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Report No. 12149

PERFORMANCE AUDIT REPORT

MEXICO
EARTHQUAKE REHABILITATION AND RECONSTRUCTION PROJECT
(LOAN 2665-ME)

JUNE 30, 1993

MICROGRAPHICS

Report No: 12149
Type: PPAR

Operations Evaluation Department

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EXCHANGE RATES

Currency Unit	=	MXF (Mexican Peso)
March 1986	1 US\$ =	430 MXP
October 1991	1 US\$ =	3,000 MXP

GLOSSARY OF ACRONYMS

BANOBAS	National Development Bank for Public Works (Banco Nacional de Obras y Servicios Públicos)
CAPFCE	Federal Committee for School Construction (Comité Administrativo del Programa Federal de Construcción de Escuelas)
CONACYIT	National Council for Science and Technology (Consejo Nacional de Ciencia y Tecnología)
DF	Federal District of Mexico City (Distrito Federal)
DDF	Federal District Government (Departamento del Distrito Federal)
FONHAPO	National Fund for Low Cost Housing (Fondo Nacional de Habitaciones Populares)
FOVI	Bank Housing Fund (Fondo de Operación y Financiamiento Bancario a la Vivienda)
IMSS	Mexican Social Security Institute (Instituto Mexicano del Seguro Social)
INAH	National Institute of Anthropology and History (Instituto Nacional de Antropología e Historia)
INBA	National Institute of Fine Arts (Instituto Nacional de Bellas Artes)
MCMA	Mexico City Metropolitan Area (Area Metropolitana de la Ciudad de México)

GLOSSARY OF ACRONYMS (Cont.)

PAR	Performance Audit Report
PCR	Project Completion Report
SAR	Staff Appraisal Report
SEDUE	Ministry of Urban Development and Ecology (Secretaría de Ecología y Desarrollo Urbano)
SEP	Ministry of Education (Secretaría de Educación Pública)
SHCP	Ministry of Finance (Secretaría de Hacienda y Crédito Público)
SPP	Ministry of Planning and Budget (Secretaría de Programación y Presupuesto)

FISCAL YEAR OF THE BORROWER

January 1 - December 31

THE WORLD BANK
Washington, D.C. 20433
U.S.A.

Office of Director-General
Operations Evaluation

June 30, 1993

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

**SUBJECT: Performance Audit Report on Mexico
Earthquake Rehabilitation and Reconstruction Project
(Loan 2665-ME)**

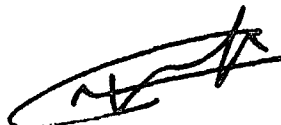
Attached is the report entitled "Performance Audit Report on Mexico - Earthquake Rehabilitation and Reconstruction Project (Loan 2665-ME)" prepared by the Operations Evaluation Department.

The audited project, a major disaster relief operation, was processed expeditiously. The main feature of the project was the introduction of a massive program to reconstruct and rehabilitate demolished and damaged housing stock in Mexico City. It also included a disaster awareness and preparedness component. The project was well managed by government agencies with substantial and effective community participation.

The project exceeded its physical targets. Although the studies designed to improve the disaster awareness were not completed, the pattern of housing tenure and improved construction standards have reduced the area's vulnerability to earthquakes.

The project is a well documented model for Bank reconstruction lending. Based on its experience in Mexico, the Bank reinforced its policy development for disaster reconstruction projects.

The Audit concludes that the project's overall achievements were highly satisfactory, its institutional development partial and its sustainability likely. These are the same as the PCR-based ratings except for the institutional development which was previously rated as negligible.



PERFORMANCE AUDIT REPORT

MEXICO
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PERFORMANCE AUDIT REPORT

MEXICO
EARTHQUAKE REHABILITATION AND RECONSTRUCTION PROJECT
(LOAN 2665-ME)

PREFACE

1. This is the Performance Audit Report (PAR) of the Mexico - Earthquake Rehabilitation and Reconstruction Project. Approved on March 25, 1986, the project was supported by Loan 2665-ME for US\$400 million. The loan was closed on December 31, 1990. The project received additional support from another loan made to Mexico, Loan 1990-ME, of which US\$81.8 million was reallocated to support this project.
2. The PAR consists of an Evaluation Summary and a Performance Audit Report prepared by the Operations Evaluation Department (OED). A Project Completion Report (PCR), prepared by the Infrastructure and Energy Operations Division of Country Department II of the Latin America and Caribbean Region (LA2IE), was previously submitted to the Board of Executive Directors as Report No. 10392, dated February 21, 1992.
3. The PCR provides a good but terse account of the project experience and its achievements. In order to give a wider perspective, the Audit provides additional information about the history of the project, its outcome, the issues raised, implementation experience, and the principal lessons learned. The PAR is based on the Staff Appraisal Report (SAR), the President's Report (PR), the Loan Agreement, and project files, as well as other relevant material including a comprehensive PCR prepared by the Government of Mexico (GOM), collated during the audit mission. The Audit also draws on discussions with Bank staff in Washington and interviews with representatives of Mexican authorities during the audit mission in August-September 1992.
4. While the Audit agrees with the PCR to a large extent, the use of a broader data base has led to a slightly different view of the project's institutional impact. The Audit highlights the importance of local commitment and participation, the innovative approach taken in implementation of the housing component, and the excellent collaboration between the GOM and the Bank.
5. Following standard OED procedures, copies of the draft PAR were sent to the Borrower for comments on April 22, 1993. Comments were received from BANOBRAS and are reflected in and attached to this final version of the report as Annex 1.

PERFORMANCE AUDIT REPORTMEXICOEARTHQUAKE REHABILITATION AND RECONSTRUCTION PROJECT
(LOAN 2665-ME)BASIC DATA SHEETKEY PROJECT DATA

<u>Item</u>	<u>Appraisal Expectation</u>	<u>Actual or Current Estimate</u>	<u>Actual as % of Appraisal Estimate</u>
Total Project Cost (US\$ m)	571.4	540.7 ¹	94.6
Loan Amount (US\$ m)	400.0	400.0	100.0
Economic Rate of Return	N/A	N/A	N/A
Institutional Performance:	Partial		

CUMULATIVE ESTIMATED AND ACTUAL DISBURSEMENTS

Appraisal Estimate (US\$M)	400.0
Actual (US\$M)	400.0
Actual as % of Appraisal (%)	100.0
Date of Final Disbursement:	April 10, 1991

PROJECT DATES

	<u>Original</u>	<u>Actual</u>
Identification	10/30/85	10/30/85
Preparation		
Appraisal	11/04/85	11/04/85
Loan Negotiations	03/02/86	03/02/86
Board Approval	03/25/86	03/25/86
Loan Signature	04/09/86	04/09/86
Loan Effectiveness	04/30/86	08/08/86
Project Completion	06/30/90	04/30/91
Loan Closing	12/31/89	12/31/90

¹ An incremental amount of US\$81.8 million was reallocated from Ln. 1990-ME.

STAFF INPUTS
(staffweeks)

	<u>FY86</u>	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>Total</u>
Preappraisal	14.9	-	.8	-	-	-	-	15.7
Appraisal	31.4	-	-	-	-	-	-	31.4
Negotiation	8.7	-	-	-	-	-	-	8.7
Supervision	7.0	23.7	38.7	7.2	5.9	7.2	.7	90.4
Other	18.6	-	-	-	-	-	-	18.6

MISSION DATA

	<u>Date</u> <u>Month/Year</u>	<u>No. of</u> <u>Days</u>	<u>No. of</u> <u>Persons</u>
Preappraisal	09/85	6	4
Appraisal	11/85	22 ²	20
Project Launch	05/86	9	4
Supervision	08/86	4	1
Supervision	09/86	4	1
Supervision	11/86	9	3
Supervision	03/87	8	4
Supervision	07/87	6	4
Supervision	10/87	11	1
Supervision	11/87	10	4
Supervision	04/88	9	4
Supervision	01/89	5	3
Supervision	02/90	5	2
Supervision	11/90	<u>7</u>	2
Total		115	

OTHER PROJECT DATA

Borrower: Banco Nacional de Obras y Servicios Públicos (BANOBRAS).

Executing Agencies: Banco Nacional de Obras y Servicios Públicos (BANOBRAS).

² Not all mission members stayed the full time.

PERFORMANCE AUDIT REPORT

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EVALUATION SUMMARYIntroduction

1. The Audit agrees with the PCR's judgement that the Mexican earthquake reconstruction project was a success in a sector (housing construction) and context (emergency). Furthermore, the Audit takes a broader view of the project than found in the PCR, emphasizing the background conditions in Mexico's housing sector, the effect on Bank-Mexican relations, and Bank lending policy. It also draws comparisons to other Bank experiences in earthquake reconstruction in other Latin American countries.

Background

2. Despite a history of earthquakes and updated building codes, Mexico was unprepared for the tremors of September 19 and 20, 1985. Mexico City's vulnerability stemmed from its geomorphic conditions, but also from its deteriorated housing stock, largely inner-city tenements where twenty years of rent control had left housing over-crowded and in ill-repair.

3. Fortunately, the Government had already made a commitment to improve low-income housing, and had requested the Bank's support for a loan for FONHAPO, the national low-income housing agency, the year before the earthquake. Immediately after the earthquake, the Mexican government committed itself to

rebuilding housing for the poor families left homeless on the site of the ruined tenements. This policy differs radically from that of Mexico's neighbors, Nicaragua and Guatemala, which, when faced with similar emergencies, continued their regular urban development plans.

4. In response to the emergency, the Bank accelerated the loan preparation process. The project was brought to the board five months after the disaster and a loan of US\$400 million approved, in addition to over US\$80 million rechanneled from other, stalled, urban projects.

The Project

5. The project set straightforward objectives and proposed to meet them with a massive reconstruction effort for housing, health and education. It relied on several existing agencies, but the bulk of the work, including demolition, clearance, management of temporary housing, and new home construction, was left to a newly created agency "RHP" which was given a two year life span. Commercial banks were used initially to handle savings accounts for financing temporary assistance to the homeless, but the task proved too complicated for them. The project was completely managed by government agencies, although some NGOs participated in the financing or building of about 3% of the homes.

RHP performed extremely well, calling into question the view that no new agency should be created to deal with disasters. RHP was disbanded after its two year mandate was completed, turning its remaining responsibilities over to FONHAPO.

Implementation, Achievements and Impact

6. At completion, the project cost about 15% more than estimated at appraisal, reducing the Bank's funding share to 76% from the programmed 84%. By the same token, physical achievements were larger than planned, as it became evident that the earthquake had caused more damage than originally estimated. The latest housing figures show some 78,000 families rehoused, up from the 72,000 listed in the PCR. The only project components not fully achieved were cost recovery (para. 48) and the prevention and mitigation studies (PCR para. 5.12, PAR paras. 40 and 41). As these fumbled, so also the proposed disaster mitigation and prevention scheme failed to materialize. Nonetheless, the project had substantial impact on Mexico's disaster awareness. The changes in the pattern of housing tenure will go a long way to reduce vulnerability to earthquakes as will subsequent steps taken independently by the Mexican government (paras. 35 and 36).

7. The project influenced both Bank and Mexican policy on disasters, leading the Bank to set up a special task force and to consider disaster reconstruction a specialty for future missions. Both the Bank and Mexico also developed new housing policies as a result of the project. The Bank accepted the home improvement loan program proposed by FONHAPO and also agreed

to finance the middle class housing support program of FOVI, another agency working in the reconstruction project. The Bank has subsequently made three loans to these agencies. All have proved successful in terms of accomplishing their objectives and disbursing quickly. Finally, the project introduced new administrative procedures whereby BANOBRAS, Mexico's national development bank and official borrower for the project, managed the accounts and contract approvals. BANOBRAS role has since been enlarged in the housing and water sector loans and has led to a significant reduction in times used for sub-project approvals and reimbursements.

Points of Interest

8. In terms of sustainability, housing standards have been very well accepted, although not all beneficiaries remained in their old sites. Given the subsidies involved which made selling out for capital gains irresistibly attractive. At the same time, gentrification was avoided.

9. A final point involves the project's impact on Bank-Mexico relations. It appears to have been one in a series of accomplishments which gave the Mexican government greater credibility and confidence.

The Role of the Bank

10. The Bank came to Mexico's support at a time of crisis. This support was key, but so was the wisdom to understand and back a good program, fully "owned" and managed by the Mexican authorities. The task manager and the project team were well-suited for the task and were perceived by the Mexicans as friends and supporters. The project

is remembered as one where the Bank "showed its human face."

Conclusions and Lessons Learned

11. The Mexico earthquake reconstruction project is rated satisfactory (same as the PCR based rating); it met the needs of the earthquake's victims. By contrast, the experiences in Guatemala and Nicaragua, (paras. 12 - 13) showed how difficult it can be to bring the benefits of a reconstruction project to the disaster victims. Mexico's program should be credited for keeping the priority needs of the victims, present and future, in forefront. The project also took important steps in prevention and mitigation by changing the patterns of housing tenure. In doing so it took on not simply the housing units which had been dilapidated but the entire deteriorated tenement system. The Audit rates the sustainability of the project benefits as likely, the same as the PCR-based rating. The project's institutional impact is rated as partial (the PCR-based rating was negligible).

12. The main lessons that the project provides are as follows:

- (i) The success of the Mexico reconstruction project should dispel doubts about the Bank's capacity to undertake emergency projects. By the same token it underlines the fact that Bank assistance will only be as effective as government is committed (para. 13). It also demonstrates how Bank collaboration in emergency projects can be important in gaining the trust of and improving relations with client countries (para. 50);
- (ii) For disaster reconstruction the project offers an important lesson in timing. The components which were put off until after the reconstruction, i.e. the prevention and mitigation studies and a plan to redevelop the historical buildings, ultimately were abandoned;
- (iii) Traditional low-cost housing solutions may not be the appropriate answer in disaster situations. Rebuilding on site, respecting the establishment of community and neighborhood formations, as well as location with relation to employment are not necessarily consistent with affordability; and
- (iv) The project represented a massive spending and construction effort which provided a counteracting economic stimulus to the disruptive impact of the earthquake and, on balance, may have had a positive effect on Mexico's economic recovery. (para. 6.01).

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MEXICO
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I. PROJECT SUMMARY

A. Background

1. The Mexican earthquake reconstruction of 1986-1987 is one of the most well-documented and highly-publicized of the World Bank's projects. The Bank has prepared a clear and accurate PCR. The Mexican Government prepared an exhaustive PCR as well. In addition, the project's implementing agency, RHP, produced its own account of project implementation. There have also been numerous journalistic accounts and several books. So why write another report on the Mexican earthquake reconstruction project? The Audit offers two basic reasons; first to expand on the PCR's view of the project as limited to replacing housing stock lost in the earthquake. In particular, the Audit emphasizes the background conditions of Mexico's housing sector, the project's effects on Bank-Mexican relations, and on Bank lending policy. Second, it presents the project as the first in a series of extremely successful Bank loans to Mexico's housing sector.

B. The Earthquake

2. The earthquake which shook Mexico City on September 19, 1985 was the first in a series of tremors which continued the following day and left unprecedented damage. To the data listed in the PCR (para 2.01) the Audit adds that the earthquake left some 250,000 persons completely homeless and 900,000 with damaged homes. About 13,000 buildings were damaged, over half suffering severe structural deformation or collapse. 1,687 schools were damaged, 29 irreparably so¹ and damage to health centers destroyed 30% of the city's hospital capacity. Besides the capital, the earthquake damaged significant areas in Jalisco, Michoacan, Colima and Guerrero.

3. Located in a seismic zone, Mexico City had already been hit by earthquakes twice previously in this century. The city had made efforts to mitigate the effect of earthquakes. Building codes reflecting the state of the art in seismic design had been introduced in 1942. These were subsequently revised and updated. After the earthquake of 1957, emergency norms and seismic zoning were introduced along with the installation of the country's first acceleration meters. These, however, had little effect on most of Mexico City's buildings which were never retrofitted to meet the new code.

¹ Housing Reconstruction Program: RHP Memoir, p. 13

4. The effects of the earthquake were devastating for three reasons. The first involves the earthquake itself; the intensity of its movements (8.1 on Richter scale followed by another quake of 7.8 on Richter scale two days later) and its duration were unprecedented: "there were no prior experiences of earthquakes with such extended periods of vibration...The earthquake lasted 90 seconds ... which was itself considered exceptional"². The second reason for the earthquake's marked impact has to do with the changes which had occurred in the composition of the sub-soil of Mexico City (para. 5 below) during the past fifty years and which rendered inadequate even the updated building codes. The third stems from the state of disrepair which characterized the inner-city, a function of the housing sector itself.

C. Mexico City - Geomorphic Conditions and Building Conditions

5. During the past fifty years, as Mexico City's area and population swelled, the continual deforestation and pumping of groundwater combined to dry up the lake bed which formed the base of Mexico City leaving a layer of highly compressible clay which added to the oscillations of the earthquake's vibrations.

At the same time, the damage assessment done after the earthquake revealed that 32% of the buildings affected had been damaged because of physical deterioration and poor maintenance, another 30% because of poor maintenance compounded by the effects of the earthquake. Only 22% sustained damage attributable exclusively to the quake³. Some 40,000 dwelling units had been on the verge of collapse, and this came about because of the history of the housing sector.

6. According to a Bank financed study done in 1974,

"In the 1940's and 1950's, the housing system in Mexico City functioned reasonably well... families who could not afford minimum standard housing (according to codes) had various options... Government action at the end of the 1940's, however, curtailed new construction of vecindades, froze rents (a further form of curtailing construction and of ending whatever chance existed of maintenance and improvement) and the legally land available [for new housing] was sharply reduced. As a result some 70% of the families in Mexico City could no longer afford legal housing. All this produced ciudades perdidas."⁴

7. The various terms used above refer to the different forms of rental housing for low-income families which prevailed in Mexico City. Before the earthquake, the commercial banks did not finance housing, government did.

² Housing Reconstruction Program: RHP Memoir, page 12. For the experts the citation continues: "The maximum acceleration was nearly 20% of gravity with a dominant period of two seconds."

³ RHP Memoir, Table 13.

⁴ Low-Income Housing in Mexico, a working paper by John Turner et. al., commissioned by the World Bank Urban Projects Division in 1976

Government supported programs favored middle income families. While mortgage holders were generally required to carry life insurance, the housing itself was not generally insured against disasters. The housing wrecked by the earthquake turned out to be mainly tenements in extremely precarious condition, shoddily built to begin with and left by frustrated landlords and helpless tenants to deteriorate over time, often relying on public or communal baths, cooking and laundry facilities and, on average 32 meters square per dwelling. An estimated 15% of the dwellings were shared by more than one family. 65% of the families left homeless had occupied the same housing for over 20 years, more or less since the rent control laws went into effect. In the cities affected by the earthquake, the high correlation between buildings under rent control and buildings damaged argues strongly against rent control.

D. Mexico - Economic and Political Conditions

8. The PCR gives partial credit to a "set of exceptional circumstances" for the project's success (Para. 4.03). To these, the Audit would add that the earthquake occurred at an extremely difficult moment for Mexico, but a bright moment for its low-income housing sector. Miguel de La Madrid became President in 1982 to find a shattered country. Oil revenues were down along with export revenues and Mexico was unable to meet its external debt obligations. Internally employment was falling, production stagnating and inflation threatening to climb out of control. With the international banking community closing its doors and pressing for repayments, Mexico found itself quite alone. By 1985 Mexico had secured support from the World Bank but its situation was far from steady. Just at this turning point, the earthquake fostered unity in political action which in the words of the Bank's resident representative at the time, "the de La Madrid government had to rise to the new crisis, but politically the government had everything going for it to enable it to act efficiently and effectively."⁵

9. Faced with a serious recession in the construction industry, the de La Madrid's administration had already put an aggressive housing program in place. Two national agencies, FONHAPO and FOVI, were just emerging with workable programs and an enthusiastic and highly qualified staff. The Bank had come to FONHAPO's aid with a loan for \$150 million in 1985 (para. 10).

E. Mexico's Relations with the Bank

10. At the time of the earthquake, the two Bank sponsored urban projects in Mexico (Lazaro Cardenas and "PACDU"- two "integrated development projects") were floundering. After the country's economic crisis came to a head in 1982, the Bank shifted from a focus on increasing output and employment while improving distribution patterns to a new emphasis on policy reforms which aimed to assist Mexico's banks to lend for housing voluntarily and government to reduce subsidies. The first low-income housing project, negotiated in 1985 for execution by a newly expanded agency for low-income housing finance, FONHAPO, signalled a new style of sector loan in which FONHAPO would on-lend funds to suitable borrowers from the private and public sector for low-income housing

⁵ Interview, Marco Volj, May, 1992.

construction. The first FONHAPO loan emerged from a dialogue sadly absent from the previous urban projects, which were characterized as Bank models imposed on the Mexicans. Negotiating the FONHAPO loan had not been easy. During the early 1980's, Mexico was not viewed as a prize client by the urban projects division, and the Mexicans ventured into collaboration with the Bank on urban projects over great misgivings⁶.

11. Among other reasons for its aloofness, the Bank's urban projects division had maintained a dialogue with the Mexican government from 1976 to 1981 in an attempt to do an 'integrated project' (housing plus slum upgrading plus community services, etc.) in Mexico City. Following its usual strategy, the Bank proposed a first project with several construction sites for serviced lots and urban upgrading in Mexico's capital and largest city. Bank files are incomplete but it is clear that while the Bank invested time and energy, the idea withered for lack of local support. Ironically enough, the Bank did get its project in Mexico City five years later, and with relatively little effort, after the earthquake. Once signed, the loan signalled a new and positive era for Bank-Mexico relations in the urban sector.

F. The Bank's Experience with Disaster Relief Projects

12. An increasing percentage of Bank urban projects have dealt with disaster relief. Prior to the Mexican earthquake, the Bank had financed reconstruction efforts after earthquakes and the civil war in Nicaragua (total of US\$42 million in 1973 and 1979), in Guatemala (US\$46 million in 1976) and most recently in Popayan, Colombia (US\$47.3 million in 1983). Within the year following the Mexican disaster the Bank came to the assistance of another reconstruction project after earthquake in El Salvador, Loan of US\$65 million. After its experience in Mexico, the Bank reinforced its policy development for disaster reconstruction projects.

13. The approach taken in the above projects is worth considering in the light of what was to be the Bank's largest reconstruction effort to date, in Mexico. Reconstruction financing in Guatemala and in Nicaragua was linked to programs to increase the overall housing stock but was not directed specifically to earthquake victims. After an earthquake destroyed much of Managua, the Nicaraguan government decided to intensify efforts to decentralize the country's urbanization patterns, building new housing in secondary cities, precisely where no earthquake victims lived. In Guatemala, on the other hand, when the earthquake of 1976 destroyed and damaged 30,000 homes in the countryside and small towns, the Bank backed a program to build 10,000 new serviced lots in Guatemala City. In Popayan, a multi-sectoral project financed repair and reconstruction of about 9,000 homes in and around the city. Relocation was kept to a minimum. The first two were judged failures both in terms of overall project achievements and, in particular, of meeting the needs of the earthquake victims, while the third, still in process when the earthquake struck Mexico, is considered a success on most counts, faulted only for cost recovery problems.

⁶ from conversations with Mexicans in government at the time of the earthquake, Bank files and interviews with the Bank's Resident Representative at the time.

An important lesson has to do with government commitment. The Bank audit of the two Nicaraguan reconstruction projects points out that the first suffered from Government disinterest, while the second (under a new government) which "did its utmost to faithfully implement the ...project"⁷ met with success.

II. THE PROJECT AND THEIR OBJECTIVES

A. Project Preparation

1. Borrower's Actions

14. From the outset, the earthquake in Mexico sparked events very different from those in the neighboring Central American countries. For their part the earthquake victims made their presence felt and their plight visible. A week after the quake, a march of 3,000 strong began the first of a series of protests by those left homeless. With the aid of public and private agencies the quake victims moved into the streets into some seventy odd camps around the damaged tenements. In a certain way what went on in the street resembled largely what had gone on in the vecindades before the earthquake. In contrast, the victims of the Central American earthquakes were largely hidden from view. Those left homeless in Nicaragua fled to other cities and to the homes of friends and family. The Guatemalans set about rebuilding their homes in the countryside. The El Salvadorans continued to live in the ruins behind the facades of the tenements or in the gullies near the river. San Salvadorans saw their streets clogged with rubble from the quake for several years afterwards, but they were spared the view of the victims living in the highway green areas.

15. In comparison, and in reaction, the Mexican Government acted extremely quickly (PCR para. 2.02) and had already taken the basic decisions and initial actions for reconstruction by the time the Bank's appraisal mission arrived in November (this early appraisal was in itself a recognition of the Mexicans' rapid response). On October 3, the President announced a plan to decentralize government ministries to make use of available housing in the provinces for public sector employees (PCR para. 2.03). More important, on October 7, the Cabinet approved the "Urban Renewal Program for the Marginal and Low Income Areas Affected by the Earthquakes in the D.F.", declaring the decision to rebuild housing for the earthquake victims on their original home sites, and underlining the President's involvement in the reconstruction, as a national, not just a local problem.

16. The decision to rebuild on site was followed on October 11 by a decree which expropriated some 5,500 rental properties damaged in earthquake, as well as those considered to be dangerously deteriorated and those lacking individual services - in other words the "vecindades" or the tenements which housed Mexico City's poorest families (para. 7) Described by some as a measure of "social justice, revolutionary and democratic" and decried by others as "undue

⁷ PAR, Nicaragua reconstruction projects p. vii.

State control, a violation of individual guarantees and property rights, populist and demagogic⁸ the expropriation actually answered pleas to protect earthquake victims from eviction and encountered little resistance from the former landlords since most of the properties, under rent control and owing back taxes, had long since failed to provide them with any income. At the same time, the expropriation had to be carried out fast enough to preclude discussion and, as a result the first decree, based on analysis of aerial photographs, contained many errors, repetitions and even expropriations of government-owned properties. Later corrections led to a reduction in numbers of about one thousand properties.

17. On the 14th of October the Housing Reconstruction Program (RHP - see PCR para. 4.05) was established by presidential decree and charged with: a) rebuilding and reorganizing the areas damaged by the earthquakes; b) defining a policy for social development taking into account the traditional form of the *vecindad*, the residents local roots and guarantee ownership, use of appropriate dwelling, rational land use and appropriate urban services; c) to combat land speculation; and d) to rationalize all the building finance and investment which would be channeled into the reconstruction effort. RHP's first task was to carry out a survey of buildings damaged in the quakes and of families left homeless.

18. Completed in December, 1985, together with the introduction of a new building code, the survey of the buildings led to three key decisions. The first to rebuild all the tenements in danger of collapse or unfit to live in, even when the problems stemmed from general deterioration and lack of maintenance, not just from earthquake damage (para. 5); the second to proceed with the demolition of 120 buildings in danger of immediate collapse; and the third to undertake a three pronged project of minor repairs (4,486), rehabilitation on site (11,649), and construction of new housing (28,302). Like the new housing, the repairs and rehabilitation were linked with the occupants' purchase of the housing unit and geared to the population of very poor families from the tenements, who made up the vast majority of earthquake victims. In the end, the rehabilitation and repairs were subsumed to a large extent by new home construction, as the objective changed first from rebuilding what had been damaged in the earthquake to rebuilding what could be damaged in a future earthquake as well, and then to replacing the city's deficient tenements with independent and occupant owned apartments built according to an earthquake resistant building code.

19. In retrospect, RHP's program can be seen as a belated attempt at slum renewal. Once the earthquake revealed the extent of insecurity, overcrowding, and the unsanitary conditions which had prevailed in the inner city's tenements, the government set out to replace them. Each family should have its own apartment with independent kitchen and bath. This meant building new housing for sale to every disenfranchised family, not merely replacing the lost tenement rooms (para. 25).

20. After studying the profiles of the earthquake victims' needs and finances, the Mexicans discarded their own initial proposal to finance self-help and progressive development units which would have varied according to the

⁸ RHP Memoir, p.15

buyer's income level. Since the target population's economic and family situations by and large conformed to general characteristics, the RHP opted to build according to a standard design formula at a standard price. The apartments varied some from site to site, but offered the same size (40 meters square), in groupings of less than 20 apartments. The financing plan and price were designed to be affordable to families who earned from one to two and a half minimum salaries (up to the 40% of victims according to current income distribution figures). Families who could afford larger units were offered another option as FOVI made available recently built apartments on the outskirts of Mexico City. FOVI, which collaborates with banks who agree to finance construction of middle income (2 to 10 minimum wages) housing finances all finished homes and apartments. The project looked very different from the Bank's traditional housing and disaster reconstruction projects which had emphasized progressive housing and serviced lots (paras. 1 and 51).

2. Bank's Response

21. The Bank responded to the Mexican request for support by accelerating preparation, bypassing project brief and appraisal report stages, and presenting the project directly to the Board five months after the disaster. Four months later the loan became effective. In the meantime, US\$173 million was made available for emergency needs (PCR paras. 2.05 and 2.06) through reallocation from on-going loans. The Vice-President's office sent the appraisal mission off with an authorization to endorse force account, to relax procurement limits so as to allow small packages, to increase the Bank's share above the 50% specified in the standing structural adjustment program, and to offer emergency funds for up to one year. While these were infrequent, but not unknown in the Bank's dealings, the financing of demolition, of purchase and repair of used housing (para. 41) and of construction on expropriated land, represented exceptions to Bank practice.

22. Involvement in housing reconstruction seemed appropriate since the Bank was familiar with the sector and most issues involved in the housing construction component had already been sorted out under the first FONHAPO loan (para. 10). The bottleneck had been cost recovery since FONHAPO charged an interest payment which increased at a fixed rate, well below the current inflation. As in its first loan to FONHAPO, the Bank loan required FONHAPO to report on its cost recovery for the reconstruction project as well and, in the event that the level of payments dipped below 50%, to take action satisfactory to the Bank.

B. Project Description

1. Objectives

23. The project objectives listed in the PCR (para. 3.01) differ somewhat from those mentioned in the President's Report and Recommendation for the Earthquake Rehabilitation and Reconstruction Project and analyzed here:

- "a) to assist the Government in the rehabilitation (repair of damaged buildings) and reconstruction (complete rebuilding of structures) of the urban areas damaged by the earthquake; and

- b) to improve construction standards and planning through regulatory instruments at the municipal, state and national levels to protect urban infrastructure and superstructure from future earthquakes."⁹

24. The project proposed to meet the first objective with rather straightforward demolition, clearing away and replacement of dangerous and heavily-damaged buildings, and with repairs or rehabilitation of the salvageable buildings. As Table 1 shows, this involved some 70,000 housing units, as well as schools (48) and hospitals. For the second objective, the project would undertake "reinforcing school buildings in the Federal District and a program of technical assistance and studies designed to identify the earthquake hazard urban areas in the country and to develop appropriate damage mitigation measures and regulations, appropriate construction codes and land-use and micro-zoning plans at the municipal level."

25. The project's strongest measure for mitigation of future disaster losses resided in its proposed transformation of some 50,000 rental units into owner-occupied apartments (para. 19). Although neither the President's Report, nor the Loan Agreement mentioned this objective directly, the Bank's collaboration was implicit in its support of FONHAPO and FOVI's mortgage instruments.

⁹ President's Report, Para. 49.

Table 1
Project Components and Costs

	At Appraisal				On Completion						
	# of units ¹⁰	%	costs ¹¹	%	# of units	%	costs change	%	% change	units	\$
A. Housing: (sub-totals)	69,770		333.56	58	78,232¹²		393	61		12	13
Reconstruction	39,270	56.3	231.7	40.3	64,109	82	374.3 ¹³				
Rehabilitation	30,500	43.7	101.86	17.7	12,001	15	8.6				
NGO's					2,122	3	n.a.				
B. Community Facilities:											
Schools ¹⁴ :	998		40.8	7.0	2,770		69.3	8	179	21	
Reconstruction	48	5	16.8	2.5	382 ¹⁵	16	18.3				
Reinforcement	950	95	26.0	4.5	2,388 ¹⁶	86	31.5				
Health-Care Facilities:			106.8	19			113.3	18	n.a.	6	
total beds:	2,000				n.a.						
Metropolitan Hospitals	6	60 ¹⁷	31.5	9.7	6		49.1				
Regional Hospitals	5	40	35.3	9.0	5		64.2				
Municipal Markets	13		8.0	1.6	13		n.a.		(dropped from project)		
C. Demolition of Damaged Buildings and Debris Removal			61.63	10.7			62.5	10	n.a.	0	
(16,300 dwelling units and an unquantified number of buildings labelled "public nuisance")											
Demolition			51.6	9.0							
Debris Removal			10.02	1.8							
D. Technical Assistance and Administration			20.6				7.2	1.2	n.a.	-64	
Institutional Support and Project Administration			14.6	2.6			7.2	1.2	1.2		
			6.0	1.0			n.a.				
E. Totals			571.4	100.0			622.5	100	9		

¹⁰ The PCR mentions 72,000 units in the Project Description (Para.3.02) but this appears to be a typographical error considering that it later states that the number of dwellings planned were 69,800 (Para. 6.02). The dwelling units listed in the Loan Agreement, Schedule 2, add up to "about 69,800".

¹¹ in US\$ millions of 1985.

¹² Mexican PCR, paras. 35,41, y 47

¹³ Based on Audit's calculations.

¹⁴ Since IDB financed the rehabilitation of some 1900 damaged schools the Bank agreed to finance the "retrofitting" of the remaining schools, i.e. bringing them up to earthquake resistant standards. In fact in Schedule 2 of the Loan Agreement, where the only legal description exists, the number of schools or classrooms to be attended to is unspecified.

¹⁵ PCR, table 4

¹⁶ Mexican PCR para. 81

¹⁷ in number of beds planned.

2. Institutional Arrangements

26. As described in the PCR (para. 4.03) the project was nominally run by an inter-ministerial committee. However, the actual borrower, BANOBRAS, deserves to be singled out, as well as the implementing agencies; RHP, FONHAPO, FOVI, IMSS and CAFFCE. BANOBRAS not only channeled Bank funds to the implementing agencies but also played an important role in approving contracts and guiding disbursements (para. 33).

27. The components dealing with housing were divided into three groupings depending on the income level of the beneficiaries and on the origin and location of the housing sites. FONHAPO and FOVI managed housing programs congruent with their general clientele and traditional programs, which financed families who already owned land, or financed land purchase along with the housing. The expropriated properties were left in the hands of RHP (para. 16, and PCR para. 4.05). RHP was also charged with the complicated task of registering, housing, and consoling the earthquake victims, while negotiating the new solutions with them. This was no minor feat. RHP had to deal first with homeless families living in the street and with widespread distrust of its own intentions. RHP went from dealing with collaborating with the insurgent neighborhood reconstruction committees, with opposition parties and NGO's (PCR para. 5.04). The school and health components were under the aegis of their respective agencies, as described in the PCR (para. 4.06.)

28. Early on, the Bank recommended "the use of commercial banks as the most suitable first tier mechanism to channel the available resources of the reconstruction fund to the beneficiaries." Aside from the FOVI, which uses commercial banks as the financial agents for its low and middle income housing programs, the housing program stayed in government hands. In comparison, the El Salvadoran government relied on commercial banks to handle a significant part of its home reconstruction loans program, with unfortunate results (para. 56).

3. Components, Costs, and Financing

29. Housing made up the largest component and followed the plan developed by the Mexicans during project preparation (paras. 14 through 20). The general project outline is described in Table 1 and in the PCR (paras. 3.02-4.07). The total costs of RHP's reconstruction program were estimated at US\$700 million, an amount which subsequently dropped to US\$571 million during design and increased during construction (para. 31). Bank participation thus went from a recommended 70% during preparation to 83% in the Loan Agreement to 76% in the final analysis (para. 30) as shown in Table 2 below. Since most expenses were local and reimbursements came in foreign currency, the financing came to a boon to Mexico, then confronting an external debt crisis (para. 8). Fortunately, Mexico could execute the reconstruction program without significant imports. In other countries, which suffered from natural disasters in the same years, notably Jamaica, the Sudan, and El Salvador, local industry could not supply the needed amounts of building materials.

Table 2Project Financing

(in millions of US\$ of current years)

Costs	Estimated (1986)		Actual (1986-1990)	
Costs	571.4		622.5	99%
Participation				
Bank	481.8	84%	475.88	76%
Mexican Govt	67	12%	108.32	17%
Beneficiaries	23.2	4%	38.3	6%

III. IMPLEMENTATION, ACHIEVEMENTS, AND IMPACTA. Time Delays, Cost Overruns, and Cancellations

30. As the PCR states (para. 5.01), implementation went smoothly. Delays in hospital construction were caught up (PCR para. 5.11) and the reconstruction of Mexico City's Siglo XXI health center mentioned tentatively in the PCR (para. 4.06) has become an impressive reality. As Table 1 shows, overall project costs were around 9% more than programmed, although the missing information on administrative costs might increase this percentage somewhat. But the increased costs correspond to increased production in almost all components, and except for RHP, most administrative costs were absorbed by current costs of existing agencies. During the reconstruction process more damaged and vulnerable buildings came to light than had been originally counted and, in the case of the schools, the need for protective retrofitting of the undamaged buildings also became obvious. While the overall project cost increased, unit costs were actually reduced.

B. Achievements

31. In a project where most components were marked highly successful, the housing component is most impressive. The latest figures available to the Audit suggest that the number of units completed not only exceeds the number anticipated at appraisal by about 8,500, or 12%, but even overrides the number given in the PCR by some 6,000. Table 1 shows that the cost of the housing component was on the order of US\$50 million more than anticipated at appraisal (about 15% more overall), while coverage was also 10% higher. But the significant difference can be noted in the change from repairs and rehabilitation versus new construction (47%/53% at appraisal compared to 15%/85% at project completion). The average cost of a new RHP or FONHAPO dwelling dropped only

slightly from US\$5,795 at appraisal to US\$5,726 at project completion¹⁸, but the cost of repairs and rehabilitations dropped from an estimated average of US\$3,340 to US\$700. What happened, in fact, was that RHP's technical team found that repairs and retrofitting often would cost more than new construction, particularly given the decisions to rebuild with private baths and kitchens. Thus, except for very minor repairs, most housing was rebuilt entirely.

32. The sustained and unrelenting effort which the project represented for RHP, FONHAPO and FOVI deserves special comment. A year after the earthquake, SEDUE's evaluation of RHP's activities announced that 100,000 dwellings had suffered damage in the quake and that a total of 93,339 families were being helped by government and NGO programs. A total of 82,857 dwellings were being acted on; 28.5% had been completed and allocated, 42% were under construction; 22% were to be started in 1986 and 7% in 1987. Meanwhile, in February, 1986 RHP revised the rules to attempt to house each family in a new dwelling (not simply to replace each dwelling). This meant an additional 2,000 units. The NGOs which built housing (PCR para. 5.04) helped, but on a very minor scale. Their housing is of generally inferior quality to RHP's, and was delayed in construction, although the NGOs subscribed to the same guidelines as RHP for design, and for repayment schemes. The NGOs' contributions would probably have been put to better use if it had been donated outright to RHP. It would, however, have been difficult to overcome the distrust of government, well-founded when one considers the history of earthquake reconstruction efforts among Mexico's neighbors (paras. 13).

33. Once in full swing, the agencies calculated that they were spending over one million dollars and signing an average of four contracts daily which meant a massive accounting effort as well as a sophisticated construction organization. In view of the work pace, the Bank suspended normal requirements for pre-review of project contracts and accepted an arrangement whereby BANOBRAS gave local approval and the Bank reviewed only a selected number of projects. The Bank also allowed a few contracts to be awarded without public bidding. In this case the Bank's trust appears to have been amply rewarded by effective management and economic products (para. 39). Numbers aside, the reconstructed housing is of a quality rarely found in public sector housing, or private housing for low income families anywhere, and at reasonable costs. The designs respected the urban life style of the beneficiaries, maintaining the common areas and patios, and low density, while respecting the needs of each family for space and privacy.

34. The schools component costs were some 21% more than its appraised costs but it appears also to have widely surpassed its goals (by 179%), although it could be asked how many more schools came to be rebuilt than were reported destroyed in the first place (para. 2); answers will not be forthcoming since the CAPFCE staff who worked in the reconstruction project has long since left the agency, as have their replacements. The PCR explains that the DDF (the city government) in fact retrofitted some 3,000 undamaged schools to bring them up to standards set by new construction codes. This is confirmed by the Mexican

¹⁸ FOVI's costs remained fairly constant at US\$6,370/dwelling.

PCR (paras. 77-83) and represents an important preventive measure included for the first time in a Bank reconstruction project. There is still some confusion about the numbers, however, as evidenced by the contradiction between those given in the PCR's table 5 (the same as Table 1 here) and the PCR's text (para. 5.10).

35. The studies and technical assistance (PCR para. 5.12) represent the only component which fell short of expectations. The Bank team had hoped to capitalize on the awareness produced by the earthquake, to extend the preventive actions to the rest of the country, and to apply micro-zoning methods to Mexico City itself. As the PCR explains, the enthusiasm with which the Mexicans were dealing with the earthquake waned just as bureaucratic squabbles began to prevail (PCR para. 5.09). However, the basic intentions of this component, i.e. revisions to all the building codes in the country in the light of disaster prevention, were carried out by SEDUE in the years following the project (PCR, Part II, paras 6-7). Mexican government functionaries commented to the Audit that they prefer to carry out studies on their own and not within the framework of a Bank project.

36. Like the Mexicans, the Bank also appears to have lost its enthusiasm for disaster relief after the reconstruction phase. A follow-up project aimed specifically at disaster prevention and mitigation was appraised but never negotiated (para. 40). It included financing for retrofitting the remaining public buildings and schools of Mexico City, as well as micro-zoning measures considered necessary by the Mexican government (PCR, Part II, para.7). The original project went much farther beyond mere reconstruction than most, however. The conversion of over 70,000 properties from tenement to owner-occupied apartment will have a most lasting effect on the maintenance and resistance of Mexico City's housing as will the retrofitting of schools and the introduction of earthquake insurance as part of the mortgage arrangements. Each of these measures will have both preventive and mitigation effects over the long term.

C. Policy Impact

37. One does not expect major policy changes from a disaster reconstruction project. Indeed the Bank stipulated from the beginning that it would not attempt to make policy changes:

"The Bank's assistance strategy is ... within the existing administrative structure for financing, the rehabilitation and reconstruction without creation of a new institutional framework which has been the underlying weakness in some previous reconstruction projects. No major policy reforms are sought."¹⁹

In the Audit's view, however, the project did make significant impact both on Bank and on Mexican policies.

¹⁹ Memo from David Knox, project files.

1. Impact on Bank Policies and Follow-On Projects

38. The Mexican reconstruction project awakened the Bank to the importance of disaster reconstruction programs, and led to the study and formulation of disaster reconstruction and prevention policies. It also began to acknowledge that working in reconstruction projects can benefit from certain expertise and experience, which led, consciously or not, to its identifying seasoned persons who had worked in disaster reconstruction to manage such projects. The improved Bank policies can be seen in the Jamaica Emergency Reconstruction Loan, after hurricane Gilbert in 1988. The loan was put together by the much of the same team which worked in Mexico. It applied the needed flexibility and became effective four months after the hurricane.

39. The flexibility which the Bank showed in relaxing its requirements for approving contracts not only sped the reconstruction project along but has also, subsequently, been applied in other Bank projects in Mexico. After the earthquake reconstruction experience, BANOBRAS has taken over more of the Bank's former administrative procedures and thus speeded up the contract approval process for all Mexico's housing loans, and the reimbursement process as well for water sector loans. The Mexican government has commented formally on this change as a very positive outcome of the reconstruction project (PCR, Part II, para. 9). Informally some functionaries have remarked, "It was as if Daddy finally trusted us with the credit card... and saw that we could handle it quite well."²⁰

40. Ever since the 1970's when the Bank first financed low-income housing, it has prided itself on supporting low-cost solutions, affordable by the target populations. As evidenced in the FONHAPO loan made one year before the earthquake, this meant serviced lots and loans for self-help construction. The experience in Mexico awakened the Bank up to other ideas about government housing programs. Notably, it led to negotiations of a first loan to FOVI, a housing fund which assists private sector builders of middle-income housing to secure long term mortgage financing. The FOVI loan was disbursed very successfully and a second loan has recently been signed. The project also led to the Bank's financing home improvement loans through FONHAPO, a category it had previously rejected. While one of the project's most interesting features, loans to purchase and to rehabilitate existing housing, has not been replicated elsewhere, it has been carried on by the Mexican government. It also led to the preparation and appraisal of the Bank's first disaster prevention project, even though the loan itself was never negotiated (para. 35).

2. Impact on Mexican Policy and Policy Makers

41. The reconstruction project fostered several changes in Mexican housing policy, and in its policy toward disaster prevention and mitigation. In the first category, the success of the "casa propia" program, financing the sale of rental property to occupants has continued and has been followed up by new lines of credit for "used" housing (para. 7). Also, FONHAPO and FOVI financed houses are now obliged to carry earthquake insurance as part of any mortgage

²⁰ Interview, former SPP and RHP officials, August, 1992.

guarantee. The national Ministry of Government has established a special office for disaster mitigation and the municipal government of Mexico City has initiated a program of education and prevention via the schools and the little city halls. It is notable, at the same time, that the expropriation which was used following the earthquake continues to be a strictly emergency measure and has not been made general policy. By the same token, the rent controls, which received much blame for the deterioration and consequent vulnerability of the inner city apartments, were subsequently repealed, and the government continues to promote its policy of financing the purchase and rehabilitation of tenements.

42. Persons involved in the reconstruction effort in Mexico have moved on to higher offices and influential positions in Mexican government as a reward for jobs well-done. The project gave a many professionals an opportunity to perform. Insofar as the same group of hard working and competent technicians have continued to rise in Mexico's governmental apparatus, the project impacted on government operations and on its image.

IV. POINTS OF INTEREST

A. Local Participation in Reconstruction - How Did They Do It ?

43. RHP managed the demolition, clearance, reconstruction and repairs of over forty two thousand apartments while supervising the temporary shelter and situation of some eighty five thousand families. RHP started out without any previous planning or experience in emergency situations, a factor which explains the first months of apparent inaction while it developed an effective organization. Initially a replica of FONHAPO, it soon reorganized into a much tighter organization based on a direct link between the Director General and thirteen "modules", which became the key to the reconstruction effort.

44. The "modules" were reception centers to attend the earthquake victims. Each module formed a "renovation council" made up of the victims, which assisted in the first task of counting the earthquake victims and verifying the identity of those who claimed "certificates of right" (to a replacement dwelling.) Representatives of the different agencies offering housing (RHP, FOVI, INFONAVIT, FOVISSTE and the various NGOs) met with victims at the modules and worked out which solution would be best for each family. Since the basic commitment was to rehouse families on the same sites where they had lived before the quake the modules sorted out the groupings of people to be housed in each new apartment building, and worked together with them during the design phase. Families joined together in determining the materials for common areas, pavings, planters, location of water tanks and shrines, etc. Every apartment plan had to be signed by their eventual owners before construction could begin.

45. While about half of the families continued to live in temporary shelters in the streets, with RHP supplying water, sanitation, and cooking implements, another half opted to take advantage of RHP's rental aid program. Families who moved out of the shelters and in with family, friends or found vacant apartments, were given a monthly subsidy, which turned out to cost, in

total, considerably less than financing the temporary shelters. Meanwhile, the modules became important for maintaining contact with families who had dispersed.

46. For owner occupied apartments which needed repairs and rehabilitation, RHP established ten depots in key locations throughout the city where families could go to pick up construction materials and to get technical advice. The depots were later transferred to FIVIDESU, the municipality's low income housing agency. FIVIDESU ran them at a loss for several years after the earthquake before unloading them.

47. In order to keep disruption of normal urban activities to a minimum, RHP carried on most of its activities at night. Meetings with beneficiaries and counseling went on from evening on. The overwhelming task of trucking some two and a half thousand tons of rubble out of the city, and bringing in an equivalent load in new building materials was carried out from midnight to five a.m. In collaborative spirit, the Bank supervision missions adjusted their hours to meet with RHP's nocturnal shifts (para. 50).

B. Cost Recovery

48. Cost recovery could be the project's only point of failure, and it stems largely from RHP's rapid rate of implementation. Mortgage conditions set a payment fixed to a percentage of the minimum wage and interest rates varying from 13% to 17%. Although the Loan Agreement included the same stipulation as FONHAPO's (para. 22) and although the evidence was that cost recovery was falling below 50% by 1986, and worse when inflation rose above 50% in 1987, the reconstruction project moved too fast for the new mortgage instrument developed by FONHAPO to be applied. About 20% of the beneficiaries, those who got housing through Fase II and Casa Propia, the second round of construction by FONHAPO (PCR para. 5.06), did repay through the new FONHAPO mortgage instrument, which reported a rate of cost recovery of over 65% in 1989. Another 15% paid through FOVI's system, which claims 100% cost recovery. However, none of the beneficiaries were charged full cost of land (expropriation), administration, or construction financing to begin with. The amount of this "up-front" subsidy remains unknown.

C. Sustainability

49. The Audit's visits to the reconstruction sites confirm that the housing has maintained its high quality, some six years after completion. The state of common areas varies from apartment block to apartment block, but in general the housing remains attractive and well-kept even though the bright colors have faded. In this sense the project's objective of creating a new environment which would be less vulnerable to future earthquakes (para. 23) has been met and is being sustained. Inevitably there are many instances of families expanding their apartments at the expense of communal areas, something future architects should bear in mind. But the general appearance, density and structural quality of the apartments remains sound. Furthermore, the RHP housing was all sold with earthquake insurance as a condition of the mortgage (para. 39). However, while the buildings appear safe from natural disaster, it is not clear that the target population is equally safe. A percentage of the beneficiary families have cashed in on their windfall, sold out and moved elsewhere. Mexico

City's social policy officer for housing programs, formerly director of social development for RHP and FONHAPO believes that the vast majority of the present residents of the reconstruction housing are not the first owners. The Audit's spot visits tend to confirm the Mexican official's assertion, although the population appears more steady in the apartments subject to minor repairs (where the windfall was less pronounced). The housing does not appear to be subject to drastic gentrification. Families have generally sold out to the relatives of families who remain, so the poverty impact appears unimpaired.

D. Bank - Mexico Relations

50. The reconstruction project created a new bridge of trust between Mexican negotiators and the World Bank. As one Mexican official put it, "the Bank showed us its human face." On the other hand, the Mexican government showed itself as efficient, and caring. The project gave the government a new confidence which marked a turning point in Bank-Mexican relations. Given Mexico's success in the reconstruction effort, and the structural adjustment measures applied alongside it, the government became more confident in expressing its needs and the Bank more respectful of Mexican ideas.

V. THE ROLE OF THE BANK

51. The Bank moved fast. It offered immediate assistance by rechanneling on-going loans while it assured the Mexicans that the necessary financing would be available for the full project and it followed through with a project in record time. The Mexicans, however, had paved the Bank's way by making key decisions about the recovery and reconstruction program before the Bank came on the scene. The time lapse between disaster and loan effectiveness (ten months) compares favorably with that in Colombia (two years), Guatemala (fifteen months) and Nicaragua (fourteen months). While it indicates improved Bank performance (the Bank managed to act even faster in Ecuador, the Sudan and Jamaica) it also reflects on the Mexicans' quick rise to action. The Bank had the wisdom to see a good program and to back it up with an accelerated preparation time and, no less important, with a substantial supervision program.

52. The task manager, an architect-planner well versed in major construction problems, personable and genuinely concerned about the plight of the beneficiaries proved extremely well-suited to the project. Supported by a small team which included the Bank's first explicitly named expert in disaster reconstruction and mitigation, Bank missions held the Mexican's objective and the project in priority throughout and were able to play an extremely supportive role. The RHP staff recalls "this time the Bank missions didn't come to lecture us, they came to help"... "He visited every site. And whenever he'd make a comment like 'That column is off center' or 'The cement is too dry' we'd go back and have it tested because he always turned out to be right." "He accepted the logic of force account and he was willing to go and fight for us." The history of the project is one of continual adjustments to speed up administrative processes and to avoid stagnation for lack of funds or materials. By virtue of his close working relationship with the project, the task manager was able to

recommend greater reliance on and greater flexibility with the Mexicans as well as numerous ways to streamline Bank and Mexican procedures.

VI. CONCLUSIONS AND LESSONS LEARNED

A. Conclusions

53. The Mexico earthquake reconstruction project is rated as satisfactory (same as the PCR rating), and the victims of the earthquake were able to carry on their lives as before the disaster, or better, and the population at large can be assured that the city, and in particular its poorest inhabitants, will not be as vulnerable to the next natural disaster. The experiences in Guatemala and Nicaragua, (paras. 12 -13) remind how difficult it can be to bring the benefits of a reconstruction project to the disaster victims.

54. In Nicaragua, planners decided not merely to repair the damage in Managua, but to reorganize living and working patterns throughout the entire country. In Guatemala, the reconstruction effort was molded onto plans for reception areas in Guatemala City. Mexico's program, in contrast, opted for reconstruction on-site in improved housing. It should be credited for keeping in mind the priority needs of the victims, present and future, and for sticking to reconstruction without getting bogged down in additional objectives (para. 60).

55. The project also took important steps in prevention and mitigation (rehabilitating and replacing housing which was not necessarily damaged by the earthquake but which was too deteriorated to withstand another disaster.) In doing so, it took on not simply the housing units which had been dilapidated but the entire "vecindad" system. Low-income rental units, by definition impossible to keep up to any minimum standard, with shared sanitary and cooking facilities had proved unimprovable. The sustainability of project benefits is rated as likely (same as the PCR-based rating).

56. The project has been labelled paternalistic as it was managed entirely by the government.²¹ The commercial banks, for example, were brought into the financial part of the program, but found that they could not administer savings accounts established by RHP for each of the program's beneficiaries. RHP, which was not a bank nor long established, took on the task instead. Although private builders were contracted to do the actual construction, the bidding system was simplified to a "shopping" arrangement to speed construction. NGO participation was minor (para. 32). The Mexican example counters the dogmatic distrust of the public sector and the project's success stems from the role of government and from its interest and efficiency at the time. The project's institutional impact is rated as partial (the PCR-based rating was negligible).

²¹ see "el día que el paternalismo le tomaron la palabra" (by Carlos Monsiváis) in Un Lugar Para Vivir. Historias de la Reconstrucción by Rafael López Jiménez, Océano, México, 1988.

B. Lessons Learned

1. About Disasters and the Bank

57. The success of the Mexico reconstruction project, and the importance of the Bank's role in it should dispel doubts about the Bank's capacity to undertake emergency projects. By the same token it underlines the fact, mentioned in the audits of both the Guatemalan and Nicaraguan earthquake reconstruction projects, that Bank assistance will only be as effective as government is committed to reconstruction and devotes the management and administrative resources needed to get the job done (para. 13).

58. The project demonstrates that Bank collaboration in emergency projects can be important in gaining the trust of and improving relations with client countries (para. 50). The Bank's acceptance and support of Mexico's proposals for reconstruction also helped in this regard. And the Bank's collaborative spirit won its friends in the Mexican government.

2. About Disaster Reconstruction Projects

59. The project also points out the importance of quick response and flexibility in getting a project underway. Neither the government of Mexico, nor the Bank, lost time in acting, thus benefiting from the outpourings of concern and sympathy for the earthquake victims. The reconstruction began, in reality, the week after the earthquake, underlining another maxim true in Mexico, the shorter the preparation time, the shorter the implementation. The experience offers an important lesson in timing. The components which got put off until after the reconstruction, i.e. the prevention and mitigation studies and a plan to redevelop the historical buildings, unfortunately got abandoned once a stable situation was restored and people could forget about the earthquake. Thus, it is important not only to act quickly, but to include all elements at once.

60. In the same vein, the project underlines the recommendations of the Bank's own disaster guidelines, to concentrate on relief in relief projects. In this case it avoided the serious mistakes of the Nicaraguan, Guatemalan and El Salvadoran projects (para. 13) by sticking to reconstruction and not trying to introduce additional objectives.

3. About Urban Projects

61. By accepting the Mexican plan for financing finished apartments and eventually even the purchase of used housing, in addition to its expropriation policy, the Bank in fact was recognizing that disaster reconstruction not only can differ from the standard housing reconstruction projects, but also that it was more important to support the Mexican proposal than to attempt to foist its own solutions on to its clients. As one Mexican functionary described it, "The Bank accepted that my bureaucracy knows more about how to handle the situation than its bureaucracy".

62. Traditional low-cost housing solutions may not be the appropriate answer in disaster situations. Although reconstruction projects in Nicaragua, Guatemala and Popayan, Colombia financed serviced lots and home construction

loans which made up the Bank's standard menu for housing projects throughout the 1970's, the victims of natural disasters found serviced lots scant replacement for the completely furnished homes built over the years which they had lost. The decision to rebuild housing for the earthquake victims on the sites of their former housing was key. It respected the establishment of community and neighborhood formations as well as location with relation to employment, as few housing projects manage to do.

4. About Institutions and Project Management

63. The project offers an interesting lesson about working with existing institutions. Education and health components were managed successfully by the standard agencies in charge of school and hospital construction. On the other hand, housing, the star component, came under a new agency, RHP, created for the express purpose of implementing the earthquake reconstruction project, notwithstanding Bank intentions to avoid the creation of new institutions (para. 37). RHP, which drew many of its professional staff from FONHAPO and other parts of the housing sector, seems to have gained strength and momentum from the very fact that it was starting out. Indeed, many housing institutions in Latin America are characterized by a burst of vitality and energy in their founding years followed by a long decline. The secret of RHP's success seems to lie in the fact that its life was cut off after the initial burst of energy. The real danger of using new institutions in emergency situations is that they may live on after the emergency is over.

64. Most audits end by lamenting the need for more supervision and pointing out the relation between preparation and supervision. This project had an average of one mission per four months, virtually all supervision, since the project was actually underway during its presumed appraisal.

65. The system applied by RHP (paras. 43 - 47) offers a lesson also for relocation and resettlement in urban situations.

5. In General

66. The project represented a massive spending and construction effort at a time when many officials argued that the Mexican government should cut back on public spending. It does appear, however, to have had no negative effect on Mexico's economic recovery and the PCR suggests (para. 6.01) that it even helped, since it generated economic stimulus which helped to counteract the disruptive impact of the earthquake on the national economy.

Comments from the Borrower
(Translation from Spanish original)

National Development Bank for Public Works -- BANOBRAS
International Finance Agencies Department

Ref.: GOFI-1065-93

May 27, 1993

Mr. Yves Albouy
Division Chief
Infrastructure and Energy
Operations Evaluation Department
The World Bank

Subject: Loan 2665-ME

Dear Mr. Albouy:

I have the following comments to make on the Performance Audit Report for the Earthquake Rehabilitation and Reconstruction Project (Loan 2665-ME):

- In the Glossary of Acronyms, the title of the IMSS should read *Instituto Mexicano del Seguro Social*.
- In the section entitled "Background," the dates of the earthquakes, which were September 19 and 20, 1985, should be corrected.
- With regard to para. 41 of the report, on December 31, 1992 the Government of Mexico repealed the decree freezing rents in the Federal District and on December 25 of that year the same provisions for the State of Nuevo León were abrogated. This was to avoid property deterioration to the extent possible.

Yours truly,

/s/ Ismael Diaz Aguilera
Manager