such a program should also consider the priorities and mechanisms set forth in the Mesoamerican Biological Corridor, as discussed earlier.

Municipalities and other government authorities are in the best position to make decisions about land use. Actions in this field should include the training of public and private sector leaders, at the national and local levels, in land-use planning techniques that build vulnerability mitigation into planning processes. Resources will be allocated to develop tools, techniques, and training, at the national level, and to impart programs throughout the region.

Infrastructure Planning and Construction Practices

Any kind of infrastructure—transportation, energy, communications, roads, wastewater, and storm water systems—is vulnerable to severe natural catastrophes. Infrastructure has direct and indirect impacts on the serious-

ness of a disaster. Excluding the likelihood of severe events in designing and siting decisions could destroy infrastructure and entail dangerous secondary effects. For instance, a deficient sewage system could easily become overburdened in case of floods, discharging wastewater on the surface and in drinking water reservoirs, thus involving potentially serious risks for people. Roads destroyed by earthquakes or floods may isolate areas in need of relief during disasters. Ports face a particular risk of sedimentation during rainy spells.

Decades of efforts have created relatively high-quality construction codes and practices. Nevertheless, these laws and regulations often are not implemented or enforced. Regional experts agree that a serious effort to teach, apply, and periodically evaluate construction codes and practices will significantly reduce vulnerability to various risks, including direct disasters such as fires and collapse.

Educating people to be more aware of the importance of complying with established standards, strengthening local government enforcement capacity, and designing clear mechanisms to assign civil and criminal liabilities in case of noncompliance, are actions that need to be taken in order for construction codes and standards to have a positive effect.

Productive activities, with proper compensation, are the immediate source of families' economic and social growth and give individuals a sense of control over their own destiny. In the face of the multiple threats to Central America—and particularly now, in view of the havoc caused by tropical storms and Hurricane Mitch—there is a need to create and strengthen the economic and productive safety net by guaranteeing productive sectors' access to production means, jobs, and domestic, regional, and international markets—with special emphasis on micro, small, and medium-sized businesses, the main source of income to the most vulnerable Central American sectors.

Human Settlement Relocation Programs

A priority in any development scheme or model is safe housing for every family. This is a basic need directly related to all other elements of individual, family, and social welfare. Thus, safe housing is an ethical and practical requirement of sustainable development strategies. To meet this goal, adequate financial mechanisms should exist that allow all social sectors a solution to their housing problems. For those without access to such schemes, due to poverty or disability, a policy and a mechanism must exist to take care of them as a part of social security.

The housing finance market in Central America is underdeveloped, and

social safety nets have proved to be inadequate in solving the problem of shelter for the poorest. Housing was a major problem before Hurricane Mitch and worsened thereafter. According to ECLAC, 93,537 houses were destroyed and 174,470 were damaged by the effects of Hurricane Mitch; estimated damage in the housing sector was US$591 million.

"We know how and where to build homes and structures to avoid fatalities, injuries, and destruction of property. So, if we know this, why do so many people—most often the poor—die? And why do so many others remain homeless? They do so because the poor do not possess this knowledge, share this understanding, benefit from a social safety net, or enjoy the opportunities of choice. What is lacking is not technical know-how on how to build a safer home, but rather access to it" (Friday 1999).

However, housing is expensive and this compounds the problem, especially in societies with very scarce financial resources, like those of Central America. Poverty often leads populations to occupy vulnerable land on hillsides and near rivers. Thus, compensatory housing programs, mitigation funds, reconstruction resources and the like, should place particular emphasis on relocating entire populations currently housed in highly hazardous areas (see Figure 18-5).

When resources are scarce and unemployment tends to increase, self-help construction programs are an interesting option. However, such construction programs should include previous training and adequate supervision, in order to build safe houses. If done successfully, the people involved (including many local craftsmen) will gain both employment and increased knowledge of more adequate construction techniques.

Risk mapping to identify vulnerable zones in a region known for multiple threats, such as the case of Central America, has very high economic and technical costs. Displacing and relocating population groups, according to a land use planning policy stemming from identification of high-risk areas for human activities, is also complex, in economic, political, social, cultural, and productive terms. Transparency in choosing new settlements and selecting target groups is fundamental, as well as creating a series of instruments to materially discourage or prevent families from returning to their old homes or moving to new settlements in other vulnerable areas.

Understanding and including cultural and social relations variables is basic in a relocation policy—these should be articulated along with the above-mentioned set of social safety policies and employment sources. Those linked to small and medium-sized businesses—particularly if they remain nearby—will continue to be a pole of attraction to vulnerable areas. If they move far from their market, they may face increased distribution and logistics costs, thereby reducing their prospects of selling their products.

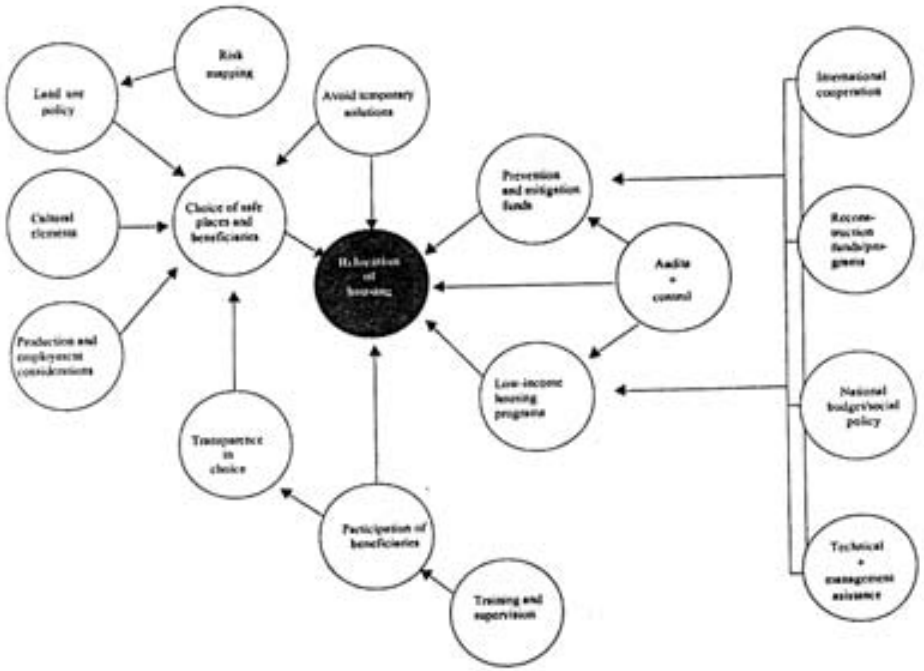

Figure 18-5. Activity System Related to Human Settlement Relocation

In the aftermath of a disaster, Friday (1999) is clear about the inconvenience of temporary shelter solutions. They are expensive, create dependencies, are often inappropriate to the climate, and sometimes ignorant of cultural realities; they can pose unsafe social environments, too often become permanent, and represent a less-than-optimal use of donor funds.

- *Temporary shelter solutions are expensive:* " . . . the relative cost of the temporary solutions . . . is enormous in comparison with permanent solutions. Put toward permanent housing solutions, much of the financing of the temporary shelters could [do] wonders."
- *Temporary shelter solutions create dependencies* "The provision of shelter *for* people tended to create the expectation of future free assistance. . . . "
- *Temporary shelter solutions are often inappropriate to the climate:* Materials coming from the United States and other donors were inappropriate to the climate. They made the homes hot during the day and cold at night. Some provisions included igloos and tents. There were many complaints and virtually no demand component to the assistance.
- *Temporary shelter solutions ignore cultural realities:* Many temporary shelter sites provided water facilities that were culturally inappropriate. There were cases where latrines were provided and never used in the six years from the date of the earthquake to that of the evaluation.
- *Temporary shelter solutions can pose unsafe social environments:* Some of the shelters were essentially group houses in which nonrelatives lived together, causing many complaints and friction.
- *Temporary shelter solutions all too often become permanent:* Many of the temporary shelters evolved to permanent housing with improvements made of the properties. The layout of "temporary camps" should incorporate the possibility that they will evolve into permanent settlements; they must consider adequate space per family and a strategy that will discourage seismically vulnerable rowhouses and other patterns.
- Temporary shelter solutions represent a less-than-optimal use of donor funds.

An activity system like the one shown in Figure 18-5 can be used in most of the proposed programs aimed at strengthening the networks, particularly in those cases entailing direct fund transfers.

Economic and Productive Safety Net

Economic and social stability should be the main objective, at the stage following a natural disaster, in order to prevent a disaster's direct damages from increasing as a result of economic crisis, and to create the appropriate conditions for reconstruction and economic growth. To this end, a careful economic policy that fosters private and public investment is needed.

Creating a favorable economic environment to rebuild and transform Central America after Mitch requires infusing fresh resources directly into the most affected areas, focusing on small and medium-size producers. Small and medium-size (agricultural, industrial, or commercial) businesses are the vehicles that may enable most victims to resume their productive activities, overcome the current crisis, and set out for personal and family recovery process.

In view of Mitch's impact, building this net requires a series of instruments and actions to:

- Secure fresh resources for supporting micro, small, and medium-sized businesses, to make them catalysts of economic and social growth.

- Facilitate either direct or linkage participation of micro, small, and medium-size businesses in regional and international trade.

Within the first group, direct assistance from the international community, deep reduction or cancellation of Honduran and Nicaraguan foreign debt to release resources for this sector, and attention to migratory phenomenon problems and opportunities are important.

The second considers access to international markets as a production and risk diversification mechanism and as a source of foreign exchange and best practices in production and marketing; developing regional logistic capacity as a source of market integration and expansion and to remove the trade barrier imposed on small and medium producers and merchants by such an onerous and fragile system as the current one; and the need for financial instruments to guarantee credit and disaster insurance in Central America.

Redirecting Fresh Funds to Micro, Small, and Medium-Sized Businesses

Re-establishing economic and productive stability in countries impacted by huge disasters, such as Hurricane Mitch, requires a considerable amount of long-term funds. These would have to come from international solidarity, particularly for countries such as Nicaragua and Honduras, since otherwise the already weakened capacity for future growth would be jeopardized. Governments and financial systems should be furnished with the necessary resources to rehabilitate basic services and basic minimum infrastructure required by the population and the productive sector. Among other things, there should be available capacity to finance private sector projects related to public works implementation, productive infrastructure, foreign trade, and other areas identified by governments, the private sector, and civil society. In addition to their positive impact on restoring production for self-consumption and trade, project development should be a direct source of employment and economic activity.

As part of the INCAE/HIID/CABEI Regional Project for Central American Competitiveness and Sustainable Development, a series of activities were developed with the region's private and public sector to identify and study those clusters whose internal dynamics offers significant growth and job generation potential.[14] Promising sectors, among others, turned out to be tourism, export and value-added agribusiness, and regional textile industry. A major portion of these resources could be targeted on small and medium-sized businesses

14. Each corresponding study was carried out using the conceptual models and methodology developed by Michael E. Porter of Harvard Business School.

that are either part of these clusters or suppliers to cluster major players. This would enhance the likelihood of an adequate return on investments and increase these industries' ability to create more jobs and/or better income.

The Foreign Debt of Honduras and Nicaragua[15]

Before Hurricane Mitch hit Central America there was clear evidence that Honduras and Nicaragua needed a drastic reduction in their foreign debt burden if they were to grow at a satisfactory and sustainable rate for a long period of time. Per capita income in Nicaragua and Honduras is about one-fourth of Panama's and Costa Rica's, whose incomes, in turn, are about one-fourth of the United States'. Under the conservative assumption that population will grow at 2.5 percent per year, Honduran and Nicaraguan GDP would have to grow at a constant rate of about 6 percent per year for 40 years, just to reach the actual per capita income level of Costa Rica and Panama.

Analysts have pointed out that foreign debt overburden acts as a high marginal tax rate that discourages investment and economic adjustment (Krugman 1988; Sachs 1989). This argument, known as the foreign debt Laffer curve, suggests that a reduction in foreign debt could be extremely appealing to both creditors and debtors, since heavy foreign debt imposes strong restraints on debtor country development and limits country capacity to service the debt. In economies having these characteristics, the debt issue has a decisive impact, if it is reduced and if already scarce public resources are reorganized around developing and strengthening safety nets and policies to reduce or eradicate extreme poverty. Hurricane Mitch's destructive force in Honduras and Nicaragua has further worsened the state of affairs, making the need for substantial debt reduction in these countries even more apparent and urgent.[16]

The Migratory Situation in Central America[17]

The subject of migration has many facets. From this chapter's perspective, what matters in particular is the remittances sent by those working abroad,

15. This subject is developed in further detail by Esquivel, Larrain and Sachs in Chapter 7 of Volume 1 in this series, *Economic Development in Central America: Growth and Internationalization.*

16. In both Honduras and Nicaragua, foreign debt size had already climbed up to unsustainable levels. In 1996, total debt service payments in Honduras and Nicaragua accounted for 29 percent and 24 percent of exports of goods and services, respectively.

17. Most of the information used in this section was provided by Silvia Olego, expert on migratory issues, upon specific request to support preparation of the document "Strategy for Reconstruction and Transformation of Central America after Hurricane Mitch."

their effect on poverty, and Mitch's negative impact as an element that could become the trigger of mass migrations, such as wars were in past decades.

In migratory terms, Central America has experienced in the last two decades a strong growth in the number of emigrants and unprecedented population displacements, as a consequence of political turmoil and armed conflicts in El Salvador, Guatemala, and Nicaragua. In 1990, the number of Central American emigrants reached 1,264,335, with 87 percent of them residing in the United States.

Remittances are major sources of investment and support to families and communities (see Table 18-5), as well as being important to economies in the region, particularly El Salvador, Guatemala, and Honduras. In these countries, remittance contribution to poor household survival is a significant reality.

For instance, data from El Salvador reveal that, in 1997, around 15 percent of households received remittances from relatives living abroad, approximately $348 per person per year. Of all households in El Salvador under the poverty line, 40.2 percent received remittances from migrants in 1997, thus proving remittance contribution to poor family survival, a situation that can be generalized to the other countries in the region.

A problem faced by migrants is the high cost of transfers (in some cases, up to 20 percent of the transferred amount). Cost reduction, combined with new strategies to encourage a productive remittance use, may be a form of complementary contribution to the local and community development process.

The effects of Hurricane Mitch magnified, at all levels, the various factors determining and explaining international migratory movements. These have widened social and economic development gaps, unemployment, underemployment, and poverty levels, the precarious living conditions, etc. These, combined with the inability of ecosystems in the affected areas to accommodate population and activities, will surely be factors in a sharpened and reinforced high population mobility, particularly in countries with the greatest damages.

Migrant traffic in general makes such subjects as illegal aliens, U.S. migration legislation, and deportation relevant issues. "Legalizing" aliens might allow them not only to increase their income and, thus, possibly expand their flow of funds to their poor relatives, but also, by being economically active, they become a trade link and open up market opportunities for regional producers, thus galvanizing economic activity, production, and income levels on both sides of borders.[18] While this kind of migration is difficult to quantify because of its very nature, the U.S. Immigration and Naturalization Service (INS) estimated that, in 1996, 54 percent of the 5 million illegal aliens in the United States came from Mexico (about 2.7 million people) and over 13 percent were from Central America (El Salvador: 335,000; Guatemala: 165,000; Honduras: 90,000; and Nicaragua: 70,000).

Table 18-5. Family Remittances as a Share of GDP

	1993	1994	1995	1996
El Salvador	14.3	16.1	16.1	16.0
Guatemala	2.0	2.6	3.3	3.2
Honduras	1.6	2.1	3.0	3.0
Nicaragua	1.5	1.7	4.0	4.6

Source: ECLAC. Uso productivo de las remesas. LC/MEX/662. September, 1998.

On the other hand, adverse conditions in the region and very restrictive policies in receiving countries would also turn aliens into a marginal population, incapable of coming out of poverty, not to mention supporting their relatives in Central America.

Infusing fresh resources is urgent, but it is also contingent on circumstances. Maintaining a positive resource flow toward the most vulnerable sectors and firms will depend on a set of actions to let them be fully immersed in well-compensated productive activities.

Access to International Markets

Within the group of actions needed to build an economic and productive safety net after natural disasters, four can make a significant contribution:

1. Better access to developed markets.
2. Increased logistics capacity and efficiency.
3. Strong financial systems to support production activities and investment in micro, small, and medium-sized businesses;
4. A mechanism that offers insurance against disasters in the region, provides protection, creates incentives to reduce vulnerability, and allows economic instruments to finance recovery.

Central America's future is linked to its foreign trade. Since the early nineties, Central America has sped up the transformations of its economic devel

18. Within the framework of the huge disaster caused by Mitch, actions to be taken by Canada, Mexico, and particularly the United States are especially relevant. The example of Costa Rica must be highlighted, because, despite its economic and social difficulties, it decreed ample amnesty for Central American citizens residing illegally in Costa Rican territory. Through this measure approximately 300,000 aliens (according to official estimates), mostly Nicaraguans and almost 10 percent of Costa Rican population, will be able to legalize their migratory status

opment model to allow for sustainability of peace and democratization processes fostered in the region during the previous decade.

One of the pillars of the strategy aimed at supporting changes is the export promotion and trade-opening policy, understood as the best choice for the Central American community to become fully inserted in international trade and globalization advantages, thus improving the standards of living of millions of Central Americans. This is also seen as an opportunity to diversify production and, hence, risk. Reliance on a few crops concentrated in disaster-prone geographical areas results in the risk of a greater crisis created by unemployment and the collapse of economic structures directly and exclusively depending on these activities. Honduras' recent experience of losing its banana plantations illustrates this sort of vulnerability.

A trade-opening policy for Central America could involve four elements:

1. Reactivation of the regional trade integration process.
2. Subscription of multilateral trade discipline under the Uruguay Round Agreements managed by WTO.
3. Negotiation of bilateral, trilateral, or regional Free Trade Agreements with Mexico and the Dominican Republic.
4. Resolute involvement in the AFTA process.

The sizable damages and losses caused by Hurricane Mitch have exposed the fragility of Central American economies and have made more urgent the need for trade systems favoring access of our products to international markets.

Central America acknowledges the favorable mutual impact, both on the region's economies and on the United States, brought about by the Caribbean Basin Initiative launched by President Reagan in 1982 and elevated to the legislative level in August 1983 as the Caribbean Basin Economic Recovery Act (CBERA). The core of the program is eliminating import tariffs on a wide variety of products exported from member countries, thus promoting domestic and foreign investment in nontraditional production sectors and diversifying member country economies.

In 1986, the United States implemented a Special Access Program (SAP 807-A) for textiles and apparel made up of materials manufactured and cut in the United States. The program benefits are not revealed in terms of eliminating tariffs, but rather in establishing more liberal quotas, known as Guaranteed Access Levels (GALs). This program is known today as SAP 9802.

In 1990, the United States Congress passed a CBERA Expansion Act, as part of the Customs and Trade Act, expanding the benefits and eliminating any future expiration date. Subsequent revisions were made in 1991 and 1992. As a result of these legislative and administrative expansions, CBERA provides free and preferential access to most products from the region and grants quota preferences to the textile and apparel sectors under the SAP:

> CBERA has proven to be an effective instrument in furthering economic interests, not only of program member nations but particularly of the United States of America. After the first decade (1983–93) of the program, the United States had reached a US$1.8 billion trade surplus with countries in the region, compared to the deficit of over US$2.6 billion at the beginning of the program. That is to say, Central America and the Caribbean Basin countries turned out to be excellent trade partners of the United States, reducing migratory pressures due to employment problems in the region and, moreover, being a part of a U.S. trade strategy to better position some of its production sectors (particularly the textile and apparel sector).
>
> It is no surprise that the American Apparel Manufacturers Association, the U.S. Association of Importers of Textile and Apparel, and the American Textile Manufacturers Institute (namely, the major associations of U.S. producers and importers) have expressed their full support to increasing the benefits established by CBERA to member countries and matching them with those granted to Mexico under NAFTA.

Upon NAFTA's approval, however, Mexico negotiated and got better conditions for products currently excluded from CBERA, mainly textiles and apparel, as compared to the current status of CBERA countries, as well as zero–tariff-specific quotas for products subject to quantity restraints in the U.S. market and phased-off tariffs on off-quota imports of said products.

The above is a major threat to Central America, because, together with the Mitch disaster, it may divert investments, which would have a direct impact on employment (particularly in the textile area) and would result in exacerbated poverty.[19]

Developing Advanced Logistics Infrastructure[20]

Since the early 1990s, prompted by the growing globalization of the world economy and by progress made in democratization and peace processes in the region, Central American Presidents agreed to formally relaunch the Central American integration process. This was established on new bases, match-

19. In order to reduce any investment diversion from these areas, by the initiative of some members of the United States Congress and with support from the main constituencies in the U.S. textile and apparel sector, unsuccessful attempts have been made at passing legislation to match benefits received by Mexico with those granted under CBERA 9802's Special Access Program.

20. The importance of infrastructure for development and the options for Central America are discussed in Chapter 12 in this volume.

ing domestic processes of external openness with a renewed regional integration process (Summits of Antigua 1990 and Esquipulas 1991).

Through this renewed open-regionalism approach, Central America intends to show the world that it is an integrated economic area where goods can be hauled through intermodal transportation systems from one ocean to the other, without intraregional border hassles, where ports in the different countries compete to provide the best service at the lowest cost, and where goods can be delivered at one country's port, remanufactured in other country, and shipped from a third country's port, using any member country's national transportation system.

The first step in the right direction is building a modern physical infrastructure, especially in the area of transportation, financed and operated by the private sector, if possible and relevant.[21]

Before Mitch, Central American governments were considering, to various degrees, a new approach to quickly create a liberal regulatory framework for the service sector (particularly transportation and other related cargo-moving businesses) and to set the right foundations for a Central American logistics service sector that effectively contributes to market integration, and whose costs do not discourage production and regional and extraregional trade.

International production and trade practices demand a new generation of infrastructure, known in the technical literature as "Advanced Infrastructure," where information and communication technology combines with basic transportation to create an improved service capacity and enable businesses to respond to competitive pressures for shorter production cycles and better customer service. In addition to technology-induced improvements, the new infrastructure generation is based on the growing importance of value-added services linked to transportation. In this sense, service providers and services themselves are integrated into the Advanced Infrastructure, now oriented to the demand side, rather than supply's, including design considerations and specific works tailored to user needs.

A concrete way of crystallizing this vision and giving a qualitative leap in the subject of trade-related infrastructure is the megaproject known as the Central American Logistics Corridor,[22] consisting of (see Figure 18-6):

21. Guatemala and Costa Rica have already shown progress in this field, particularly in highways, ports, and airports, through public works concessions, onerous usufruct, and interested management administration. Nicaragua has enacted legislation for road concessions.

22. The project is based on the results of a technical, financial, and legal pre-feasibility analysis carried out by INCAE, upon CABEI's request, according to an agreement reached at the Tegucigalpa Presidential Summit in January, 1997.

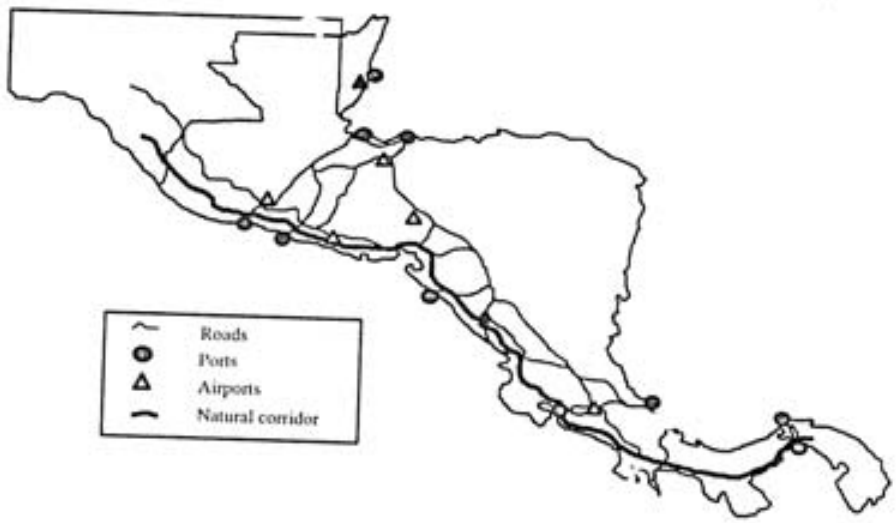

Figure 18-6. Central American Logistics Corridor

1. The Central American Pacific Corridor, also known as the Natural Corridor. It involves reconditioning, reconstruction, and construction works.[23]
2. The Pan-American Highway Reconstruction/Reconditioning. This highway would act as an alternate route, creating redundancy in the system and, thus, reduce the productive vulnerability brought about by the threat of interruption in trade roads, that are also used in relief actions during emergencies or disasters.
3. Construction/reconstruction/reconditioning of major corridors connecting ports, capital cities, and major economic and production centers of each of the five countries. These would be the main "links" interconnecting small and medium-sized exporting and importing businesses to major logistics activity centers through domestic networks.
4. Customs facilities. A fundamental element in logistic corridor operations is modernizing border facilities and, in general, customs procedures at any logistics activity center.
5. Trade expediting. Reforms being implemented on customs and logistic service businesses (transportation, customs brokers, multimodal operators, etc.) need further deepening. Similarly, developing the necessary information technology to support these activities (computer science, telecommunications, electronic document transfer, etc.) is required.[24]

23. See Chapter 12 in this volume.

24. In this regard see Barahona (1999).

Developing Microcredit Mechanisms for Individuals and Small Businesses

Individuals and businesses most seriously affected by disasters face the least possibility of recovery due to lack of liquidity. A community's recovery capacity is mainly based on its ability to secure the necessary resources to "dampen" extreme events and recover from them. Microcredit has turned out to be an effective mechanism in solving short-term liquidity problems in poor communities. Resources should be allocated to evaluate and design specific microcredit models in vulnerable areas. They should also be used as seed capital to establish "emergency microcredit mechanisms."

Insurance, Reinsurance, and Catastrophe Protection

Although some areas in the planet are more prone to disasters than others, no country is exempt. In 1996, over 600 natural events worldwide caused US$50 billion in damages, $7.9 billion of which were absorbed by insurance and reinsurance companies. Countries such as France, for instance, offer their citizens total unlimited coverage against floods, while other countries, such as Germany, do not provide any kind of protection. Other countries in Europe are trying different systems, with coverage ranging between these two extremes (Miesel 1997).

A region like Central America requires protection systems, especially for small productive units, so they can recover quickly and minimize the damages caused by natural events. However, a scenario involving small and highly vulnerable taxpayers will necessarily require an innovative search and careful assessment of systems that can offer protection and financial instruments that reduce vulnerability.

Instruments used in preventing or lessening natural disaster consequences can be classified into two categories (OAS 1996):

1. Risk mitigation and vulnerability reduction measures adopted before a disaster, including national funds for natural disasters.
2. Economic instruments, such as insurance, to finance reconstruction costs.

The first category offers more efficient action, although the second may reduce economic volatility by spreading risks more widely. Costs in the second category (insurance and reinsurance premiums and commissions) are influenced by what is done in the first category.

In Central America, as in many other parts of the American continent, insurance and reinsurance market operations are not contributing to disaster prevention or mitigation. Similarly, information on risks, threats, and vulnerability is not taken into account when determining insurance policies. Moreover, the majority of the region's most vulnerable populations are not protected by any kind of insurance.

Insurance companies operating in the region should accurately assess their risk portfolios to show reinsurers their true and actual exposure and hold reinsurance to reasonable costs. In order to carry out such an assessment, detailed and disaggregated information on risks, dangers, and vulnerability is needed, taking damage frequency into account, according to the different types of threats to specific sites.[25]

The restricted coverage policy is usually designed and imposed by foreign reinsurance companies, with high premiums and commissions that directly affect policyholders.

Obviously, maintaining industry sustainability and protecting public interest requires that all parties involved—namely, governments, insurance and reinsurance companies—play an active role in promoting vulnerability reduction measures. In developing this process, technical and financial assistance from international institutions is needed.

Central America should join Caribbean efforts in establishing regional reinsurance pools, operated by international reinsurance companies with enough capacity to provide the capital needed to cover the large costs brought about by natural disasters. A critical success factor in this effort would require an apolitical financial fund management and would probably be best managed by private firms with ample knowledge of this industry. For initial liquidity or the establishment of some sort of subsidy, support from external development agencies and multilateral financial institutions is likely to be required.

States play a major role in reducing vulnerability by identifying risk-prone areas and limiting their use; identifying land and incentive use; using construction codes and materials specifications; reinforcing existing structure; using protection mechanisms; and developing special funds to protect what private insurance will not protect. Private insurance would mainly protect public infrastructure and the private sector (see Figure 18-7).

A first step could be contracting out a study to identify and recommend sustainable methods of increasing availability of catastrophe insurance at af-

25. As in many other fields in Central America, available information is likely to be insufficient. Therefore, insurance and reinsurance companies should earmark resources to produce and use such data.

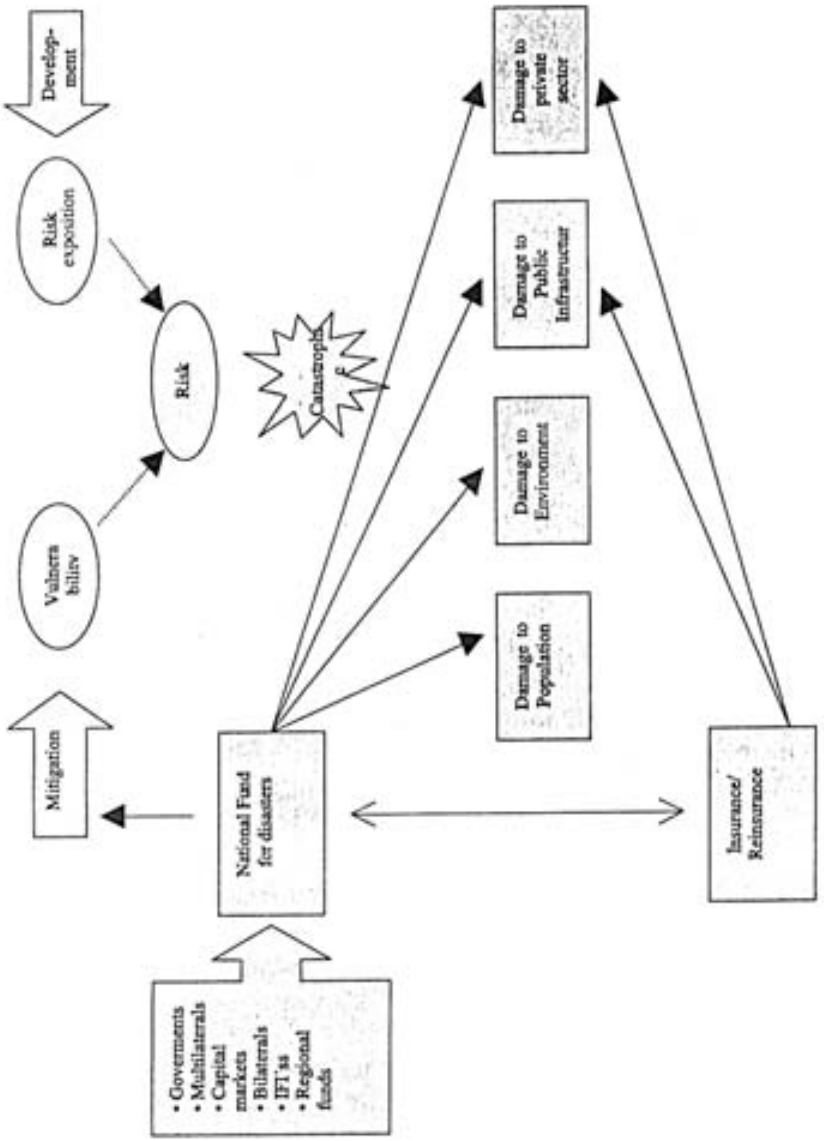

Figure 18-7. Insurance on Public Infrastructure and the Private Sector

fordable prices, including measures to reduce premium volatility, coverage limitations, and vulnerability to disasters.[26]

Lessons Learned

Some lessons were learned in the wake of Hurricane Mitch and during the following weeks. At that time rehabilitation efforts were combined with national and regional efforts to develop a reconstruction strategy, as well as plans for a variety of projects. The identification of projects by regional institutions and governments was both intense and complex. While regional institutions proposed projects in six different areas that cost US$1.4 billion, political process and focus on national agendas reduced this amount to US$116.7 million.[27]

Why was Mitch so devastating?

- A combination occurred between extraordinary natural forces and extreme regional vulnerability.
- Natural fierceness has been felt in previous times and will continue to be experienced through the El Niño and La Niña phenomena, as well as through other hurricanes, volcano eruptions, earthquakes, etc. These events have always occurred and will continue to occur.
- The destruction of the environment, particularly in the last few decades, served as catalyst to the destructive power of Mitch.
- Extreme poverty and the lack of risk-free production schemes led human groups to settle in high-risk areas.
- All of the above is compounded by the lack of an organization responsible for planning, early warning, and attention in emergencies.
- In a word, no strong safety net was in place to protect the most vulnerable members of the population. This resulted in a huge numbers of homeless, injuries, and death.

26. Said study could consider, among other things: analyzing current successful models (such as the French); creating a catastrophe trust fund, structured by insurance companies; creating a multinational/regional reinsurance pool; developing risk maps and actuarial studies that include probable loss estimates; identifying coverage classifications for current needs; identifying measures to reduce actual vulnerability; projecting capital needs, potential sources, and long-term financing scenarios; identifying legal structures and administrative, financial, and operating environments; recommending steps to improve reinsurance practices, guaranteeing access to world-class companies.

27. Copy of the project proposed by the Integration Institutions of Central America can be obtained from Secretaría General del SICA in El Salvador or in digital format at www.sgsica.org.sv/incae.

In reconstructions after such a disaster, what steps can be taken to use scarce resources wisely for reconstruction?

1. Recognizing that international aid is always less than the amount of the loss, and much lower than the cost of reposition—the needs for reconstruction and the social pressures compounding the effects of the disaster tend to drain the resources earmarked for development.
2. Step 1 leads to minimal investment in temporary solutions and to concentration of resources on integral long-term solutions, focusing on the most vulnerable human groups. A special emphasis will be required to develop and strengthen institutions and mechanisms making up the extended safety network of each country.
3. The activity of both old and new actors increases in reconstruction times. Each actor follows its own agenda, based on different objectives, perceptions, and solutions for the same groups of problems and communities. This leads to a need to develop mechanisms facilitating information flows and to coordination mechanisms required to avoid useless competition and needless replication of efforts. New information technologies can play a very useful role.
4. The convenience of addressing the corruption problem in an early state, setting up prevention and enforcement mechanisms through the involvement of beneficiaries, NGOs, civil society and developing capacity in those institutions that should be responsible in this matter.

Any development model should include the following principles:

Focus on the most vulnerable human groups. Concentrate resources and abilities on rescuing the poorest of the poor from their extreme vulnerability. There is a collective responsibility resulting from the number of avoidable deaths in this and other catastrophes. Many years of social, military, and political instability were driven by decades of exclusion of the population at large. These groups must be given priority and a careful design must be made of a number of activities and mechanisms to make a transparent and effective process, like those previously suggested. The participation of beneficiaries, the development of control mechanisms, the involvement of civil society in providing monitoring and follow-up—all are essential to ensure that no abuse takes place.

Create a link between disasters and sustainable development. The reduction of vulnerability must be built into every dimension and action of development. A conceptual leap is required to link the concepts of sustainable development, competitiveness, fairness, and reduction of vulnerability. This proposal, known as the extended safety net, offers a point of encounter for analysis. However, more in-depth work is required. Conceptual frameworks must be developed, divulged, and made operational in the daily life of families, business firms, governments, and cooperating agencies. This action must begin now, when memories of Mitch are still recent. International agencies can fund and support this effort as a way to enrich their own frameworks of reference in terms of development.

Develop institutional capacity. An essential is to concentrate resources in strengthening institutions, particularly those responsible for anticipating and mitigating disasters and those directly related to social, economic, and environmental protection networks. The proposals developed by Central American institutions, under the coordination of a General Secretariat of the Integration System and the leadership of Central American ministers designated by their governments, should be strongly oriented toward the following:

Development of technical-scientific knowledge of menaces
Strengthening of menace monitoring and forecast organizations
Adoption of watershed as unit of reduction of vulnerability to elaborate development plans
Development of a prevention and mitigation culture among the population
Improvement of emergency planning and management
Reduction of vulnerability of social and productive sectors
Mitigation of vulnerability of regional integration

In more general terms, the long-term creation of institutional capacity is an essential element of the process to create knowledge and develop the analytical skills required for progress in all areas. These include the economic, social, environmental, and political fields. They also include individual, family, business, community, local, national, and regional levels. The reconstruction processes must be seen as an opportunity to strengthen the administrative and management capacity of both the public and the private sector.

Agree on a regional and national agenda through a holistic, integrating concept. The reconstruction agenda cannot be different from the development agenda, as no additional source of income exists for the latter. All reconstruction must be linked to a major long-term action related to development. Reducing vulnerability must be a priority; however, that means transferring resources to activities for which they are not usually earmarked. This will affect the traditional distribution of riches and the power balances established

prior to the disaster. Therefore, to succeed in the new democratic context, the implementation of these actions must begin with an important effort to negotiate with and convince groups with the highest concentration of economic, intellectual, and political power.

The above results in the need to carefully design the reconstruction/transformation process for each country of the region. This is of paramount importance for external agencies and donors, because what can fit well in a Central American country may be inappropriate for another. In spite of striking cultural, historical, and natural similitude, two variables determine the effectiveness of the development mechanisms between countries: the institutional development of markets and the capacity of governments.

The transformation/development strategy expressed in the agenda must include a clear vision of the institutional transformation, the creation of new institutions and demise of others. Without a transformation/development strategy, the development of sectoral plans cannot be optimal; therefore, the existing scarce resources for recovery, vulnerability reduction, and development will be wasted. The strategy must show priorities and a sequence for the actions to be taken. For instance, it can strengthen the government control systems and promote supervision mechanisms (such as international transparency or the establishment of an ombudsman for humanitarian assistance) before generating large funds to mitigate and manage natural disasters.

The definition of a national strategy for a Central American country or the region cannot be achieved on paper in some Washington office or that of any Central American technocrat. A strategy for the next quarter of a century must result from consensus.

Let us review this for a moment. Mitch has kept the Central American countries apart because they see themselves as competitors in the overdemanded market for international aid, and the regional institutions do not have the strength to reverse this situation in the short run. Governments were not fully ready to manage such a crisis, and the tragedy makes it difficult to think strategically. The institutions, as previously discussed, are technically, economically, and politically weak. Many nations in the isthmus have recently returned to democracy, and many citizens and institutions are not politically mature. All the necessary elements to develop a regional and national strategy are lacking. Who, then, can develop a strategy based on a necessary consensus to validate and implement it? The answer is still the Central Americans; however, it is important to recognize this limitation since it indicates an opportunity and convenience to allocate a share of the resources from the donor community and multilateral agencies to support and finance an expensive, difficult, and essential process to develop and promote a national and regional strategy.

Developing a reconstruction/transformation/development strategy incorporating a reduction of vulnerability as a vital element, involves a change, most of the time radical, in Central American thinking, and to modify it is a money-, energy-, and time-consuming process. The difference can lie in spending resources before or after the catastrophes.

Review and coordinate the role played by all the actors involved. One of the problems Central America faces is difficult access to and distribution of information. This is both a result and a cause for the lack of coordination and of the inadequate cooperation mechanisms among agencies, sectors, governments, etc. Upon establishing the national and regional agendas and priorities, it is necessary to review competencies and allocate responsibilities among actors who can, must, or want to participate. Programs and projects being implemented and to be implemented later must include an ease of access for the national and international community so that cooperation is facilitated and the vacuums in each Central American nation can be made evident.

The funds to be allocated to the reconstruction can be an opportunity to encourage communities to organize their implementation and follow-up. The communities are closer than the international agencies, donors, and governments. The benefits derived from a familiarity with both the area and the recipients can determine project success. Moreover, community participation in one or several projects will help develop skills and commitments that result in benefits in other development endeavors. The most-developed NGOs can provide training, guidance, and supervision throughout the process.

Conclusions

Central America faces the possibility of treating the Mitch emergency as "an act of God" and, with resignation and thankfulness, start "rebuilding" what was lost. Or, it could transform its conception of social and economic development and consider this "divine act" as magnified by huge environmental damage in the past and by weak social structures characterized by inequality and marginalization, and find the means to mitigate these weaknesses.

Reducing vulnerability involves investing directly in families, through the building of primary care social networks (health, education, childcare centers, etc.). It means targeting relief, involving target populations, and trying to give a qualitative leap, regarding the way social safety has been managed so far. Reducing human resource vulnerability is the priority.

Actions proposed to build an economic and productive safety net, aimed at

strengthening and facilitating the operations of micro, small, and medium-sized enterprises (developing superior logistical capacity, better access to international markets, and catastrophe insurance), would not only be a commitment to social equity and justice, but also a qualified mechanism for diversifying risk for local, national, and regional development. These are measures conducive to reducing capital vulnerability.

Recovering the biological corridor and strengthening the institutions that should develop the vulnerability concept systematically contribute to protecting natural resources and increasing their role in economic growth.

Productivity in any country is the result of blending the efficiencies with which human, organizational, financial, and natural resources are used. Reducing their vulnerability is guaranteeing future productivity and, therefore, minimizing the impact of future catastrophic events on lives and income.

Explicitly building capacity, reducing vulnerability, and improving inclusion and equity through the extended safety net, as part of the equation for sustainable development and competitiveness, is consistent with the ethical challenge and vision set forth by the Agenda for Sustainable Development of Central America.

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