



Policy forum

Reframing disaster policy: the global evolution
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1. The social construction of disaster

A disaster is widely perceived as an event that is beyond human control; the capricious hand of fate moves against unsuspecting communities creating massive destruction and prompting victims to call for divine support as well as earthly assistance.¹ Surely these people would have acted differently had the risks been known and now they must depend on others for humanitarian aid with which to rebuild their shattered communities.

We challenge these notions and argue that, instead of helping us to understand and ameliorate the root conditions of disaster, they actually perpetuate and worsen them (Hewitt, 1997; Blaikie et al., 1994; Mileti, 1999). In an era when most relief agencies stop short of examining the policies and practices that contribute to disaster, we call for an explicit analysis of the circumstances that

make human communities vulnerable to unforeseen natural and technological events.

Disasters have become a policy problem of global scope precisely because what humans do, both in the normal course of their lives and in response to disasters, frequently magnifies the vulnerability of communities. There is a widespread failure to recognize and address connections between changes in land use, settlement policies, population distributions and the accompanying degradation of habitats on the one hand and dramatically increased levels of hazard exposure and vulnerability on the other. We propose that human vulnerability—those circumstances that place people at risk while reducing their means of response or denying them available protection—becomes an integral concern in the development and evaluation of disaster policies. We must change the policies of today that rely heavily on sending assistance only after tragedy has occurred.

Our argument is based on four premises:

- The increasing number and costs of disasters demonstrate a rate of social and environmental change that exceeds the management capacity of existing organizations
- Overtaxed management systems are exacerbated by inadequate understanding of the components and consequences of change, including impacts on affected communities
- Individuals, organizations and governments that interact in an uninformed manner create a cumulative pattern of interdependent practices that leads to

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¹For example, President Arnoldo Aleman recent called upon Nicaraguans to pray for deliverance from the consequences of Hurricane Mitch but conspicuously avoided mentioning the responsibilities of the government. See: Centro de Coordinacion para de Los Desastres Naturales en America Central (CEPREDENAC), <http://www.sinfo.net/cepredenac/mitch >

massive failures of environmental, technical and organizational systems (i.e. disasters) under conditions of stress.

- Disasters serve as evidence of the need for changes in public policy and practice and they create opportunities to redesign, revise or rebuild damaged human environments. Without such actions the vulnerability of built and natural environments in risk-prone regions continues to increase as a result of recurring damage.

Given this set of premises, the responsibility for initiating new policies and practices shifts to a range of participating actors that is wider than that which is customarily acknowledged. In this brief analysis, we place the increasing vulnerability of human communities at the center of our explanation of burgeoning global disasters. We illustrate the dynamic process of interacting conditions and cumulative practice with reference to the case of Hurricane Mitch (1998) and its effects upon Honduras and Nicaragua. We further show that our analysis, which includes information from multiple disciplines and levels of responsibility for action, leads to an interpretation of the disaster that differs substantially from the misperceptions noted above and toward new strategies for action.

2. Disaster as a outcome of existing practice

The events that led to devastation in Honduras and Nicaragua in the wake of Hurricane Mitch began long before October 28, 1998 when the storm stalled off the Atlantic coast of Honduras for five days. During that fateful period the winds of this Saffir-Simpson Category 5 hurricane diminished but the torrential rainfall (25 in. in one day) brought new problems. As the storm moved across Honduras to the mountains of Western Nicaragua it generated floods, started mudslides and washed away roads, bridges, communications, utilities distribution lines and whole villages. (Fig. 1) This was not the first time that Central America has been severely affected by hurricanes or flooding. Hurricanes Irene (1971), Fifi (1974), Joan (1988) and Cesar (1996) have caused recurring damage to the region. In 1975, a landslide triggered by riverine floods killed 2 500 people in the lowlands of Choloma, Honduras (Blaikie et al., 1994:149).² In 1998 the same area suffered severely during Hurricane Mitch. Little had changed in 23 years to make it safer for residents; little has been learned from prior events (Pulwarty and Riebsame, 1997).

² Frederick Cuny documented the same phenomenon in *Disasters and Development*. Oxford: Oxford University Press, 1983.

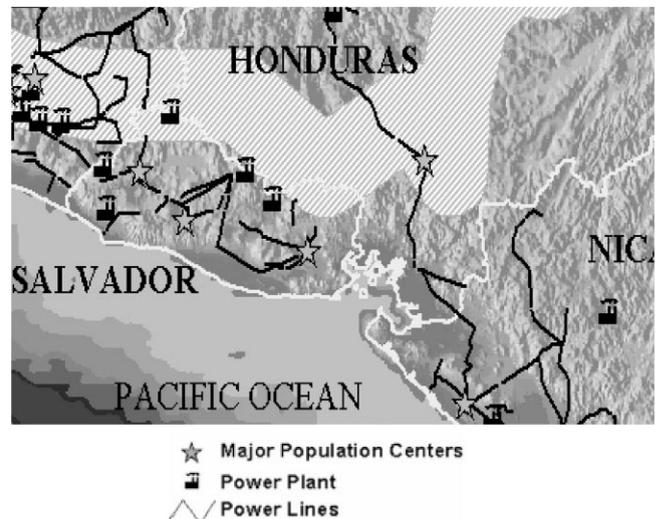


Fig. 1. Source: US Geological Survey, Center for Integration of Natural Disaster Information, 1998.

The impact of Hurricane Mitch's heavy rain was exacerbated by clearance of old growth forests in Nicaragua and Honduras. Multinational companies financed many of the coffee plantations neatly terraced into the mountainsides of Nicaragua and the banana plantations carved out of the lush coastal regions of Honduras. Both types of plantation were viewed as beneficial economic enterprises but they had the secondary effect of displacing small farmers further into the mountains where they in turn cut down forests to grow subsistence crops (Nations and Leonard, 1986; Williams, 1986; Nations, 1992; Faber, 1993; Stonich, 1993). Since 1950 this combination of land-clearing practices has led to the disappearance of approximately 53% of Nicaragua's forested land—with sobering environmental consequences.³ Nearly 3 million tons of topsoil were lost to erosion and over 200 rivers dried up. Without tree roots to hold soil in place Mitch's heavy rains caused hillsides to slide thereby destroying crops, infrastructure, villages and anything else in the way. But the long-term environmental consequences of clear-cutting land for agricultural purposes were never anticipated in the region's

³ Sources disagree about the precise rate of deforestation in Nicaragua although all acknowledge a serious decrease. The World Bank reports that forest areas declined from 7 million hectares in 1950 to 4.3 million hectares in 1998 (World Bank, Washington DC, January 9, 1999 news release). A 1997 State of the World's Forests report includes data from the UN Food and Agriculture Organization that shows deforestation rates for Nicaragua and Honduras of 2.3% and 2.5%, respectively, during the period 1990–1995. These rates are far above those that prevailed for the period between 1950 and 1999. Other sources point to a loss of 60% of Nicaragua's forest cover since 1950 (Soren Ambrose, Nicaraguan Network Environmental Task Force, Washington DC, November 28, 1998).

development plans. Potential economic losses were never calculated, nor were mitigating actions taken to reduce the harmful effects of erosion. Secondary and tertiary effects of lost agricultural production and unemployment upon human communities were not considered. Scientific data about soil profiles, the root structures of forests and local meteorological patterns were not integrated into policy decisions taken in support of economic development goals (Wiener, 1996).

Cutbacks in government spending on health, transportation and other public services also reduced the capacity of local and national governments in the affected region to respond effectively to the disaster. Combined with a severe drop in economic production the cutbacks led to a sharp decline in human welfare. For the 4.5 million people of Nicaragua the situation became particularly distressing. As stated by Sr. Porfirio Gamez (Movimiento Communal Nicaraguense) 3.6 million are in poverty; 2.6 million experience hunger; 1.1 million have no access to health care; 1.5 million youths have no access to education; 2.0 million have no access to safe drinking water; 2.3 million have no access to electricity; and 4.0 million have no telephone.⁴

The cutbacks in government expenditures were instituted in response to austerity measures required by the structural adjustment programs which were imposed by international banks as a condition for extending loans to the affected countries. These requirements created a severe conflict for the small states of Central America. The need is for international loans to build their economies but the conditions imposed by the loans weaken their capacity to meet sudden, unexpected disasters. The consequences of Hurricane Mitch proved far more devastating than expected because municipal and national governments were in a seriously weakened condition.

3. Reframing disaster as an evolving policy process

If disaster is understood as the product of a cumulative set of decisions taken over long periods, then the processes by which these choices are made become a focal point for potential change. Interacting decisions may either create increased vulnerability among the social, economic, political, environmental, organizational or technical conditions of the region, or they may reduce vulnerability to potential hazards. These decision processes operate on different organizational levels and in different societal arenas simultaneously, affecting one

another reciprocally and adding to the complexity of the operating system. The crucial distinguishing characteristic of disaster is that it is never final.

Decisions taken in response to a specific disaster become defining elements for the (temporary) resolution of that crisis, but also likely steps toward the creation of the next crisis. Disaster moves a community, a region, a governmental system from temporary state to temporary state. Reconstruction efforts intended to restore the community only to its previous level before the disaster often perpetuate the conditions that create vulnerability. Little is done to prevent the recurrence of destructive consequences. Rather, typical actions recreate conditions that make an area vulnerable to the next disaster.

All seven Central American republics were affected by Hurricane Mitch (i.e. Honduras, Nicaragua, El Salvador, Costa Rica, Panama, Guatemala, Belize). Residents often knew something about their vulnerability to natural hazards but none were aware of the degree to which cumulative economic and environmental changes had set the stage for a major disaster. Every one of these nations had experienced previous events which necessitated reconstruction and recovery programs that imposed heavy financial burdens, consumed scarce resources and diverted attention from tasks of economic development. In late October 1998, the Central American nations were still reeling from damaging effects of El Nino-related droughts and associated forest fires in 1997–1998. Such events added greatly to already serious erosion and deforestation, making the region more vulnerable to Mitch's torrential rains (Green et al., 1991). In particular they contributed to the heavy sediment loads that showed up in the region's rivers. Clearing the mud that had flowed into homes, streets, sewer and water systems became a backbreaking, expensive, and virtually nationwide task in Honduras.

Nor was the problem of past disaster burdens confined to floods and storms. The need to recover from earthquakes—such as those that affected Nicaragua (1972), Guatemala (1976), El Salvador (1986), Costa Rica (1991) and Panama (1991)—also required scarce resources that might have been used for mitigation and risk reduction. Each nation has struggled to cope with disaster in its own way, relying on assistance from the international community. Such assistance, however, has been directed toward immediate needs and has done little to address the underlying problems of vulnerability in the region. The lack of any consistent strategy for mitigating risks in an area that is vulnerable to recurring hurricanes and earthquakes represents faulty development policy.

There are some signs of improvement. At a meeting in Comalapa, El Salvador on November 9, 1998 the region's seven Presidents agreed that "it is necessary to construct mechanisms of prevention and mitigation of natural disasters with full participation of the

⁴ Senor Porfirio Gamez, Movimiento Communal Nicaraguense. Presentation to Dialogue II Conference sponsored by the Organization of American States and the World Bank, December 15–16, 1998.

communities”.⁵ By including disaster mitigation in the collective plan for the rehabilitation and reconstruction of Central America, a major step has been taken toward reframing disaster policy as a continuing process in the development of individual countries and the region as a whole. Yet, serious challenges remain. For example, watershed management is a common problem that requires coordinated action among all seven countries. Further, 90% of Central American commerce depends upon landline communications and transportation networks that were severely disrupted by *mudslides* in the wake of Hurricane Mitch. The loss of roads and bridges left farmers with no means to get crops to markets, or producers in one nation to ship goods to other nations. In newly isolated places, producers and consumers both suffered as prices for basic goods spiraled to triple their usual cost. Sections of several countries were also without power because the regional electrical supply network was seriously damaged. Indeed, the need to repair the region’s basic infrastructure is urgent for all seven Central American states.

If disasters are to be addressed as ongoing problems rather than occasional crises it will be necessary to engage national and international participants—including public, private and nonprofit sectors—in a collective effort to reduce hazards. Among others this requires addressing the following tasks: identifying participating organizations, establishing mechanisms of communication and information exchange among them, developing a set of common standards for assessing performance on the shared goal of risk reduction, and scheduling regular periods for review of existing conditions, feedback to all participants, and revision of action strategies across the region. Research has shown that specific social and demographic groups are more vulnerable to loss, or face greater difficulties during recovery from disaster. Representatives of, or advocates for, such groups as women, ethnic minorities, the disabled, the very old and the very young need to be included in the design and implementation of recovery, prevention and mitigation activities (Fordham, 1998; Oliver-Smith, 1991; Bolin, 1986; Bolin and Stanford, 1998; Peacock et al., 1997; Cutter, 1995; Enarson and Morrow, 1998).

The process of reframing disaster policy must occur within and among the Central American countries, leading to regional vulnerability reduction and sustainable development (Maskrey et al., 1998; Maskey and Peacock, 1997). By specifying a set of actions that engage participating organizations in the regular review of risk factors in their interdependent environments, responsible organ-

izations can foster a process of continuing learning and reverse the destructive spiral that has led to an increasingly fragile and threatened environment.

4. Organizational constraints on processes of disaster reduction

When the complexity of interacting scientific, social, political, and economic conditions exceeds the existing capacity for organizational control, decisions taken by local actors govern the direction of the evolving process. Yet, an integrated process of hazard reduction requires coordinated action across jurisdictional and disciplinary boundaries. Disaster reduction implies identifying and monitoring the critical points of decision across organizations and jurisdictions that avert, or lead to, disaster. Such decisions often represent years of accepted social practice and constraining premises that expose different groups within society to different levels of risk. This process of discovery is interactive. As one group changes its practices, others adapt their behavior in ways that may achieve short-term economic benefit but long-term environmental degradation. The challenge is to guide this process of discovering effective means of reducing hazards that are perpetuated by complex, dependent relationships among multiple groups and organizations into ways that are constructive rather than destructive.

In devastated Honduras and Nicaragua, actions at the local level have already initiated a collective response to the aftermath of Hurricane Mitch. Without waiting for assistance from the government or other organizations, ordinary citizens have picked up shovels, cleared homes and streets of mud, and set up shelters for the homeless.⁶ In doing so, they exhibited characteristics of self organization, that vital process of reallocating energy and action to meet new demands (Kauffman, 1993; Comfort, 1997). In the shattered environment of disaster, rebuilding life at the community level is the basic need. Local residents also represent a valuable resource that can be brought to bear on the difficult, arduous tasks of recovery and reconstruction. Enabling residents to take informed action to rebuild their lives is a vital policy alternative, one that is essential after a disaster (Maskrey, 1989). Engaging these same residents in risk reduction practices as part of their ordinary household and community management is equally important (Eade, 1998; Anderson and Woodrow, 1999). Investment in risk reduction is likely to be most efficient and effective when directed toward improving local capacity to act in coordinated ways to achieve this community-wide goal. The

⁵ The Declaration of Comalapa, El Salvador, 9 November, 1998 is posted on the Web page of the Center of Coordination for the Prevention of Natural Disasters in central America (CEPRENAC), < <http://www.sinfo.net/ceprenac/mitch> >

⁶ Larry Rowell. 1998. “Rebuilding Honduras,” *New York Times Magazine*, December 6, 66–71.

link between policy and practice in disaster mitigation needs to be established at the local level.

5. The relentless indifference of vulnerability

Hurricane Mitch showed very clearly that small poor countries are systematically vulnerable to disasters. But so too are advanced industrial societies (Mitchell, 1999). Indeed their costs are likely to be even greater because of the vast scale and complexity of their interdependent systems of communications, transportation, water, gas, electrical power, sewage distribution and major investments in buildings and physical infrastructure. For example, in Japan's 1995 Hanshin earthquake deaths (over 6000) and property losses (over \$200 billion) far outstripped the losses inflicted by Hurricane Mitch. Further, the consequences of this disaster quickly made themselves felt in other parts of the globe. Damage to the Port of Kobe, sixth largest in the world, had economic repercussions for other Asian economies that are dependent upon Japanese products and trade (Comfort, 1999). This event's secondary and tertiary consequences on the world economy can only be estimated, but the extraordinary cost of those impacts which were assessed demonstrates that large modern urban regions are also centers of burgeoning vulnerability. Other examples include Hurricane Andrew (1992) and the Northridge earthquake (1994) (Bolin and Stanford, 1998; Peacock et al., 1997). The Quebec (Canada) ice storm of January 1998 also incurred \$1.5 billion in costs—largely due to the destruction of a vulnerable electricity grid and transport system (Statistics Canada, 1998). So the problems are global in scope. Without concerted international efforts vulnerabilities and losses will substantially and dramatically increase.

6. Recommendations for action

Several initiatives that would contribute to the long-term goal of reducing disasters include the following:

1. A coordinated effort to improve the assessment of risk in a geographic place-based approach to vulnerable regions. This is now both technically and economically feasible (National Academy of Public Administration, 1998; Maskrey et al., 1998). For example, development of an interdisciplinary "vulnerability index" would provide a reliable measure of differences among communities that are exposed to similar ranges of hazards. The knowledge to construct regional geographic information systems that provide the information base for this index is already available. Among other advantages such

systems make it possible to secure accurate timely measures of environmental degradation or renewal that are connected with social, economic, political or technical changes in monitored regions. Disciplines that might contribute to this effort include: anthropology, architecture, engineering, geography, law, meteorology, public administration, public policy and sociology.

2. Multi-way information exchange systems. These increase the capacity of communities to engage in coordinated actions by making available and sharing timely accurate information about risk. Such systems lead toward "self organization" of disaster management. The set of six community demonstration projects recently designated by the US Department of Interior's National Spatial Data Infrastructure Program is an example of building capacity among a set of organizations responsible for maintaining the environment in definable local regions (Federal Geographic Data Committee Newsletter, 1998:1–2).
3. Informed action at the local level. Local initiatives to reduce vulnerability and increase community participation may be facilitated by training, capacity building and resource transfers. These kinds of efforts may require outside support and can be sustained through a network of organizations engaged in economic, social, political and scientific action and interorganizational learning (Wisner et al., 1977).
4. Maps of the decision processes for disaster mitigation, preparedness, response and recovery. Such devices would identify: critical actors at each jurisdictional level; their risk assumptions; their different types of information needs; and the design of an information infrastructure that would support their decisions. Only by making the complexities of environmental risk management explicit will it be possible to transform the destructive spiral of disaster into a learning process for responsible management of the environment (Comfort, 1993).
5. Enablement of affected populations. People who face hazards should be assisted to manage their own environments more responsibly and equitably over the long term by joining in a global structure that supports informed, responsible, systematic actions to improve local conditions in vulnerable regions. The initial vision outlined for a Global Disaster Information Network represents a first step in this direction (GDIN Task Force, 1997).

The experience of Hurricane Mitch validates the notion of socially constructed disasters. Risk reduction and hazard mitigation strategies must address the underlying practices that contribute to vulnerability. If they do not, our current response and reconstruction policies are likely to perpetuate the very disasters that we seek to avoid.

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