
***Development:
from vulnerability
to resilience***

Case study: housing reconstruction in Mexico City

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The earthquake that struck Mexico City in September 1985 took more than 5,000 lives and damaged the housing of about 180,000 families. RHP, the agency that was set up three weeks later to rebuild urban areas damaged by the earthquake, is a textbook example of successful reconstruction. By July 1987, only 14 months later, RHP had rebuilt 45,100 dwellings — an average of 3,220 dwellings a month. Today one of every seven families living in the city's historic center has a new or rehabilitated RHP dwelling. This was one of the largest reconstruction programs since the recovery from World War II. Almost all of the federal and city development and management agencies contributed to reconstruction. More important, the beneficiaries — the earthquake victims — helped daily to expedite decisions and construction. More than 1,200 private companies participated in the program and more than 175,000 jobs were created, but by May 1987 RHP had begun reducing its staff and most personnel had returned to their former agencies. As Manuel Aguilera Gomez, RHP's director general, wrote afterward: "We all learned to conciliate the desirable with the feasible. We learned to listen with care and interest to the sentiments of those affected by reconstruction. Little by little — in stages — the attitudes of the program beneficiaries changed from hostility, uncertainty, incredulity, suspicion, and doubt to hope and confidence."

On September 19, 1985, at 7:19 a.m., Mexico City was struck by an earthquake that measured 8.1 on the Richter scale and lasted more than a minute and a half. The next day there were a number of lesser quakes, the strongest of which measured 7.8 degrees. The maximum horizontal acceleration was nearly 20 percent of gravity on a dominant two-second cycle. This ground movement resonant cycle coincided with the natural vibration period of the five- to 12-story buildings that predominate in the city's dense historic center — making the earthquake one of the most destructive in the hemisphere's history. Poorly built tenements housing low-income families in overcrowded conditions suf-

fered the worst damage. They had already deteriorated from lack of maintenance and repair. Tenement rents had been frozen since World War II so there had been no incentive for rehabilitation. The catastrophe took more than 5,000 lives, caused 16,000 injuries, and damaged or destroyed 12,700 buildings — 65 percent of them residential. The housing of about 180,000 families was damaged and 50,000 people had to be temporarily rehoused. Also affected were 340 office buildings in which 145,000 government workers were employed, plus 1,200 small industrial workshops, 1,700 hotel rooms, 1,200 schools, and 2,000 hospital beds. The loss exceeded US\$4 billion as calculated by the Min-

istry of Finance and the Economic Commission for Latin America and the Caribbean (CEPAL).

Housing reconstruction

The government of Mexico asked the World Bank for assistance for the reconstruction of hospitals, schools, and low-income housing and for research into revised building codes, zoning, and regulatory measures to reduce the city's vulnerability to earthquakes. There were four rehousing programs:

- Popular Housing Reconstruction (RHP) — 48,000 dwelling units, benefiting 260,000 people, reconstructed onsite on expropriated sites.
- Phase II — 12,000 dwellings on nonexpropriated sites.
- Casa Propia — 8,000 dwellings rehabilitated for resident owners
- Housing Foundation (FOVI) — 12,000 units of relocated housing.

What follows is a description only of the first of these, RHP — a success story in emergency construction and a model for community involvement.

Popular Housing Reconstruction

On October 14, 1985 (just three weeks after the disaster), RHP (Popular Housing Reconstruction) was set up by presidential decree as an autonomous agency with a life of two years (see box by Manuel Aguilera). RHP had a mandate to:

- Rebuild and reorganize urban areas damaged by the earthquake, following the principles of urban renewal and social development.
- Define a policy of social development that preserves and protects the physical and social patterns of urban life, guarantees ownership of the dwellings to the beneficiaries, and provides needed urban services.
- Combat land speculation.
- Rationalize the building finance and investment that would be channeled to the program.

The program was to unfold in five stages:

Stage 1. October 1985 - March 1986. Damage assessment, planning and design.

Stage 2 April - December 1986. Intense

construction and social organizing

Stage 3. January - March 1987. Allocation of dwellings, legalization and registration of deeds.

Stage 4. April - September 1987. Completion of program.

Stage 5 October 1987 - April 1988. Diagnostic history, records, and closure.

1. DAMAGE ASSESSMENT, PLANNING AND DESIGN

In the first months after the earthquake, RHP updated an initial survey to estimate the number of people affected, their socioeconomic characteristics, and the physical condition of their dwellings. On the basis of this census, the victims were awarded certificates validating their eligibility for housing assistance. Early proposals for reconstruction focused on vacant land in outlying areas, including a site adjacent to the airport. But World Bank financing was contingent on rebuilding onsite with minimal relocation, a policy based on negative experiences the Bank had had with large-scale relocation in other disaster areas. Most families had lived in their neighborhoods for a generation or more and wanted to remain there, so the government adopted a policy of reconstruction onsite.¹

This decision required expropriation of privately held land and the provision of temporary shelter by families in the immediate vicinity. This called for both political and administrative skill and enormous sensitivity in dealing intimately, day in, day out, with 60,000 families for more than a year and a half.

On October 11, 1985, the Expropriation Decree was published in the Official Gazette. Some greeted it with appreciation for its social justice; others condemned it as populist and demagogic for its violation of property rights. Errors and omissions needed correcting and individual cases were protested in the courts, but the decree itself was successfully administered with a taking of 4,312 lots or 200 hectares (500 acres).

The Expropriation Decree announced that meeting the collective needs of the people whose homes were destroyed by the earthquake was in the public interest; that the city government was to occupy the property immediately, authorize its upgrading and renewal, and sell the new housing to the people who had been living there, and that the city government was to pay compensation to the former owners within 10 years, according to the capacity of the Treasury.

By January 1986, the RHP was reorganized to create two departments, Construction and Administration, at the same level as the Office of the Director General. The most important change was the decentralization of the Construction Department into five zonal offices in charge of supervising and controlling construction and of building temporary shelters. To reinforce the core staff, RHP borrowed senior planners and engineers from the Ministries of Communications and Transport, the Secretariat of Urban Development and Ecology (SEDUE), the Federal Electricity Commission, the Urban Transportation Commission, and many agencies of the Federal District (DF) of Mexico City. The zonal offices were further decentralized into 12 construction and operations modules that managed all construction activities.

In January 1986 social and technical teams started to match socioeconomic survey data to data on the physical condition of each dwelling. In the process they organized the earthquake victims into community groups to review the whole program, site plans, and prototype apartment designs. Based on the census, the government issued *certificates of residency* establishing earthquake victims' eligibility for benefits. These were issued regardless of who legally owned the building. Many families had abandoned their dwellings immediately after the earthquake, however, so it was difficult to track them down to document their rights to new dwellings. Regular meetings were held to maintain the quake victims' social organization, to review and revise program plans, and finally to approve plans and sign documents for the construction of each apartment. For many groups, planning and redesign took as long as eight to nine months, construction only four. Only after agreement was reached were beneficiaries legally formed into a condominium association that agreed to vacate the building so reconstruction could start. Temporary shelters of corrugated aluminum or zinc were generally located within a block of the building site. Wherever possible, they were built on public lands — parks, sport centers, roadway median strips, service roads, and sometimes actually in adjacent streets.

The social teams organized the condominium associations into "renovation councils" for each reconstruction or rehabilitation site. Although they had no legal status they provided forums for people to speak out. The councils were

formally installed with elected representatives authorized to negotiate with the RHP about individual needs. They also had to decide on the legal status of their housing association — whether to be a condominium, a cooperative, or a nonprofit organization.

Many people who had no previous experience in community action found themselves as spokespersons for their association. They became outspoken not only to the press but also to the RHP and city officials. The Director General and Director of Social Affairs spent long hours negotiating and responding to their concerns. The beneficiaries' participation made the process far more rewarding for the federal government, the city, the community, and the beneficiaries.

During planning and design, five types of groups worked with the earthquake victims: political parties, university groups, technical support groups, and private voluntary and religious organizations. More than half the sites received support from one or more organizations, starting with the census survey. University groups began by evaluating damages and later acted as technical support. The political parties also played an important role.

By February 1986 the new "Personal Certificate of Rights" was developed to replace the original "Certificate of Residency," to eliminate fraud and clarify other questions of need. RHP experienced great difficulty handling so much data and residents were reluctant to be interviewed again. There were two main problems. First, people were uncertain and mistrustful because, months after the earthquake, reconstruction had not begun. Second, there was discord about the size of dwellings. Many felt that the size of the dwelling should be proportionate to the titleholder's ability to pay. But this was impractical, given the number of beneficiaries and the time constraints. By the end of February the Social Development Office issued a "Handbook of Social Procedures" explaining how disaster victims could get the replacement housing conceded to be their right.

The technical staff of architects, planners, and engineers labored over criteria to distinguish which damages were caused by the earthquake and which by physical deterioration of the dwellings. The detailed building survey showed that the earthquake had damaged or destroyed 59 percent of the buildings beyond repair or rehabilitation. A third had deteriorated because of neglect and some of these