CHAPTER FOUR

Reconstruction

Introduction

Sudden-onset disasters - such as earthquakes and hurricanes - can destroy a country's housing stock, water and energy systems, and commercial and industrial facilities, leaving tens of thousands of people homeless. The economic effects of a major disaster will be long-term. Rebuilding often diverts capital that would have otherwise gone to increase the productive capacity of the nation, state or community.

Disasters in the U.S. and Latin America have at least one common denominator - they affect the most vulnerable segments of society. In disaster-stricken communities, it is the poor who suffer the most, citizens who typically live in the most vulnerable structures, and who have few resources to call upon to put their lives back together. Efforts to reduce disaster vulnerability are inseparable from efforts to raise development standards

Reconstruction following a disaster is increasingly viewed as an opportunity to take measures to reduce the risk of future disasters, to improve the disaster resistance of physical structures, and to ultimately raise the standard of living of the impacted community. Reconstruction can be a vehicle for change.

The premise of this chapter is that reconstruction can, and should be viewed as a process that unifies recovery goals with development goals (while still meeting the immediate needs of the population) In this context, planning for reconstruction should be an on-going process, closely integrated with national or community development planning. The first section examines some of the key aspects of managing disaster recovery and reconstruction, in both the U.S. and Latin America.

Managing Recovery and Reconstruction

Planning for recovery and reconstruction - including how the process should be managed - should begin before the disaster occurs. The key players in the development process are also among the key players in pre-disaster planning for recovery - public management, urban planning, building inspection, civil engineering, structural engineering, public safety (fire, police, emergency management), public works, community development (including housing), law and program and project management. The actual membership of a recovery management organization will vary from jurisdiction to jurisdiction, but the *critical factor is that the group be able to work together as a team.*

Reconstruction is a predictable process - the problems and issues can be anticipated, potential solutions can be worked out in advance. Invariably, those jurisdictions that are positioned to become pro-active in the reconstruction phase (as opposed to reactive) have the following: strong local leadership; understanding of authorities (and limits to authority); a strong network of community based organizations (CBO's) that are linked to the vulnerable segments of the population; an active business association that is able to serve in an advocacy role for the business community, and a link to the reconstruction decision-

making process, and a structured, well administered land use development process

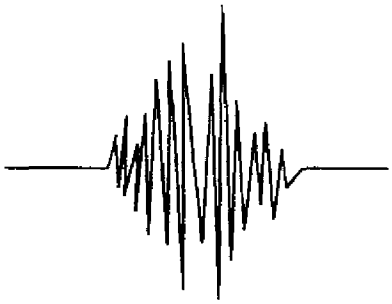
In practice, once the disaster occurs, managing the recovery process mirrors the management of the planning and development process, only at a much higher speed. The rebuilding starts almost as soon as the shaking stops; seldom are people inclined to wait until land use plans are adopted and new regulations enacted before starting reconstruction. In this context, it is important to develop - in advance of the earthquake - the policies and procedures that will govern the rebuilding process.

Managing Recovery - Lessons from Beyond the U.S.

Disasters place an enormous amount of stress on existing institutions that have jurisdiction over the development process. Weaknesses become exposed; governments are often caught off guard (a universal phenomena). Fundamental decisions - such as relocating a city, or establishing a new ministry - are sometimes made under pressure without full consideration to the long-term implications

On experienced observer (Kreimer, 1990) with the World Bank has noted that recovery is most effective when:

- Institutional arrangements are as simple as possible, even for broad multisector recovery programs.
- Coordinating mechanisms center on the nature of the emergency and work within existing systems. A special purpose interagency unit may be appropriate if the damage affects several sectors, an intra-agency committee may be best if the damage affects a single sector.
- The head of the recovery and reconstruction unit or coordinating committee is carefully selected for his or her decisionmaking abilities and access to the country's chief executive
- Day-to-day coordinating mechanisms - such as frequent decision meetings and common monitoring and reporting systems - are agreed upon early on by all implementing agencies, to avoid costly duplication.
- Existing institutions are fully used and the creation of entirely new agencies is avoided. Popayan's experience is an example of the former



Cast Study: Popayan, Colombia Earthquake (1983)

Popayan is the capital of the Department of Cauca, located in Southwest Colombia. Agriculture, cattle, mining and forestry account for fifty percent of the region's economic activity. Economic, cultural, social, and political activity is concentrated in Popayan, which was founded in 1537 and still preserves and the architectural and urban characteristics of the Colonial Era.

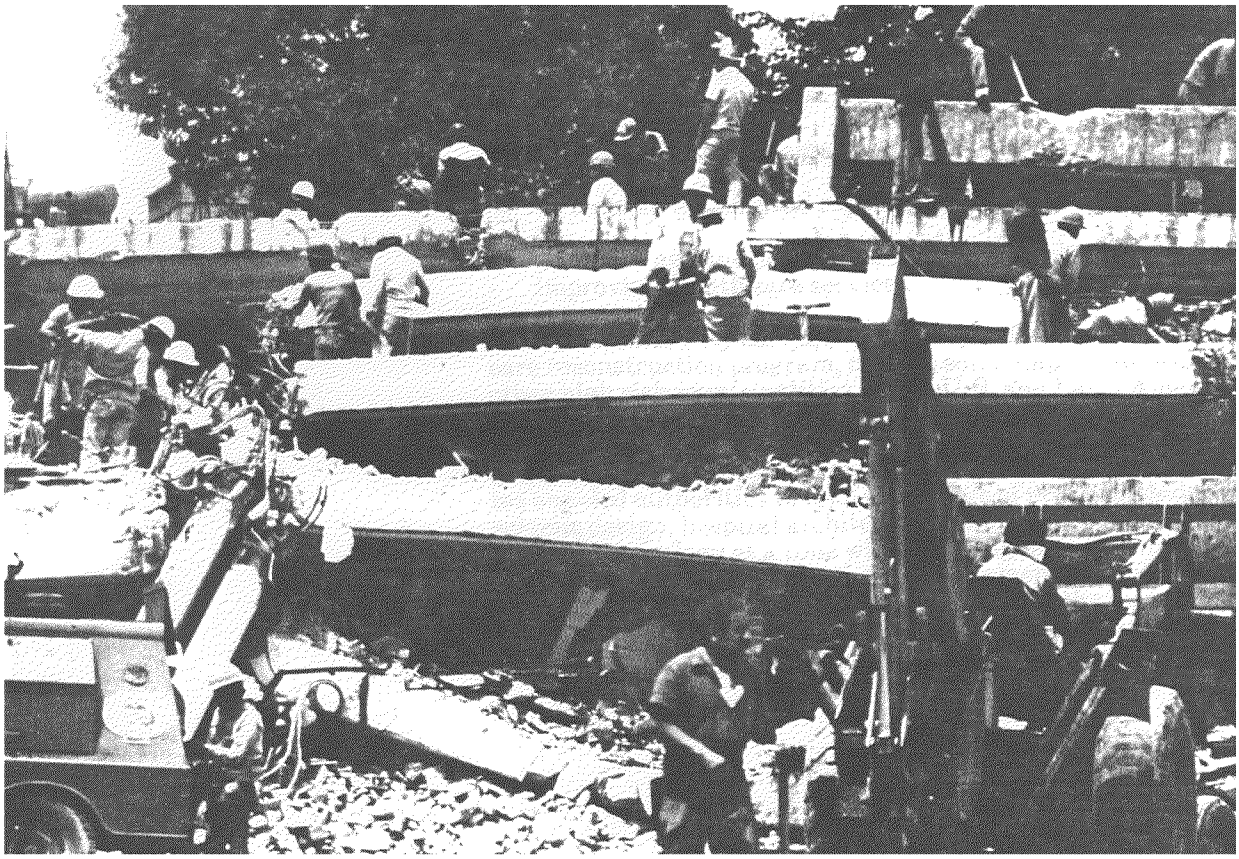
On March 31, 1983, a magnitude 5.5 earthquake struck the region, centered approximately 30 kilometers from Popayan. The unconsolidated soils upon which the city was built magnified the damages. The infrastructure, in particular, was severely damaged - electric power, water supply, sewers, and telephone lines. Recovery efforts were hindered by the migration of nearly 4,000 families from the outlying regions to the capital in search of housing and employment opportunities.

A specialized reconstruction authority was established - the Corporation of the Reconstruction of the Cauca Balley (CRC) - which followed an existing Colombian model for addressing reconstruction issues in development. Small municipal reconstruction units were established in Popayan and other affected municipalities. The Corporation was charged with monitoring reconstruction work and coordinating activities among sector agencies. In this capacity, the CRC was essential as a catalyst and an "umbrella" organization for many agencies. The CRC facilitated a rapid response to institutional needs. A national reconstruction fund was created to expedite the rebuilding process, a vital step in the recovery of this region following the earthquake.

The following sections examine the key sectors in an integrated strategy to facilitate recovery and reconstruction following a major earthquake or other disaster.

Improving Health Care: Mexico City Reconstruction

The health care system of a community - and nation - is vulnerable to the effects of earthquakes, hurricanes and other rapid on-set disasters. The 1985 earthquake in Mexico City provides a vivid example of this potential vulnerability - a total of 130 health care facilities and administrative centers were so badly damaged that their functions were interrupted or had to be temporarily relocated to other sites. Five buildings at three major hospital sites - Juarez Hospital, General Hospital, and Central Medico - completely collapsed, and nineteen buildings at the Centro Medico were so seriously damaged that they were later demolished.



Hundreds of casualties were generated by collapsed hospital facilities in Mexico City

The health sector in Mexico City clearly suffered major, long-term losses in the magnitude 8.1 earthquake. A contributing factor to the extensive damages was the centralized nature of the health care system in Mexico. Even before the earthquake struck, the Ministry of Health, in its capacity as coordinator of all health sector activities in Mexico, was pursing a strategic development plan that emphasized decentralization of services to provide greater accessibility of a range of medical services.

Immediately following the earthquake, the Federal Government approved a National Reconstruction Committee for the Mexico City Metropolitan Area, which was divided into technical task groups, dealing with decentralization, finance, civil security, international assistance, education, employment, and housing. A Public Health Reconstruction Committee was organized under the general coordination of the National Committee.

Within this framework, the government pursued an integrated approach to decentralization. Financing and investments were coordinated at the federal level, planning and programs at the state and municipal levels. The earthquake served as a catalyst to accelerate the decentralized program. The goal, as announced by the Minister of Health, was to concentrate on increasing the accessibility of health care through improving, not merely replacing, hospital capacity lost in the earthquake. The program was guided by the following policies.

- To coordinate health care development with existing urban and regional development policies.
- To abate the risk of future earthquakes by balancing development with three levels of health care.
- To rehabilitate and upgrade beds in the undamaged hospitals.
- To rehabilitate the damaged facilities.
- To reconstruct hospital capacity to its pre-earthquake level.
- To encourage and promote community involvement in improving health care services.

The Mexico City earthquake, and specifically the health care reconstruction program, reveals some important lessons for other high risk municipalities, in the U.S. and Latin America. First, the recovery and reconstruction phase was an opportunity for the Mexican government to achieve multiple goals - physical, social, and cultural; second, the construction of new facilites enabled authorities to take advantage of new knowledge of seismic design, hospital architecture, and developments in medical technology at a time when existing facilities were becoming outdated; and third, the government did not abandon the development goals and planning process in the midst of the earthquake; rather, the earthquake accelerated the strategy and administrative reorganization.

Housing Reconstruction

Earthquakes, hurricanes, and severe weather continue to take a devastating toll on the world's housing stock. Floods in Bangladesh, Hurricane Andrew in Florida, earthquakes in Armenia, Mexico, El Salvador, Guatemala, and California - the list goes on. In most cases, the housing was not constructed to withstand the forces of nature.

Housing reconstruction involves a number of steps, beginning immediately after the disaster

1. *Assess damage to the housing sector*, including the degree of damage and the location of housing losses

2. *Evaluate overall disaster-generated housing needs.* A pre-disaster vulnerability study - for populations and for structures - will greatly assist the post-disaster evaluation of housing needs.

3. *Inventory existing resources*, including unoccupied units or units under construction. It is important to have standardized categories of housing types (i.e. single room occupancy) to facilitate the inventory process.

4. *Compare housing needs and resources to determine total post-disaster housing needs* Again, a pre-disaster data base that has information on occupancy rates, ownership patterns, densities, and demographic information will expedite the analysis of housing needs.

5. *Identify ways to protect or upgrade the housing stock.* Mexico City's Emergency Building Code, for example, which contained enhanced seismic provisions, was in place just five weeks after the 1985 earthquake The Mexican government, through the RHP, was able to effectively upgrade the housing structures after the earthquake to improve the occupants' standard of living.

Lessons Learned from Housing Reconstruction

There is a growing body of research and experience related to the provision of housing after a disaster. While there are marked differences - socially, culturally, economically, and politically - among the disaster prone states and countries in the Americas, there has emerged a pattern of experience, and lessons, from housing reconstruction.

- *To the extent possible, temporary solutions should be avoided (Kreimer, 1990).* The main reason for this is that the cost of temporary housing in many developing nations almost equals the cost of permanent housing. In the U.S., the cost of temporary housing approaches the cost of minimum standard permanent dwellings; often takes an extended period of time to erect or move (particularly trailers); and remains longer than intended.

- *Housing reconstruction needs to be tied to employment.* If temporary or replacement housing is located far from the source of employment of the occupants, chances are much greater that the will not be used. After the Loma Prieta earthquake, employment was heavily factored into decisions on location of temporary housing. Mexico City's housing reconstruction program was notable for it's strategy to rebuild on-site of the damaged areas, in close proximity to the jobs and neighborhoods of the earthquake victims.