

Document of  
**The World Bank**

**FOR OFFICIAL USE ONLY**

*LN 3263-PH*

**Report No. P-5379-PH**

**MEMORANDUM AND RECOMMENDATION  
OF THE  
PRESIDENT OF THE  
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
TO THE  
EXECUTIVE DIRECTORS  
ON A PROPOSED LOAN  
IN AN AMOUNT EQUIVALENT TO US\$125 MILLION  
TO THE  
REPUBLIC OF THE PHILIPPINES  
FOR AN  
EARTHQUAKE RECONSTRUCTION PROJECT**

**SEPTEMBER 23, 1990**

**This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.**

## CURRENCY EQUIVALENTS

Currency unit = Peso (P)

US\$1.00 = P 25.0

P 1 = US\$0.04

(as of September 14, 1990)

## ABBREVIATIONS AND ACRONYMS

ADB	-	Asian Development Bank
BHS	-	Barangay Health Station
CB	-	Central Bank of the Philippines
CIF	-	Cost Insurance and Freight
COA	-	Commission on Audit
DBM	-	Department of Budget and Management
DLG	-	Department of Local Government
DOF	-	Department of Finance
DOH	-	Department of Health
DPWH	-	Department of Public Works and Highways
DSWD	-	Department of Social Welfare and Development
ERR	-	Economic Rate of Return
GOP	-	Government of the Philippines
GSIS	-	Government Services Insurance System
HDMF	-	Home Development Mutual Fund
HUDCC	-	Housing and Urban Development Coordinating Council
IBRD	-	International Bank for Reconstruction and Development
LCB	-	Local Competitive Bidding
ICB	-	International Competitive Bidding
MHC	-	Main Health Center
NCR	-	National Capital Region
NEDA	-	National Economic Development Authority
NHA	-	National Housing Authority
NHMFC	-	National Home Mortgage Finance Corporation
NIA	-	National Irrigation Administration
PCR	-	Project Completion Report
PCU	-	Project Coordinating Unit
PHC	-	Primary Health Care
PIU	-	Project Implementation Unit
RDC	-	Regional Development Council
RHU	-	Rural Health Unit
RP	-	Reconstruction Proposal
SOE	-	Statement of Expenditure
SSS	-	Social Security System
TA	-	Technical Assistance
USAID	-	United States Agency for International Development

## FISCAL YEAR

January 1 - December 31

PHILIPPINES

EARTHQUAKE RECONSTRUCTION PROJECT

Loan and Project Summary

Borrower: Republic of the Philippines

Beneficiary: National Home Mortgage Finance Corporation for the housing component

Amount: US\$125 million equivalent

Terms: Twenty years, including a five-year grace period, at the Bank's standard variable interest rate.

Relending Terms: Interest Rate - A rate acceptable to the Bank will be agreed upon.

Amortization Period - 20 years including a grace period of 5 years.

Foreign Exchange Risk - To be borne by Borrower.

Financing Plan:

Government	US\$ 57.7 million
IBRD	<u>US\$ 125.0 million</u>
Total	<u>US\$ 182.7 million</u>

Economic Rate of Return: Not applicable

Staff Appraisal Report: Not applicable. A Technical Annex is attached.

Maps: Nos. IBRD 22617, 22618 and 22619

**MEMORANDUM AND RECOMMENDATION OF THE PRESIDENT  
OF THE INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
TO THE EXECUTIVE DIRECTORS  
ON A PROPOSED LOAN  
TO THE REPUBLIC OF THE PHILIPPINES  
FOR AN EARTHQUAKE RECONSTRUCTION PROJECT**

1. The following memorandum and recommendation on a proposed loan to the Republic of the Philippines for US\$125 million equivalent is submitted for approval in support of the Government's earthquake reconstruction efforts. The proposed loan would have a term of 20 years, including five years of grace, at the standard variable interest rate.

2. Background. The earthquake experienced by the Philippines on July 16, 1990 was one of the strongest and most destructive to occur in the country during the last 40 years. The tremor had a magnitude of 7.7 on the Richter scale and affected an area of about 100,000 km<sup>2</sup> on the island of Luzon. The earthquake's epicenter was located near the city of Cabanatuan, about 60 miles north of Manila. Since July 16, about 130 aftershocks have occurred, at least 15 of which have had magnitudes of 5.0 or more on the Richter scale. The most serious damage occurred over an area of about 15,000 km<sup>2</sup>, affecting the cities of Baguio, Dagupan, and Cabanatuan and the towns of Agoo, Aringay, Caba and Sto. Tomas, which received severe damage to their municipal buildings, markets, schools and housing. Overall, at least 1,700 people have died, 700 are still missing, 3,500 were injured, and more than 24,000 houses were destroyed. The damage to homes and public infrastructure (mainly roads, bridges, ports, schools, hospitals, and government buildings) totals an estimated P 15 billion (US\$600 million equivalent). The earthquake's total damage to agriculture, private buildings, mining and tourism, is still being assessed by the Government.

3. To cope with the disaster, the Government has formulated a three-stage program. The first stage, rescue and relief operations, under the National Disaster Coordinating Committee, focused on the immediate actions needed to help the people affected and lasted for about two weeks. The second stage, rehabilitation and recovery, is under the direction of the Presidential Task Force on Rehabilitation and is focused on rapidly executed projects to put vital infrastructure back into service. The second stage started on July 25 with an expected duration of one year. The third stage, reconstruction and development, comprises the longer-term restoration effort, with about 50 days of planning and three to five years of execution. The National Economic and Development Authority (NEDA) in cooperation with other government agencies is responsible for this third task.

4. The overall Reconstruction Program for public infrastructure and housing would cost an estimated US\$600 million, for which the Government will need about US\$500 million in external financing. It is currently seeking this assistance from various external donors and multilateral sources. Many governments and multi-lateral donors have expressed a willingness to assist the Government of the Philippines (GOP) in financing its Reconstruction Program. The United States Agency for International Development (USAID) which has agreed to provide about US\$20 million to finance the reconstruction of schools, public

markets and local roads. The Asian Development Bank (ADB) is expected to complete its appraisal of a US\$100.0 million loan on concessional terms in late September 1990. The Government of Japan has been requested to provide a US\$ 300.0 million commodity loan and will respond after the GOP has completed the damage assessment and financing plan. The proposed Bank loan will provide 25% of the external financing required, and when combined with the reallocation of about US\$79 million of uncommitted funds from existing loans, will provide the Government with about 34% of the estimated cost of the Reconstruction Program.

5. Bank Approach and Project Preparation. In response to the Government's request for assistance in reconstructing infrastructure damaged by the earthquake, the Bank's strategy was to begin immediately preparing a possible emergency reconstruction loan while at the same time identifying uncommitted funds from existing loans that could be reallocated to provide immediate financial assistance to the area. The Bank's initial damage assessment mission, comprising the Resident Representative in Manila, a highway engineer, and a port consultant, was dispatched one day after the earthquake, on July 17, to assess the situation and gather information for a possible reconstruction loan. This assessment mission was followed by a mission, beginning August 9, 1990, which identified and appraised the proposed project. Negotiations for the loan were conducted in Manila from September 12 - 14, 1990. During the appraisal, the Government indicated that the uncommitted balances in the loan accounts of six existing Bank loans would be utilized to address the needs of education, municipal development, port facilities, energy, irrigation, and housing.

6. Project Objectives and Rationale for Bank Involvement. The objective of the proposed multisectoral project would be to minimize the adverse economic impact of the disaster by assisting in the reconstruction of essential infrastructure and other facilities to promptly restore economic activity in the affected area. In addition, the project will introduce measures to lessen the impact of future earthquakes. The project will cover sectors in which the Bank has previous experience and current loans, and therefore a comparative advantage in quickly identifying needed repairs, coordinating new work with ongoing contracts, and ensuring that reconstruction plans are compatible with the overall policy framework in each sector. Bank involvement will also bring international experience to bear on the development of Reconstruction Proposals (RPs) for the affected area and to prevent the recurrence of similar earthquake damage in the future by strengthening existing building codes and/or their enforcement. Land use controls (height and building bulk limitations) will also be improved with special restrictions and penalties for high-risk zones, e.g., flood plains and unstable soils/geology.

7. Project Description. The proposed project will finance reconstruction activities over a three and one half year period, including: (a) reconstruction investments in key infrastructure and housing (accounting for 79% of total base costs); (b) financing of critical construction materials and commodities needed to implement the project (16% of base costs); and (c) technical assistance for both project execution and the implementation of measures to mitigate earthquake damage in the future, including the provision of training in geology and seismology and the procurement of equipment for seismological studies (5% of base costs).

8. The reconstruction investments would be focused on four subsectors: (a) roads and bridges - to reconstruct and rehabilitate a portion of the national highway system destroyed or badly damaged by the earthquake and landslides which followed, and a portion of the local roads and bridges connecting towns and villages to the highway system; (b) housing - to reconstruct or repair homes destroyed or damaged in seven urban areas through the on-lending of project funds by the National Home Mortgage Finance Corporation (NHMFC) for housing credit programs carried out by the National Housing Authority (NHA) and private housing entities; (c) medical facilities - to reconstruct and re-equip damaged hospitals and clinics; and (d) irrigation - to reconstruct damaged irrigation systems. Project technical assistance would prepare detailed designs and procurement documents and supervise contracts for project components. It would also: (a) help develop Reconstruction Proposals for the affected areas; (b) recommend revisions to the local building codes where needed; (c) improve the level of technical expertise in earthquake-resistant construction, in both the construction industry and the public sector via training to enhance the quality and resilience of national infrastructure and private buildings; and (d) re-establish a network of seismic monitoring instruments throughout the country.

9. Estimated Costs and Financing Plan. The total cost of the proposed project, including taxes and contingencies, is estimated at US\$182.7 million equivalent, with a foreign exchange component of US\$106 million or 58%. The proposed Bank loan of US\$125 million would finance about 70% of total project costs. A summary of project costs and financing is presented in Schedule A. Due to the emergency nature of the project, US\$25.0 million will be provided under retroactive financing for the removal of debris, opening of roads and bridges, temporary hospitals and medical facilities, and the acquisition of essential construction materials. Amounts and methods of procurement, the proportion of expenditures to be financed and the disbursement schedule are shown in Schedule B. A timetable of key project processing events and the status of Bank Group operations in the Philippines are given in Schedules C and D, respectively. Maps (IBRD 22617, 22618 and 22619) are also attached.

10. Implementation. To expedite execution, the project would be implemented within the Government's existing organizational framework and would rely on the line agencies' technical expertise to monitor and supervise the implementation of their respective project components. A small Project Coordinating Unit (PCU) has been created under the jurisdiction of the Department of Public Works and Highways (DPWH) to monitor and coordinate the project. This unit would be supplemented by geo-technical consultants to advise the implementing agencies on site location and design issues. Responsibility for actual project implementation, to include all procurement, contracting and submission of disbursement applications to the Bank, would be with the Project Implementation Units (PIUs) established in each of the line agencies for the implementation of the project. These agencies and departments are familiar with the Bank's policies and procurement procedures. A Steering Committee would be established in each of the affected regions to advise the PCU on procedures to facilitate project implementation. The Steering Committees would meet with the PCU on a quarterly basis for a formal review of the project. The PCU will submit quarterly and annual progress reports to the Bank, the Government's Project Facilitation Committee and to the Steering Committees. No problems are

envisioned with project start-up since the first year's works are ready for immediate implementation. The implementing agencies have allocated available staff to the PIUs and will select consultants, where needed, to assist in the preparation of the detailed designs for the various project components. The completed designs will be reviewed by the geo-technical consultants working with the PCU and the PIUs prior to their submission to the Bank for review. A portion of the counterpart funds for the first year of project implementation have already been released. The remainder of the counterpart funds will be released throughout the year.

11. Actions Agreed. The Government has agreed to: (a) include the expenditures required to implement the project in its annual budget proposals for the project years, with adequate arrangements for the flow of counterpart funds; (b) implement the project in accordance with technical, financial, and environmental standards and procedures acceptable to the Bank; (c) prepare Reconstruction Proposals (RPs) for each jurisdiction in the affected area by March 31, 1991 and submit the RPs for review and comment by a technical panel, established by the Government in consultation with the Bank; (d) maintain adequate qualified staff in each of the PIUs and the PCU and provide the necessary facilities to ensure qualitative and timely implementation and supervision of the proposed project; (e) require the various implementing agencies to employ both local and foreign consultants, where needed, to serve as technical and project advisors to ensure rapid project implementation in accordance with appropriate geo-technical standards; and (f) on-lend a portion of the proceeds of the loan for the housing component under terms and conditions satisfactory to the Bank.

12. Benefits and Risks. The project would provide the Government with the financial and technical assistance needed to promptly reconstruct key infrastructure in the area most seriously damaged by the earthquake. The only significant risk is that the economic condition of the country may deteriorate, resulting in budgetary pressures to reduce the rate of project implementation and possibly impede enforcement of improved standards for future construction of the nation's infrastructure and housing. Accordingly, the project provides technical assistance to support project implementation, enhance the training of professional staff and strengthen the existing building codes which have been found to be inadequate. Another project risk is the possibility of delays which could result from a potential loss of momentum normally experienced in reconstruction activities, and from inadequate personnel to implement all of the projects. To address these risks, the project will consist of short-term, well-focused components and will provide needed materials and implementation support. Frequent supervision missions are planned during the first two years of the three-year implementation period so that adjustments to the program can be made as needed to promptly resolve problems causing delays. In addition, the United Nations Center for Regional Development in Nagoya, Japan will assist in reviewing the project's implementation.

13. Recommendation. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Bank and recommend that the Executive Directors approve the proposed loan.

Barber B. Conable  
President

Attachments

Washington, D.C.  
September 23, 1990

PHILIPPINES

EARTHQUAKE RECONSTRUCTION PROJECT

Estimated Costs and Financing Plan

---

	Local	Foreign	Total
	----- (US\$ million) -----		
<hr/>			
<u>Estimated Cost</u>			
Roads and Bridges	35.7	47.0	82.7
Housing Credit	9.4	4.2	13.6
Medical Facilities	5.2	6.4	11.6
Irrigation Systems	9.7	6.5	16.2
Critical Construction Materials and Commodities	0.0	25.0	25.0
Technical Assistance	2.0	6.5	8.5
Base Cost	<u>62.0</u>	<u>95.6</u>	<u>157.6</u>
Physical Contingencies	6.0	6.5	12.5
Price Contingencies	8.4	4.2	12.6
TOTAL PROJECT COST	<u>76.4</u>	<u>106.3</u>	<u>182.7</u>
<u>Financing Plan</u>			
Government	57.7	0.0	57.7
IBRD	18.7	106.3	125.0
TOTAL	<u>76.4</u>	<u>106.3</u>	<u>182.7</u>

---

Notes:

1. Total physical contingencies are about 8% of base costs; price contingencies (foreign and local) are about 8%.
2. Taxes and duties estimated at US\$9.6 million equivalent are included in estimated costs.
3. Costs of project components include related equipment.

PHILIPPINES  
EARTHQUAKE RECONSTRUCTION PROJECT

Procurement Method  
(US\$ million)

Category	ICB	LCB	Other /a	Total
Civil Works	50.9 (30.1)/b	49.3 (29.1)	28.2 (16.7)	128.4 (75.9)
Housing Credit	-- --	7.5 (5.2)	7.2 (5.0)	14.7 (10.2)
Critical Construction Materials and Commodities	25.0 (25.0)	-- --	-- --	25.0 (25.0)
Equipment and Materials	5.5 (5.0)	1.0 (0.9)	0.9 (0.8)	7.4 (6.7)
Technical Assistance	-- --	-- --	7.2 (7.2)	7.2 (7.2)
TOTAL	<u>81.4</u> (60.1)	<u>57.8</u> (35.2)	<u>43.5</u> (29.7)	<u>182.7</u> (125.0)

/a "Other" includes force account, direct contracting and housing credits.

/b Figures in parentheses indicate the respective amounts financed by the Bank.

PHILIPPINES  
EARTHQUAKE RECONSTRUCTION PROJECT

Disbursements

Loan Category	Amount of Loan Allocated (US\$ million)	Percent of Expenditure to be Financed
Civil Works		
Roads and Bridges	46.0	60%
Irrigation Systems	7.3	70%
Medical Facilities	6.4	70%
Equipment and Materials	5.9	100% of foreign expenditures, 100% of local expenditures (ex-factory cost) and 65% of local expenditures for other items procured locally.
Housing Credit	8.3	70%
Critical Construction Materials and Commodities	25.0	100% of foreign expenditures
Technical Assistance	6.1	100%
Unallocated	20.0	
TOTAL	<u>125.0</u>	

Estimated Bank Disbursements  
(US\$ million)

<u>Bank Year</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Annual	35.00	14.00	29.00	29.50	17.50
Cumulative	35.00	49.00	78.00	107.50	125.00

PHILIPPINES

EARTHQUAKE RECONSTRUCTION PROJECT

Timetable of Key Project Processing Events

---

(a) Time taken to prepare:	Two months
(b) Prepared by:	Government with World Bank assistance
(c) First mission:	July 17, 1990
(d) Appraisal mission departure:	August 9, 1990
(e) Negotiations:	September 12, 1990
(f) Planned date of effectiveness:	November 30, 1990
(g) List of relevant PCRs and PPARs:	None

---

**THE STATUS OF BANK GROUP OPERATIONS IN THE PHILIPPINES**

**A. STATEMENT OF BANK LOANS AND IDA CREDITS /a**  
(June 30, 1990)

Loan or Credit Number	Fiscal Year	Borrower	Purpose	Amount (less cancellations)		
				Bank	IDA	Undisbursed
Eighty-nine loans and six credits fully disbursed				3,551.78	105.18	-
Of which SECALs, SALs, and Program Loans						
1903	1981	Rep. of the Philippines	SAL I	199.96		
2266	1983	Rep. of the Philippines	SAL II	302.25		
2469	1985	Rep. of the Philippines	Agriculture Sector Inputs	150.00		
2787	1987	Rep. of the Philippines	Economic Recovery Program	<u>300.00</u>		
Sub-Total				952.21		
1809	1980	Rep. of the Philippines	Medium-Scale Irrigation	32.93		2.76
2040	1982	Rep. of the Philippines	Agric. Support Services	22.00		3.33
2173	1982	Rep. of the Philippines	Communal Irrigation	38.50		8.64
2200	1983	Rep. of the Philippines	Education VIII	16.40		4.36
2206	1983	Rep. of the Philippines	Water Supply and Sanitation	29.00		0.16
2257	1983	Rep. of the Philippines	Regional Cities Development	42.08		18.93
2360	1984	Rep. of the Philippines	Central Visayas Regional Development	24.97		9.27
2418	1984	Rep. of the Philippines	Highways V	102.00		71.11
2435	1984	Rep. of the Philippines	Municipal Development	40.00		29.33
2495	1985	Rep. of the Philippines	Telecom. Tech. Assistance	4.00		0.73
2676	1986	Rep. of the Philippines	Manila Water Distribution	38.00		17.14
2716	1986	Rep. of the Philippines	Rural Roads II	82.00		68.30
2823	1987	Rep. of the Philippines	Provincial Ports	32.00		18.21
2948	1988	Rep. of the Philippines	Irrigation Operations Support	23.50		17.21
*2956	1988	Rep. of the Philippines	Program for Government Reform	200.00		125.00
2969	1988	Philippine Nat'l Oil Co.	Bacon-Manito Geothermal Power	41.00		21.17
2969-1	1988	Phil. Nat'l Power Corp.	Bacon-Manito Geothermal Power	59.00		58.34
2974	1988	Rep. of the Philippines	Housing Sector	160.00		55.75
3038	1989	Rep. of the Philippines	SMI IV	60.00		48.05
*3049	1989	Rep. of the Philippines	Financial Sector	300.00		150.00
3084	1989	Dev. Bank of the Phil.	Manila Power Distribution	65.50		65.50
3099	1989	Rep. of the Philippines	Health Development	70.10		66.10
3123	1990	Dev. Bank of the Phil.	Industrial Investment Credit	65.00		47.12
3124	1990	Metro. Waterworks & Sew.	Angat Water Supply	40.00		31.68
3146	1990	Rep. of the Philippines	Municipal Development II	40.00		40.00
3149	1990	Rep. of the Philippines	Debt Management Loan	200.00		50.00
3163	1990	Phil. National Power Corp.	Energy Sector Loan	200.00		185.00
3164	1990	Phil. National Oil Co.	Energy Sector Loan	150.00		150.00
3165	1990	Rep. of the Philippines	Energy Sector Loan	40.00		40.00
3204	1990	Rep. of the Philippines	Coconut Farms Development	121.80		121.80
3242	1990	Rep. of the Philippines	WS/Sewer/Sanitation	<u>85.00</u>		<u>85.00</u>
Total				5,978.58	105.18	1,606.17
of which has been repaid				<u>1,434.17</u>	<u>3.38</u>	
Total now held by Bank and IDA				<u>4,542.39</u>	<u>101.80</u>	
Amount sold				31.35		
of which repaid				<u>31.35</u>		
Total undisbursed				1,606.17	-	1,606.17

/a The status of the projects listed in Part A is described in a separate report on all Bank/IDA-financed projects in execution, which is updated twice yearly and circulated to the Executive Directors on April 30 and October 31.

\* SAL, SECAL or Program Loan.

**B. STATEMENT OF IFC INVESTMENTS**  
(As of June 30, 1990)

Investment number	Fiscal year	Obligor	Type of business	Loan ----	Equity (US\$ million)	Total ---
57/233	1963/1973	Private Dev. Corp. of the Philippines	Development finance	15.0	4.4	19.4
116/1088	1967/1989	Meralco Securities Corporation	Utilities	29.2	4.0	37.2
157/899/ 1091/1191	1970/82/87/ 89/90	Phil. Long Distance Telephone Co.	Utilities	127.7	0.8	128.5
158/218	1970/1972	Mariwasa Manufacturing, Inc.	Cement & constr. mat.	0.8	0.4	1.2
165	1970	Paper Industries Corp. of the Phil.	Pulp & paper products	-	2.2	2.2
188/369	1971/1977	Philippine Petroleum Corporation	Chemicals & petrochem.	6.2	2.1	8.3
207	1972	Marinduque Mining & Industrial Corp.	Mining	15.0	-	15.0
241	1973	Victorias Chemical Corporation	Chemicals & petrochem.	1.9	0.3	2.2
257	1974	Filipinas Synthetic Fiber Corp.	Textiles & fibers	1.5	-	1.5
272/464	1974/1979	María Christina Chem. Ind. Inc.	Iron & steel	1.6	0.6	2.2
288	1974	Republic Flour Mills Corp. (RFM)	Food & food processing	1.2	-	1.2
300	1975	Philippine Polyamide Industrial Corp.	Textiles & fiber	7.0	-	7.0
329	1976/1980	Philagro Edible Oils, Inc.	Coconut oil & copra	2.6	0.2	2.8
378/756	1977/1985	Acoja Mining Company, Inc.	Mining	2.5	1.2	3.7
374	1977	Sarmiento Industries, Inc.	Plywood	3.5	-	3.5
423	1978	Cebu Shipyard & Eng. Works, Inc.	Ship repairing	2.1	-	2.1
469	1979	General Milling Corporation	Food & food processing	4.0	1.7	5.7
481/665/ 1148/2251	1980/83/ 85/89/90	PISO Leasing Corp. (All Asia capital)	Money & capital market	11.1	0.8	11.9
480	1980	Ventures in Industry & Business Enterprises, Inc.	Money & capital market	-	0.3	0.3
519	1980	Consolidated Industrial Gases, Inc.	Chemicals & petrochem.	4.5	-	4.5
582	1981	Loans to Seven Corp. for SMSE	Money & capital market	18.5	0.6	19.1
553	1981	Phil. Assoc. Smelting & Refin. Corp.	Mining	-	5.0	5.0
572	1981	Davao Union Cement Corp.	Cement & constr. mat.	16.0	-	16.0
627	1982	NDC-Guthrie Plantations	Palm oil	11.0	-	11.0
841	1986	Pure Foods	Food & food processing	-	1.4	1.4
946	1988	BPI Agricultural Development Bank	Development finance	-	1.0	1.0
1051	1988	Philifund	Money & capital markets	-	4.2	4.2
1125	1989	Hambrecht and Quist	Money & capital markets	-	2.3	2.3
1182	1990	Manila Fund	Money & capital markets	-	7.0	7.0
1194	1990	TFPF	Money & Capital Market	-	29.7	29.7
<b>Total gross commitment</b>				<b>286.9</b>	<b>70.2</b>	<b>357.1</b>
<b>Less cancellations, terminations, repayments and sales</b>				<b>159.8</b>	<b>57.7</b>	<b>217.5</b>
<b>Total commitment now held by IFC</b>				<b>127.1</b>	<b>12.5</b>	<b>139.6</b>
<b>Total undisbursed (including participants' portion)</b>				<b>52.5</b>	<b>0.7</b>	<b>53.2</b>

PHILIPPINES  
EARTHQUAKE RECONSTRUCTION PROJECT  
TECHNICAL ANNEX

Table of Contents

	<u>Page No.</u>
Background . . . . .	14
Government's Response to the Earthquake . . . . .	15
The Bank's Response . . . . .	15
Project Description . . . . .	16
Road and Bridges . . . . .	16
Housing . . . . .	17
Medical Facilities . . . . .	19
Irrigation Systems . . . . .	20
Critical Construction Materials and Commodities . . . . .	20
Technical Assistance . . . . .	21
Project Cost and Financing . . . . .	22
Cost Estimates . . . . .	22
Financing Plan . . . . .	22
Project Management . . . . .	23
Procurement . . . . .	24
Disbursements . . . . .	26
Accounts and Auditing . . . . .	26
Environmental and Social Impact . . . . .	27
Reporting and Monitoring . . . . .	27

---

This annex is based on the findings of an appraisal mission comprising Lance Morrell (Mission Leader), Donna Haldane (Urban Specialist), Israel Naor (Irrigation Consultant), Vitelmo Bertero (Seismic Engineer Consultant), Edward Echeveria (Architect Consultant), Issac Shina (Highway Consultant), and Brian Taylor (Engineering Consultant) which visited the Philippines in August 1990. The report was edited by Patricia Brereton-Miller and produced by the AS2IN support team.

**Attachments**

1. Photos of the Damaged Area
2. Reallocation of Existing Loans
3. Government Housing Program
4. Cost Estimates
5. Implementation Schedule
6. Disbursement Schedule
7. List of Documents Available in the Project File

**Maps**

IBRD Nos. 22617, 22618, and 22619

PHILIPPINES  
EARTHQUAKE RECONSTRUCTION PROJECT  
TECHNICAL ANNEX

Background

1. The Philippine archipelago is one of the most tectonically, and therefore seismically, active areas in the world. Since 1920, there have been 18 earthquakes recorded in the Philippines with magnitudes of at least 6.5 on the Richter scale, and historical records from 1589 to the present show that the Philippines has frequently experienced earthquakes of all intensities with epicenters distributed throughout the country. The Philippine archipelago is formed on the east by the Philippine Plate (Philippine Trench), on the west by the South China Sea Plate (Manila Trench) and on the south by the Borneo Sulu crustal unit (Sulu Trench). Of these, the most significant is the Philippine Fault which has been traced for over 1,500 km. The most recent record of movement along this fault was a 3.2 meter lateral displacement triggered by the 1973 Ragay Gulf earthquake which had a magnitude of 7.3 on the Richter scale. The maps are attached.

2. The earthquake that occurred in north-central Luzon at 4:26 p.m. on July 16, 1990 was one of the strongest and most destructive earthquakes in recent Philippine history. The tremor was of tectonic origin, with a magnitude of 7.7 on the Richter scale. Since July 16, there have been over 130 aftershocks, of which at least 15 have had magnitudes of 5.0 or more. The earthquake consisted of two subevents, or fractures, along the Philippine Fault northwestward from Gabaldon to near San Jose and along the Digdig Fault from near San Jose northward. The earthquake's epicenter was located near the city of Cabanatuan, about 60 miles north of Manila. The majority of the damage can be attributed to the direct effects of the earthquake rather than to its indirect impact. The direct damage can be further divided into that caused by vibration of man-made facilities and that caused by ground failure. The former resulted in the collapse of many buildings and most of the loss of life. The latter, however, consisting of surface fractures, landslides, differential compaction of the soil, and liquefaction, produced most of the economic losses. In addition, since the earthquake occurred during the early stages of the annual monsoon rains, the danger of landslides will continue as the exposed hills absorb more rain.

3. The most heavily affected areas cover about 15,000 km<sup>2</sup>, including the cities of Baguio, Dagupan, and Cabanatuan and the towns of Agoo, Aringay, Caba and Sto. Tomas, which received severe damage to their municipal buildings, markets, schools and housing. At least 1,700 people died, 700 are still missing, 3,500 were injured, and more than 24,000 houses were destroyed. The damage to public infrastructure and housing is estimated at about P 15 billion (US\$600 million), involving mainly roads, bridges, ports, schools, homes and government buildings. The total damage to agriculture, private buildings, mining, and

tourism is not known, but the Government is currently assessing the total cost of the earthquake to the economy.

#### Government's Response to the Earthquake

4. To cope with the disaster, the Government formulated a program that divides the work to be done into three stages: stage 1 - basic emergency repair, focused on the immediate actions needed to help the people affected during the first two weeks of the disaster; stage 2 - rehabilitation and recovery, focused on rapidly implemented works to put vital infrastructure back into service; and stage 3 - reconstruction and development, focused on the longer-term reconstruction effort. Stage 1 was directed by the National Disaster Coordinating Committee. Stage 2 is under the direction of the Presidential Task Force on Rehabilitation which is responsible to coordinate all rehabilitation projects, monitor the progress of relief efforts, communicate the current status to the Government and public, liaise with parties for necessary assistance and coordination, and submit regular status reports on the relief and rehabilitation efforts. This Task Force will complete its work within a year. Stage 3, under the National Economic and Development Authority (NEDA), in cooperation with other government agencies, provides for about 50 days of planning and three to five years of execution. Actual implementation of the reconstruction work will be performed by those agencies/departments that would normally be responsible for the type of work involved. Using criteria set forth in Executive Order No. 419, the following types of infrastructure have been given priority in the reconstruction program: roads and bridges, water supply, power, irrigation, flood control, communication services, and social infrastructure including homes, hospitals, schools, and markets.

#### The Bank's Response

5. In response to the Government's request for assistance in reconstructing infrastructure damaged by the earthquake, the Bank began immediate preparation of a possible emergency reconstruction loan while simultaneously identifying uncommitted funds from the portfolio of existing loans that could be reallocated to provide immediate financial assistance to the area. The Bank's initial damage assessment mission, comprising the Resident Representative in Manila, a highway engineer, and a port consultant, was in the field on July 17, one day after the earthquake, to assess the situation and gather information for a possible reconstruction loan. At the request of the Government, a mission was sent to Manila, beginning August 9, 1990, to identify and appraise the requested emergency reconstruction project. During appraisal, the uncommitted balances from the existing loans were reviewed with Government, and about US\$79 million was identified that would be reallocated from six existing projects addressing the needs of the housing, education, ports, irrigation, energy, and municipal development sectors. The combined effect of the reallocations of uncommitted funds from the existing portfolio and the proposed loan will be to provide the Government with US\$204 million or about 34% of the estimated cost of the Reconstruction Program covering the most urgent needs in eight different sectors. The list of the existing loans from which the reallocations will be made is presented in Attachment 2.

Project Description

6. The proposed project will finance reconstruction activities over a three and one half year period, including: (a) reconstruction investments in key infrastructure (roads, bridges, and irrigation systems), medical facilities and housing; (b) financing of critical construction materials and commodities for the reconstruction effort; and (c) technical assistance for project execution and the implementation of measures to mitigate earthquake damage in the future, including the provision of training in geology and seismology and the procurement of equipment for seismological studies.

7. Roads and Bridges. Roads and bridges suffered heavy damage as a result of pavement failure, foundation collapse, and landslides. The proposed project addresses the most urgent needs in the sector by reconstructing most of the national highways in the area as well as a large percentage of the local and provincial roads damaged by the earthquake. The project addresses three phases of the work: (a) the emergency work that was done by the Department of Public Works and Highways (DPWH) to open the blocked and damaged roads in the area and to make the necessary temporary repairs; (b) the reconstruction of certain roads and bridges to their pre-earthquake condition; and (c) assistance in mitigation of future disasters by improving slope cuts along the roads and highways and stabilizing slopes with groundcover and reforestation. The project will reconstruct nine major highways in the area which total about 725 km in length as well as a portion of the provincial and barangay (local) roads in the provinces of Tarlac, Pangasinan, La Union, Benguet, and Mountain Province. The highways included in the project are:

- (a) Baguio-Bontoc Road (Halsema Road)
- (b) Manila North Road (Tarlac-San Fernando-La Union)
- (c) Agoo-Baguio Road
- (d) Aritao-Kayapa-Baguio Road
- (e) Lingayen-Dagupan-Damortis Road
- (f) Urdaneta-Dagupan Road
- (g) Bongabon-Baler Road
- (h) Bontoc-Banaue Road
- (i) Camiling-Bayambang-Mangaldan Road

Roads a, b, e, and f were or are currently financed by the Bank; the others were financed from local funds.

8. The reconstruction of the roads and bridges will be based on a geo-technical evaluation of the present alignment to determine the nature of existing soil conditions and the design required to prevent similar damage in the future. Once this evaluation has been completed and any realignments determined, the cracked or broken sections of the roads and the approaches to the bridges will be removed. The supporting layers including the sub-base will be rebuilt before replacing the surface application. With respect to the bridge approaches, the use of a structural approach slab will be considered where soil conditions require. When economically feasible, the bridges will be rebuilt to the current standard for loading and width. If the existing structure needs to be demolished and replaced, the demolition work will be carried out as part of

the project with due regard to preservation of the environment. Appropriate studies will be carried out to mitigate the problems of liquefaction in the construction of foundations. Where necessary, detour roads and bridges will be constructed to maintain necessary traffic flows.

9. To minimize the incidence of future landslides, the slopes will be recut at critical points. Where appropriate, additional drainage will be provided by vertical ditches, side ditches, subsurface drains and other facilities. Measures will also be taken to guard against soil erosion, and rock and debris falls through reforestation and/or the installation of fencing or other countermeasures. To accomplish these tasks, a survey of the existing and potential slope disaster locations will be carried out in order to identify those which should be rehabilitated. The slopes along the Agoon-Baguio Road will be cut so as to mitigate against future erosion and landslides and thereby attempt to ensure that at least one road leading to Baguio will not be closed by future landslides.

10. Reconstruction of the provincial and barangay roads will include the repair of slope cuts, reforestation and soil stabilization where feasible, restoration of damaged drainage facilities, and gravel surfacing. This effort may include the reconstruction of footbridges which have collapsed due to the earthquake. The specific roads to be included in this component will be identified during the detailed design stage and based on criteria agreed with the Bank.

11. Housing. The housing component of the proposed project would provide credit to repair or rebuild residential dwellings in the three chartered cities of Baguio, Cabanatuan, and Dagupan and four key municipalities. Of the total government program, the Social Insurance System would provide the bulk of funding (70%), with the Bank financing, under the proposed project, about 13% of total costs covering 14% of beneficiaries. Priority has been placed on reconstruction of totally destroyed or condemned housing. The project would rebuild about 4,000 dwellings and repair another 2,500 damaged units. Thus, the Bank would assist about 6,500 households, including about half of those whose homes were destroyed in the urban centers included in the project. Bank assistance would be directed to families below the 70th percentile of the income curve nearly three quarters of whom fall below the poverty line. The Social Security System (SSS), Government Services Insurance System (GSIS), and the Home Development Mutual Fund (HDMF) would make funding available for another 15,300 units, and the National Home Mortgage Finance Corporation (NHMFC) for 3,300. If funding can be secured, the Department of Social Welfare and Development (DSWD) will provide another 11,800 units from grant funding for indigent families and Land Bank 7,900 rural units under credit facilities. Together these six institutions would provide for the reconstruction and/or repair of 38,300 units or 41% of the total affected. Including the 6,500 units which would be rebuilt or repaired under this project (7% of the damage), government's total program is expected to cover about half of the households affected, including nearly all units destroyed and about 60% of those damaged in the seven urban areas. The balance of 48,600 units are expected to be repaired by private individuals without government assistance, particularly in rural areas where formal institutional presence is limited and where the bulk of the damage occurred.

Government's overall program is summarized in Table 1 and detailed in Attachment 3.

Table 1: SHELTER RECONSTRUCTION PROGRAM BY INCOME GROUP

	Higher Income 70th-100th%ile	Low Income 10th-70th%ile	Indigent Below 10th%ile
Repair	a. SSS/GSIS/HDMF Constr. Loans b. NHMFC Mortgage Loans	a. NHA Construction Loan Program b. NHMFC Mortgage program	DSWD Grant
Reconstruction	a. SSS/GSIS/HDMF Constr. Loans b. NHMFC Mortgage Loans	a. NHA Construction Loan Program for in-situ rebuilding b. NHA New Sites Relocation Program c. NHMFC Mortgage Pgm. with private builders d. Land Bank Program (rural areas)	DSWD Grant

12. Preference would be given to immediate repair and reinforcement of existing housing wherever this is feasible and cost-effective. Where damage is more severe or buildings collapsed, reconstruction would be undertaken using various earthquake resistant designs for traditional and contemporary building in a range of affordable costs. New structures built by public agencies would conform to seismic requirements, with designs reviewed by the project's technical experts and by the Bank. Proposed sites for development by NHA or private entities will be inspected for seismic acceptability by the DPWH technical experts, without charge to NHA or developers.

13. The project would focus on in-situ repair and reconstruction wherever possible. Because loans must be secured by a mortgage against titled property, costs of land acquisition would be included in loan amounts where squatters are able to negotiate purchase. Where land acquisition is not possible, relocation sites would be provided for families whose homes were totally destroyed. Any relocation would be strictly voluntary, and would conform to principles agreed with NHA. The Housing Authority has acquired a 37ha site in Bagulo, of which clear title is available for 17ha, sufficient for about 1,400 units. If found to be seismically acceptable, a portion of this site would comprise the first relocation area. Others would be acquired as needed following completion of an ongoing land tenure study of affected properties. Several sites now titled to

the local government unit in the six other towns are expected to be made available for relocation.

14. An understanding regarding the eligibility criteria summarized below for the proposed project was reached at negotiations. Beneficiaries must:

- (a) be earthquake victims as certified by the DSWD/NHA Master List of Homeowners;
- (b) have incomes below the 70th percentile of the regional cities income curve agreed between the Housing and Urban Development Coordinating Council (HUDCC) and the Bank;
- (c) own no other property;
- (d) not be beneficiaries of any other loan from another agency for home reconstruction/repair; and
- (e) have or attain a satisfactory document of tenure for the land on which the repair or reconstruction is to occur.

15. The Bank-assisted project would be implemented by NHMFC via construction loans to NHA and/or private housing entities who would both act as builders. NHA would concentrate on the three chartered cities of Baguio, Cabanatuan, and Dagupan and four largest town centers (para 3). Once reconstruction is complete and a mortgage originated by the builder, the construction loan would be repaid via takeouts by NHMFC of the mortgage paper. The Bank funds onlent to NHMFC would convert from a construction loan to a long term mortgage held by NHMFC.

16. Medical Facilities. This project component, to be implemented by the Department of Health (DOH), will provide for: (a) the reconstruction and repair of hospitals and health care buildings located in the National Capital Region (NCR) and in the provinces affected by the earthquake; and (b) the provision of medical equipment to replace that damaged or destroyed during the earthquake. The component includes hospital and health care facilities (administrative buildings, medical centers, main health centers (MHC), barangay health stations (BHS), rural health units (RHU) and medical staff facilities under DOH). Private medical facilities are not included.

17. The proposed reconstruction of totally damaged buildings will generally be on existing sites, as many structures within the hospital facilities can be repaired. The proposed program of work is in two phases for both the reconstruction and repair of hospitals and health care facilities. The first phase is for the immediate construction of temporary facilities made of inexpensive materials and the minor repairs required for some buildings to render them fit for occupancy. The first phase will be implemented within a period of six months (July - January 1991) and will provide for limited medical facilities to ensure the provision of basic health care within each community. Additional medical services will be made available from facilities in adjacent areas that were not significantly affected by the earthquake until the repair of major

damage and reconstruction is completed. The second phase will be the repair of major damage and reconstruction of both hospitals and health care facilities. This will be implemented over a two and one half year period from December 1990 through June 1993, preceded by facility planning, preparation of designs, plans and tender documents.

18. Irrigation Systems. The national and communal irrigation systems and the related dams sustained both point (buildings, bridges, etc.) and line damage (canals, roads, etc.) which temporarily interrupted the supply of water for irrigation. Works to repair this damage under the project have been divided into two phases: (a) the ongoing emergency repairs which are expected to be completed by November 1990; and (b) the reconstruction and restoration of systems to pre-earthquake conditions. The project will also provide continuous and increased desilting until gravity supply may be restored, and concurrent comprehensive evaluation of the safety of the dams based on state-of-the-art technology and the installation of seismographic equipment at the Pantabangan dam. The second phase is expected to be completed in two years.

19. Repair of the national and communal irrigation systems will require: (a) reconstruction of destroyed buildings, bridges and related structures; (b) reconstruction of totally and/or partially destroyed protective dikes, canal embankments, crossing structures (flumes and siphons), cracked concrete linings, silt removal, and the removal of landslides; and (c) equipment to assist in removing a continuous flow of silt of a much higher magnitude than the pre-earthquake flow. Regarding the last component, the procurement of four draglines under the project is necessary since the large sediment flow may continue for several years and cannot be removed with existing equipment of the National Irrigation Administration (NIA), which is unable to rent suitable equipment locally in sufficient quantities. NIA also requires portable pumps to supply water from the main canals into the distribution systems because of inoperable turnouts. The project will therefore provide about 450 portable centrifugal pumps of various sizes for this purpose along with other minor pieces of equipment. Damage to the two major dams and the related saddle dams was relatively minor, but potentially hazardous if ignored, and will require repairs to the power and irrigation tunnels and slope protection to avoid the immediate danger of collapse and reduction in the operating level of the reservoirs.

20. Civil works represent about 90% of project irrigation costs and are widely distributed throughout the provinces in the affected area. The emergency works which were initiated by NIA immediately following the earthquake have been implemented under force account. Where required, NIA has supplemented its own equipment pool by rentals from the private sector in accordance with its equipment rental rates. No major problems have been reported to date in implementation, and works are generally on schedule.

21. Critical Construction Materials and Commodities. The project will finance materials which have been identified as essential for the implementation of the proposed project. The construction materials to be imported consist of cement, lime, ingots, iron and steel, roof sheets, pipes, pipe fittings, timber, and critical commodities (petroleum). The nature and amount of the materials and commodities to be financed by the project are based on an analysis of the

needs of each of the project components. Loan proceeds will be managed by the CB which will make foreign exchange available to public and private importers through normal channels. The project would finance about 16% of the estimated increase in the required materials and commodities to be imported during 1991 over 1990 levels. The items would be procured in accordance with the Bank's guidelines, and all of the items would be procured through international competitive bidding (ICB) or international shopping (see para 31).

22. Technical Assistance. Technical assistance would be provided for project implementation as well as the implementation of measures to mitigate earthquake damage in the future, including the provision of training in geology and seismology and the procurement of equipment for seismological studies. Draft terms of reference for the selection of the proposed experts have been provided to the relevant government agencies, and the Bank has agreed to assist the Government in identifying concessionary financing for these consultants.

23. The technical consulting support of structural engineers, geo-technical engineers, and slope protection experts would be needed to assist in the preparation of detailed designs, contract supervision, the provision of advice to PIUs on implementation issues, the preparation of Reconstruction Proposals (RPs) and the revision of current building codes. The reconstruction efforts of each governmental unit would be supported by an integrated RP. The experts engaged under the project would ensure that the units preparing these plans avoid the temptation of merely repairing and/or retro-fitting structures to their pre-earthquake strength and/or stiffness or rebuilding structures in the same place using the same materials, configuration, structural system, foundation, and techniques, without considering superior alternatives. The team of experts would therefore investigate the affected areas and make recommendations regarding buildings and structures that have to be demolished or those that can be economically rehabilitated. The team will advise the governmental units on the development of regulations regarding the number of stories, structural systems, and type of foundations that should be used in the design and construction of new buildings. They will also formulate recommendations on how to upgrade existing structures that suffered damage, and plan for drainage, water supply, and other facilities as well as rehabilitation of the road network. Due to the urgency of beginning reconstruction of the damaged area and the need to ensure that the work is adequately coordinated, it was agreed at negotiations that preparation of the Reconstruction Proposals should start as soon as possible, with completion by March 31, 1991. Once these plans have been prepared, they will be promptly reviewed by a technical panel of experts satisfactory to the Bank. Each governmental unit should review its building code in conjunction with the preparation of its RP and make those revisions that are necessary to reflect local conditions.

24. Project-supported training in geology and seismology would be provided in two forms. The first would be a program of continuing professional training to be conducted in the Philippines by a team of recognized experts in the fields of geo-technical engineering and seismology. The program would be designed to upgrade the engineering profession and to start the development of reliable "seismic zonation maps." Structural engineers would help develop "micro zonation maps" for key urban areas throughout the Philippines to lower their

vulnerability to future earthquakes and typhoons. The second type of training would consist of locally-developed courses for structural engineers, private contractors and provincial and municipal engineers in order to increase their knowledge of geo-technical engineering and to expose them to procedures that must be employed to reduce the probability of future earthquake damage.

25. Local capabilities in earthquake damage mitigation would be further buttressed by the procurement, under the project, of seismic monitoring instruments (strong motion equipment) expected to cost about US\$2.0 million. Despite the existence of several accelerographs throughout the earthquake area, no accelerogram was recorded during the July 16 earthquake. A carefully planned network of strong motion instruments is needed to study seismic wave propagation and develop attenuation laws, as well as to study local site effects, topography and local geological effects and the intensity, frequency, content and duration of strong motions for the formulation of reliable seismic codes. The network would be connected by telephone and/or single-sideband radios from each station to report periodically. Institutional strengthening should accompany the equipment acquisition to ensure better use and maintenance of existing and new instruments.

#### Project Cost and Financing

26. Cost Estimates. The total project cost (Attachment 4), including contingencies, is estimated at P 4.6 billion or US\$183 million equivalent, with a foreign exchange component of 58%. Base costs, expressed in mid-year 1990 prices, reflect rates for ongoing contracts for various types of works. Price contingencies, equivalent to 8% of base costs plus physical contingencies, are based on local inflation rates of 8% for 1990-95, and foreign inflation rates of 2.6% in 1991, 4.1% in 1992, 5.4% in 1993, and 4.7% in 1994-95. Physical contingencies, totaling about 8% of base costs, were calculated on the basis of 10% for equipment, civil works for roads and bridges, and medical facilities, and 20% for irrigation. The project cost includes taxes and duties of P 240 million (US\$9.6 million equivalent).

27. Financing Plan. The Bank would finance US\$125 million or about 70% of total project costs, representing 100% of estimated foreign exchange requirements and 25% of local financing. The remaining costs would be covered by the Government, split between DPWH (22%), NIA (4%), NHA (2%), and DOH (2%) as shown in Table 2. During negotiations, it was agreed that adequate counterpart financing will be made available promptly to participating agencies. Extensive cash contributions and self-help efforts by homeowners in reconstructing and repairing their own homes, community facilities, and communal irrigation systems have not been included in the project cost but would represent a major supplement to Government and Bank funding. While provision has been made for Bank financing of technical assistance, training, equipment and studies, Government intends to seek grants for these components with Bank assistance. Any loan funds so replaced with grant financing would be utilized for other components of the project, as agreed between the Government and the Bank.

**Table 2: PROJECT FINANCING PLAN  
(US\$ million)**

Project Component	Total Cost	DPWH	NIA	NHA	DOH	World Bank
<b>Investments</b>						
Roads & Bridges	99.92	41.42	-	-	-	58.50
Housing Credits	15.09	-	-	4.49	-	10.60
Irrigation Stms.	20.25	-	7.75	-	-	12.50
Medical Facilities	13.38	-	-	-	3.78	9.60
<b>Critical Construction Materials and Commodities</b>						
	25.00	-	-	-	-	25.00
<b>Technical Assistance</b>						
	9.10	0.30	-	-	-	8.80
<b>TOTAL</b>	<u>182.74</u>	<u>41.72</u>	<u>7.75</u>	<u>4.49</u>	<u>3.78</u>	<u>125.00</u>
<b>% Share</b>	100	22.8	4.2	2.5	2.1	68.4

Project Management

28. The project would be implemented over a three and one half year period, using the Government's existing organizational framework and the line agencies' technical expertise in monitoring and supervising implementation of their respective project components. A small Project Coordinating Unit (PCU) would be created under the jurisdiction of DPWH to monitor and coordinate the activities of the entire project. Each region would have a Steering Committee formed by the Regional Development Council (RDC) under the direction of NEDA to advise the PCU on local conditions and to facilitate project implementation. The PCU would be responsible for collecting data from the Project Implementation Units (PIU) established in each line agency along with a summary of the physical progress of each component in order to prepare quarterly and annual reports that will be submitted to the Bank, the Government's Project Facilitation Committee, and to the Steering Committees. The Steering Committees will also meet periodically with the PCU for a formal review of project progress. In addition to its monitoring and reporting functions, the PCU will be supplemented by geo-technical consultants who will provide technical advice to the implementing agencies on the location and design of works. The PIUs would be responsible for actual implementation of works, but will use the consultants provided by the PCU to help review detailed designs and advise on the suitability of their site selections. In staffing the PIUs, the agencies may also need to augment the government staff with outside consultants to assist in carrying out detailed

designs, procurement, contracting, and the supervision of construction. The PIUs will be responsible for all procurement, contracting and submission of disbursement applications to the Bank, and in providing the necessary data to the PCU in a timely manner so that the reporting and monitoring functions can be properly performed. It was agreed at negotiations that the various implementing agencies will employ both local and foreign consultants to serve as technical and project advisors for the PIUs to ensure that project implementation proceeds as quickly as possible and in accordance with appropriate geo-technical standards. Terms of reference for the expert consultants for the PCU and the technical and project advisors for the PIUs will be submitted to the Bank for review in October. It was also agreed that Government will assign and maintain a sufficient number of qualified staff at each of the PIUs and the PCU, and will name a project manager for each, who is satisfactory to the Bank, to ensure that the project is implemented as planned. No problems are envisioned with project start-up since the first year's works are ready for immediate implementation. The project implementation schedule is shown in Attachment 5.

### Procurement

29. Civil Works. Large civil works contracts for national roads and bridges valued at US\$2.5 million or more will be procured using international competitive bidding (ICB) procedures, which together with major equipment purchases represents about 31% of total project expenditures. Most other civil works are expected to be too widely dispersed and small to attract the attention of foreign bidders. Therefore, about 31% of the total expenditures will be procured through local competitive bidding procedures (LCB) governed by PD 1594 as revised, which has been reviewed and found satisfactory by the Bank based on an understanding reached at negotiations.

30. Due to the emergency nature of the project, up to 20% of total expenditures will cover commitments for the early rehabilitation work necessary to restore basic services in the areas affected. The following procedures were used for these initial commitments: (a) force account; (b) shopping; and (c) direct contracting.

31. Goods and Commodities. Goods and equipment contracts valued at US\$200,000 or more will be procured by ICB, including approximately US\$2 million of strong motion equipment. Approximately 14% of project expenditures (20% of the loan) would be disbursed against contracts for the import of the following construction materials which are all required for reconstruction: cement, lime, ingots, iron and steel, roof sheets, tubes, pipes, pipe fittings, timber (logs), and critical commodities (petroleum). It is estimated that up to US\$8 million would be required for petroleum and would be financed under the proposed project. Contracts for the importation of construction materials and commodities valued at US\$5.0 million or more will be procured using ICB procedures. If the material is a commonly traded commodity in world markets, the ICB procedures used may, with prior Bank approval, be simplified to include use of standard practices followed by the applicable international commodity market. Contracts valued at less than US\$5.0 million in the private sector will be procured using the purchaser's normal commercial practices. Public sector import contracts valued at less than US\$5.0 million will be procured using the government's normal LCB

procedures acceptable to the Bank, simplified to reflect the nature of the commodity.

32. Technical Assistance, Training and Studies. Project technical assistance, training and studies comprising 4% of total expenditures will be engaged or carried out under terms of reference acceptable to the Bank and following the Bank's Guidelines for the Use of Consultants. Sole source procedures will be permitted for the selection of engineering firms to perform the critical engineering and design work needed prior to highway reconstruction, provided the qualifications of the firms selected and their proposed rates are acceptable to the Bank.

33. Review of Procurement Documents and Decisions. Project civil works contracts with an estimated value of US\$200,000 and commodity import contracts with an estimated value of US\$5.0 million or more will be subject to prior Bank review. Other contracts below this threshold will be subjected to selective post-review. Procurement arrangements are summarized in Table 3.

Table 3: PROCUREMENT ARRANGEMENTS  
(US\$ million)

Category	ICB	LCB	Other <u>/a</u>	<u>Total</u>
Civil Works	50.9 (30.1) <u>/b</u>	49.3 (29.1)	28.2 (16.7)	128.4 (75.9)
Housing Credit	-- --	7.5 (5.2)	7.2 (5.0)	14.7 (10.2)
Critical Construction Materials and Commodities	25.0 (25.0)	-- --	-- --	25.0 (25.0)
Equipment and Materials	5.5 (5.0)	1.0 (0.9)	0.9 (0.8)	7.4 (6.7)
Technical Assistance	-- --	-- --	7.2 (7.2)	7.2 (7.2)
<b>TOTAL</b>	<u>81.4</u> (60.1)	<u>57.8</u> (35.2)	<u>43.5</u> (29.7)	<u>182.7</u> (125.0)

/a "Other" includes force account, direct contracting and housing credits.

/b Figures in parentheses indicate the respective amounts financed by the Bank.

Disbursements

34. The proceeds of the Bank loan would be disbursed against eligible expenditures as follows:

(a) Equipment and Materials:

(i) 100% of the CIF cost of directly imported construction materials and commodities;

(ii) for equipment purchases, 65% if imported and locally procured, 100% of the CIF cost if directly imported, and 100% of the ex-factory cost if locally manufactured;

(b) Civil Works:

(i) 60% of the cost of civil works for roads and bridges;

(ii) 70% of the cost of hospital/health facilities and irrigation systems;

(c) Housing Credit: 70% of total expenditures; and

(d) Technical Assistance, Training and Studies: 100% of total expenditures.

35. A Special Account would be established in US dollars at the Central Bank for the housing component with an initial deposit of US\$1.0 million, equal to about four months of expenditures, from which project outlays will be reimbursed. Disbursements may be made against Statements of Expenditure (SOEs) for contracts below US\$200,000 equivalent to finance minor works and goods and for housing credit components. SOE applications would be certified by the executing agency with supporting documentation retained by the agency and made available for periodic inspection by the Bank.

36. The Bank loan of US\$125 million would be implemented over a period of three and one half years, and disbursed over four years, closing on March 31, 1995. No appropriate Bank profile exists for this kind of multi-sectoral reconstruction loan. Expenditures made after July 17, 1990, the date of the Bank's first damage assessment mission, up to a ceiling of US\$25 million would be eligible for retro-active financing for the removal of debris, opening of roads, providing temporary hospitals and medical facilities. The Disbursement Schedule is presented in Attachment 6.

Accounts and Auditing

37. The implementing agencies would maintain separate records and accounts of all transactions under the loan which would be audited by an independent external auditor acceptable to the Bank. The project accounts would be summarized on an ongoing basis to show:

(a) actual versus planned expenditures for each quarter;

(b) actual versus planned expenditures to date; and

(c) financing of the expenditures by the Bank and the Government.

In addition, the project accounts would show separately the expenditures related to applications submitted on the basis of SOEs, as opposed to those expenditures requiring submission of documentation to the Bank. Appended to the project accounts submitted by the PCU would be a listing of the withdrawal applications for the period concerned showing the amounts reimbursed. Unaudited project accounts, with the above attachments, would be submitted by the PCU on a quarterly basis to reach the Bank within 45 days after the end of the quarter. The audited project accounts, including the SOEs and Special Account, accompanied by the auditor's report, opinion, and comments on the project accounts, SOEs and Special Account would be forwarded to the Bank within six months of the end of each fiscal year. The auditor would provide a separate opinion on those expenditures made using SOEs.

#### Environmental and Social Impact

38. The project will have a positive impact on the environment. Stabilization, contouring and, where possible, reforestation of slopes on major roads will help prevent soil erosion and landslides in these ecologically delicate mountainous zones and thus a repetition of the extent of damage which resulted from the July earthquake. Prompt repair of the irrigation system will help avert potentially serious crop failures later in the year, and the adverse impact on a wide range of flora and fauna which would accompany such a failure. Earthquake damage mitigation measures carried out under the project should aid government in gradually improving construction design standards and inspection procedures, reducing damage from future earthquakes in both urban and rural environments. Reconstruction of homes destroyed by the quake will have a strong positive social impact, with resettlement restricted to cases where present sites are unstable and dangerous, e.g., those where liquefaction occurred. Improved environmental designs will also be incorporated in the Reconstruction Plans being prepared by the municipalities with specialized advice.

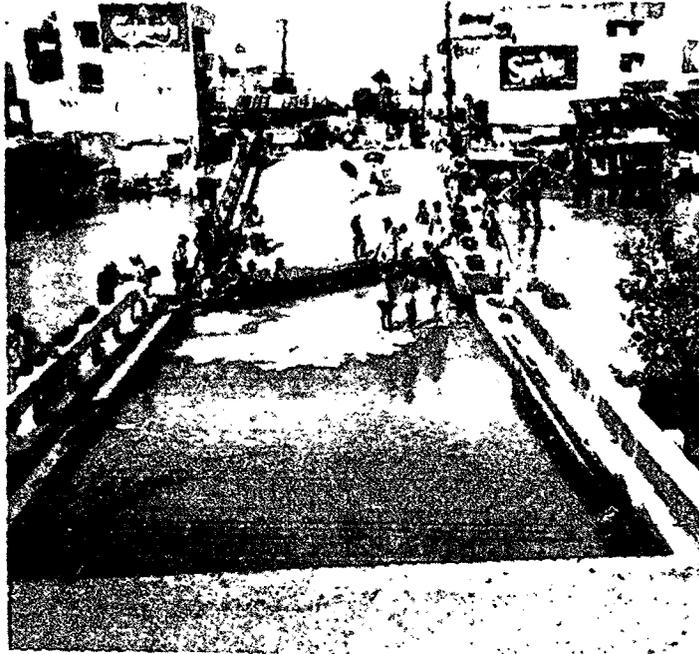
#### Reporting and Monitoring

39. The PCU would prepare a quarterly report on the project based on the reports of each agency, showing the physical progress against the plan for each component, with an explanation of any significant delay from the plan and outlining what remedial actions are being taken. The report should be submitted to the Bank concurrent with the unaudited quarterly project accounts discussed above. In addition, the quarterly and annual reports will be submitted to the Steering Committees and to the Government's Facilitation Committee. A project completion report will be prepared within six months of the closing date of the loan.

**PHILIPPINES**  
**EARTHQUAKE RECONSTRUCTION PROJECT**  
**Landslides and Housing Damage in Rural Areas**



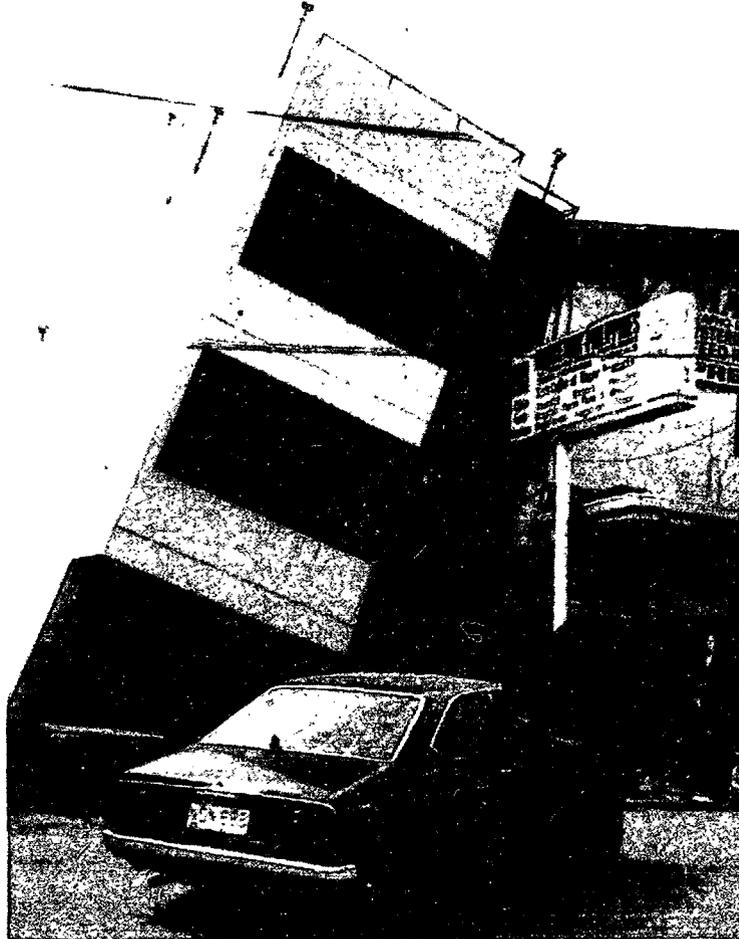
**PHILIPPINES**  
**EARTHQUAKE RECONSTRUCTION PROJECT**  
**Roads and Bridge Damage**



**PHILIPPINES**  
**EARTHQUAKE RECONSTRUCTION PROJECT**  
**Landslides and Housing Damage in Rural Areas**



**PHILIPPINES**  
**EARTHQUAKE RECONSTRUCTION PROJECT**  
**Building Damage**



PHILIPPINES  
EARTHQUAKE RECONSTRUCTION PROJECT  
Irrigation Canal Damage and Siltation



PHILIPPINES  
EARTHQUAKE RECONSTRUCTION PROJECT  
Reallocation of Existing Loans

Project Name	Loan No.	Total Ln./Cr. Amt. (US\$ mil)	Undisb. Balance (US\$ mil)	Uncomtd Balance (US\$ mil)	Closing Date	Proposed Use	Damage Estimate (US\$ mil)	Realloctn. Amt Authz (US\$ mil)	Legal Adjustment
<b>A. INFRASTRUCTURE</b>									
Housing Sector	2974-PH	160.0	55.7	55.7	6/30/94	Utilization of up to \$10 million for mortgage purchases in the affected provinces (NHMFC)	131.0	10.0	Not necessary
Municipal Devt II	3146-PH	40.0	40.0	18.3	13/31/96	Reconstruction of markets, municipal streets and other urban infrastructure (LGU's)	5.0	5.0	Necessary
Provincial Ports	2823-PH	32.0	18.2	1.8	12/31/92	Repair of San Fernando Port Facilities particularly for dry cargo (PPA).	2.6	1.8	Not necessary
<b>B. AGRICULTURE</b>									
Irrigation Operations Support (ISOP)	2948-PH	45.0	17.2	15.5	12/31/91	Repair of irrigation canals; desiltation; restoration main canals (NIA)	5.2	2.0	Not necessary
<b>C. INDUSTRY &amp; ENERGY</b>									
Energy Sector	3163-PH 3165-PH	390.0	375.0	310.0	12/31/94	Repair of distribution lines and damaged transformers (NPC/NEA)	5.0	5.0	Not necessary
<b>D. POPULATION &amp; HUMAN RESOURCES</b>									
Second Elem. Education	3244-PH	200.0	200.0	55.0	12/31/93	Reconstruction of Elementary, secondary, and tertiary schools and re-equipping	55.0	55.0	Necessary
<b>GRAND TOTAL</b>		<u>867.0</u> 100%	<u>706.1</u> 81%	<u>456.3</u> 53%			<u>203.8</u>	<u>78.8</u>	<u>11.2% of Undisbursed Amount</u> <u>38.7% of Damage.</u>

PHILIPPINES

EARTHQUAKE RECONSTRUCTION PROJECT

Government Housing Program

	CHARTERED CITIES		MUNICIPALITIES				GRAND TOTAL	
			Town Centers		Rural Areas			
	Total	Partial	Total	Partial	Total	Partial	(000s)	% PRGM
	20,680		29,092		43,638			
Total Areas Affected	7		171				178	
TOTAL HOUSES DAMAGED (8/9/90)	3,510	17,170	8,025	21,067	12,038	31,600	93,410	
Totally destroyed:							23,573	
Damaged:							69,837	
Major Areas Affected	3		40 (3 NHA)				43	
HOUSES DAMAGED (500+ units)	3,335	16,559	6,944	16,974	10,416	25,460	79,688	
% of Total Areas	95%	96%	87%	81%	87%	81%	85%	
<b>PROPOSED PROGRAMS:</b>								
A) SOCIAL INSC	% of Total	26%	37%	22%	30%	0%	0%	16%
NONE REPAIR	Number	920	6,300	1,800	6,300	0	0	13,320 34% PP
& RECONSTR	Ave Amt (000s)	200	120	150	90	0	0	116
LOANS	Tot Amt (000s)	184,000	756,000	270,000	567,000	0	0	1,777,000 69% P
B) NHMFC	% of Total	14%	6%	10%	5%	0%	0%	4%
MORTGAGE	Number	500	1,000	800	1,000	0	0	3,300 7% PP
FINANCE	Ave Amt (000s)	100	70	80	60	0	0	74
LOANS	Tot Amt (000s)	50,000	70,000	64,000	60,000	0	0	244,000 9% P
C) DSM/LGU	% of Total	10%	10%	10%	10%	17%	15%	15%
CORE SHLTR &	Number	350	1,700	800	2,200	2,000	4,700	11,750 26% PP
NTLS GRANT	Ave Amt (000s)	15	0	12	0	10	5	5
PROGRAM	Tot Amt (000s)	5,250	0	9,600	0	20,000	23,500	58,350 2% P
D) LAND BANK	% of Total	0%	0%	15%	6%	21%	9%	8%
RECONSTRCTN	Number	0	0	1,200	1,200	2,500	3,000	7,900 18% PP
LOAN	Ave Amt (000s)	0	0	55	30	15	8	21
PROGRAM	Tot Amt (000s)	0 50%	0 52%	66,000 57%	36,000 51%	37,500 37%	24,000 24%	163,502 6% P
E1) NHA IN-SITU	% of Total	22%	6%	15%	7%	0%	0%	5%
RECONSTRCTN	Number	780	1,000	1,200	1,500	0	0	4,480 10% PP
LOAN	Ave Amt (000s)	45	40	35	30	15	8	36
PROGRAM	Tot Amt (000s)	35,100	40,000	42,000	45,000	0	0	162,100 6% P
E2) NHA	% of Total	22% 3	0%	15%	0%	0%	0%	2%
RESETTLMT	Number	780	0	1,200	0	0	0	1,980 4% PP
NEW SITES	Ave Amt (000s)	100	100	75	60	0	0	85
PROGRAM	Tot Amt (000s)	78,000	0	90,000	0	0	0	168,000 7% P
ST: WB-EQ LOAN:	% of Total	44%	6%	30%	7%	0%	0%	7%
(E1 and E2)	Number	1,560	1,000	2,400	1,500	0	0	6,460 14% PP
	Ave Amt (000s)	73	40	55	30	0	0	51
	Tot Amt (000s)	113,100	40,000	132,000	45,000	0	0	330,100 13% P
GRAND	% of Total	95%	96%	87%	81%	87%	81%	85%
TOTAL	Number	3,330	10,000	7,000	12,200	4,500	7,700	44,730 100% PP
	Ave Amt (000s)	106	87	77	58	13	6	58
	Tot Amt (000s)	352,350	866,000	541,600	708,000	57,500	47,500	2,572,950 100% P
WB LOAN AMT: 70% OF E		79,170	28,000	92,400	31,500	0	0	231,070
US \$ (000s)		3,167	1,120	3,696	1,260	0	0	9,243

**PHILIPPINES**  
**EARTHQUAKE RECONSTRUCTION LOAN**

**Cost Estimates**

	Peso '000			US\$ '000			Foreign Exchange (% of Total)
	Local Cost	Foreign Cost	Total Cost	Local Cost	Foreign Cost	Total Cost	
<b>I. INVESTMENTS:</b>							
<b>A. <u>Roads and Bridges</u></b>							
Civil Works	890,400	1,133,400	2,023,800	35,616	45,336	80,952	56%
Equipment	2,200	40,700	42,900	88	1,628	1,716	95%
Sub-Total	<u>892,600</u>	<u>1,174,100</u>	<u>2,066,700</u>	<u>35,704</u>	<u>46,964</u>	<u>82,668</u>	<u>57%</u>
<b>B. <u>Housing</u></b>							
Housing Credits	231,070	99,030	330,100	9,243	3,961	13,204	30%
Equipment	0	3,620	3,620	0	145	145	100%
Technical Assistance	4,120	1,767	5,887	165	71	235	30%
Sub-Total	<u>235,190</u>	<u>104,417</u>	<u>339,607</u>	<u>9,408</u>	<u>4,177</u>	<u>13,584</u>	<u>31%</u>
<b>C. <u>Medical</u></b>							
Civil Works	127,550	127,550	255,100	5,102	5,102	10,204	50%
Equipment	0	30,200	30,200	0	1,208	1,208	100%
Technical Assistance	1,800	1,800	3,600	72	72	144	50%
Sub-Total	<u>129,350</u>	<u>159,550</u>	<u>288,900</u>	<u>5,174</u>	<u>6,382</u>	<u>11,556</u>	<u>55%</u>
<b>D. <u>Irrigation</u></b>							
Civil Works	242,350	124,111	366,461	9,694	4,964	14,658	34%
Equipment	0	37,310	37,310	0	1,492	1,492	100%
Technical Assistance	0	2,500	2,500	0	100	100	100%
Sub-Total	<u>242,350</u>	<u>163,921</u>	<u>406,271</u>	<u>9,694</u>	<u>6,557</u>	<u>16,251</u>	<u>40%</u>
TOTAL I	<u>1,499,490</u>	<u>1,601,988</u>	<u>3,101,478</u>	<u>59,980</u>	<u>64,080</u>	<u>124,059</u>	<u>52%</u>
<b>II. <u>MATERIALS AND COMMODITIES</u></b>							
	0	625,000	625,000	0	25,000	25,000	100%
<b>III. <u>MITIGATION AND TRAINING</u></b>							
TA and Operations	51,250	112,500	163,800	2,050	4,502	6,552	69%
Equipment	0	50,000	50,000	0	2,000	2,000	100%
TOTAL III	<u>51,250</u>	<u>162,550</u>	<u>213,800</u>	<u>2,050</u>	<u>6,502</u>	<u>8,552</u>	<u>76%</u>
TOTAL BASE COST:	1,550,740	2,389,538	3,940,278	62,030	95,582	157,611	61%
PHYSICAL CONTINGENCY:	150,485	162,100	312,585	6,019	6,484	12,503	52%
PRICE CONTINGENCY:	210,840	104,841	315,681	8,434	4,194	12,627	33%
TOTAL PROJECT COST:	<u>1,912,065</u>	<u>2,656,479</u>	<u>4,568,544</u>	<u>76,483</u>	<u>106,259</u>	<u>182,742</u>	<u>58%</u>

PHILIPPINES

EARTHQUAKE RECONSTRUCTION LOAN

Implementation Schedule

Component	1990				1991				1992				1993				1994				1995					
	Qtrs	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
<b>Project</b>																										
Appraisal																										
Board Presentation																										
Effective Date																										
AP																										
BP																										
ED																										
<b>Roads and Bridges</b>																										
Temporary Work																										
Consultant Services																										
Detailed Designs																										
Construction																										
<b>Housing</b>																										
Consultant Services																										
Detailed Designs																										
Construction																										
Mortgage Takeouts																										
<b>Medical</b>																										
Temporary Work																										
Consultants Services																										
Detailed Designs																										
Construction																										
Equipment																										
<b>Irrigation</b>																										
Temporary Work																										
Consultant Services																										
Detailed Designs																										
Construction																										
Equipment																										
<b>Critical Construction Materials</b>																										
<b>Disbursements</b>																										

Legend: ttttt - Temporary/Emergency Construction  
 \*\*\*\*\* - Design, Prequalification & Tender  
 xxxxxx - Construction  
 ===== - Consultancy Services  
 mmmmm - Mortgage Takeouts  
 eeeee - Equipment Acquisition  
 MMMMM - Critical Construction Materials and Commodities  
 DDDDD - Disbursements

PHILIPPINES

EARTHQUAKE RECONSTRUCTION PROJECT

Disbursement Schedule  
(US\$ Million)

US Fiscal Year	Period Ending	---Amount Disbursed---	---Amount Disbursed---	%	Philippine Standard Profile
		Period	Cumulative		
FY91	Sep 1990	0.00	0.00	0.0%	
	Dec 1990	25.00	25.00	20.6%	
	Mar 1991	4.00	29.00	23.2%	
	Jun 1991	6.00	35.00	28.0%	3.0%
FY92	Sep 1991	2.50	37.50	30.0%	
	Dec 1991	2.50	40.00	32.0%	
	Mar 1992	3.00	43.00	34.4%	
	Jun 1992	6.00	49.00	39.2%	14.0%
FY93	Sep 1992	7.00	56.00	44.8%	
	Dec 1992	8.00	64.00	51.2%	
	Mar 1993	7.00	71.00	56.8%	
	Jun 1993	7.00	78.00	62.4%	26.0%
FY94	Sep 1993	7.00	85.00	68.0%	
	Dec 1993	8.50	93.50	74.8%	
	Mar 1994	8.00	101.50	81.2%	
	Jun 1994	6.00	107.50	86.0%	46.0%
FY95	Sep 1994	5.00	112.50	90.0%	
	Dec 1994	5.20	117.70	94.2%	
	Mar 1995	<u>7.30</u>	<u>125.00</u>	<u>100.0%</u>	66.0%
<b>TOTAL</b>		<b>125.00</b>			

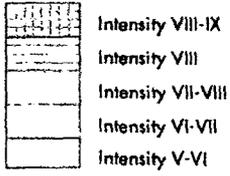
PHILIPPINES

EARTHQUAKE RECONSTRUCTION PROJECT

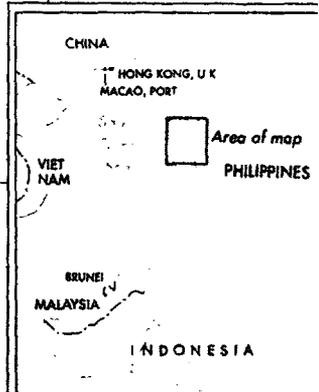
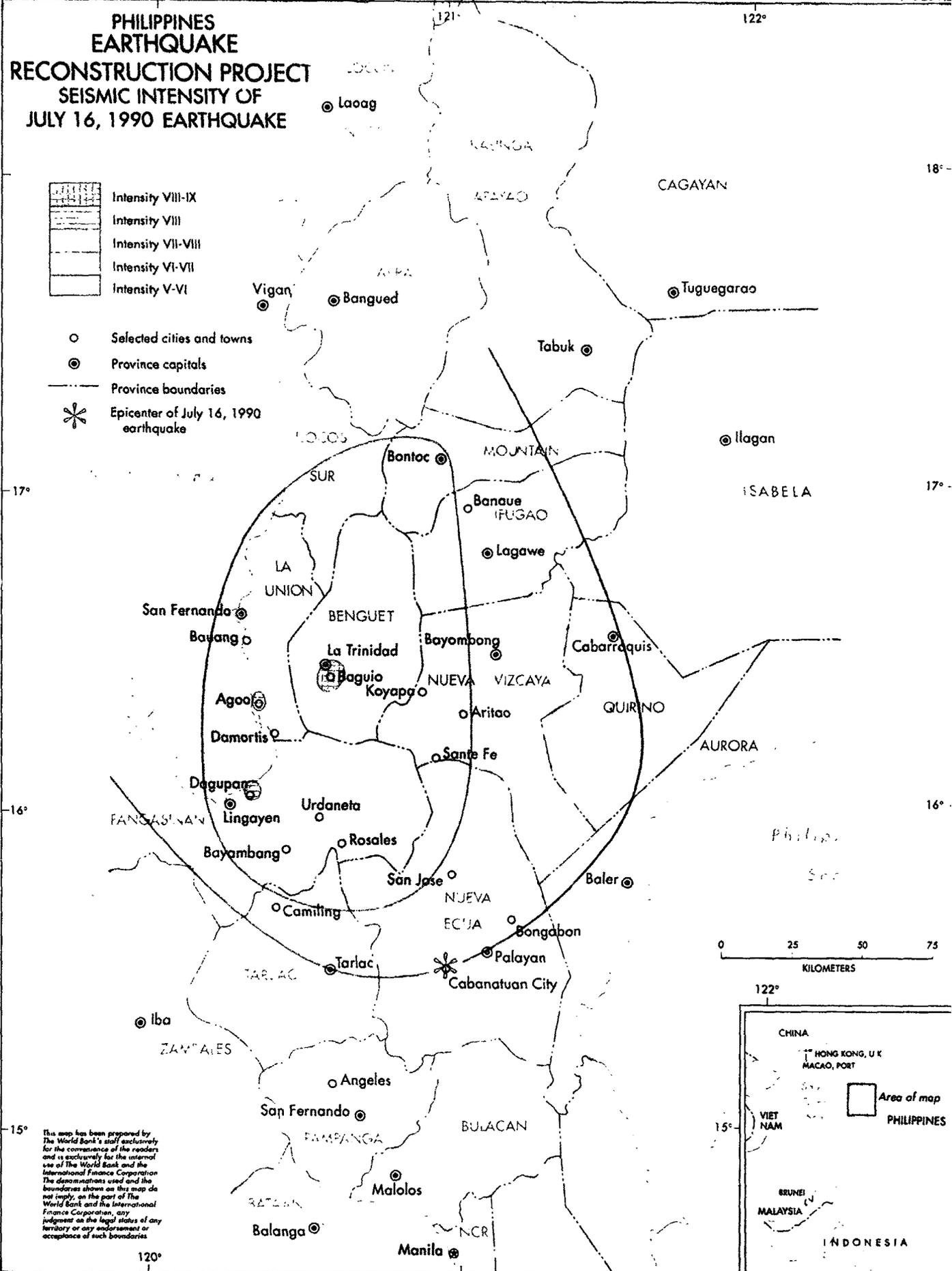
List of Documents Available in the Project File

1. Detailed Project Descriptions
  - Roads and Bridges
  - Housing
  - Medical Facilities
  - Irrigation Systems
  - Earthquake Damage Mitigation
2. Detailed Cost Estimates
3. Government Report on Urgent Repair Projects, dated August 14, 1990
4. Department of Public Works and Highways Assessment of Reconstruction Costs of Earthquake Damaged Infrastructure on Luzon, dated August 1990

# PHILIPPINES EARTHQUAKE RECONSTRUCTION PROJECT SEISMIC INTENSITY OF JULY 16, 1990 EARTHQUAKE



- Selected cities and towns
- ⊙ Province capitals
- Province boundaries
- \* Epicenter of July 16, 1990 earthquake



This map has been prepared by The World Bank's staff exclusively for the convenience of the readers and is exclusively for the internal use of The World Bank and the International Finance Corporation. The designations used and the boundaries shown on this map do not imply, on the part of The World Bank and the International Finance Corporation, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.

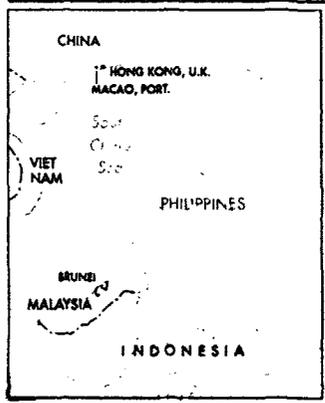
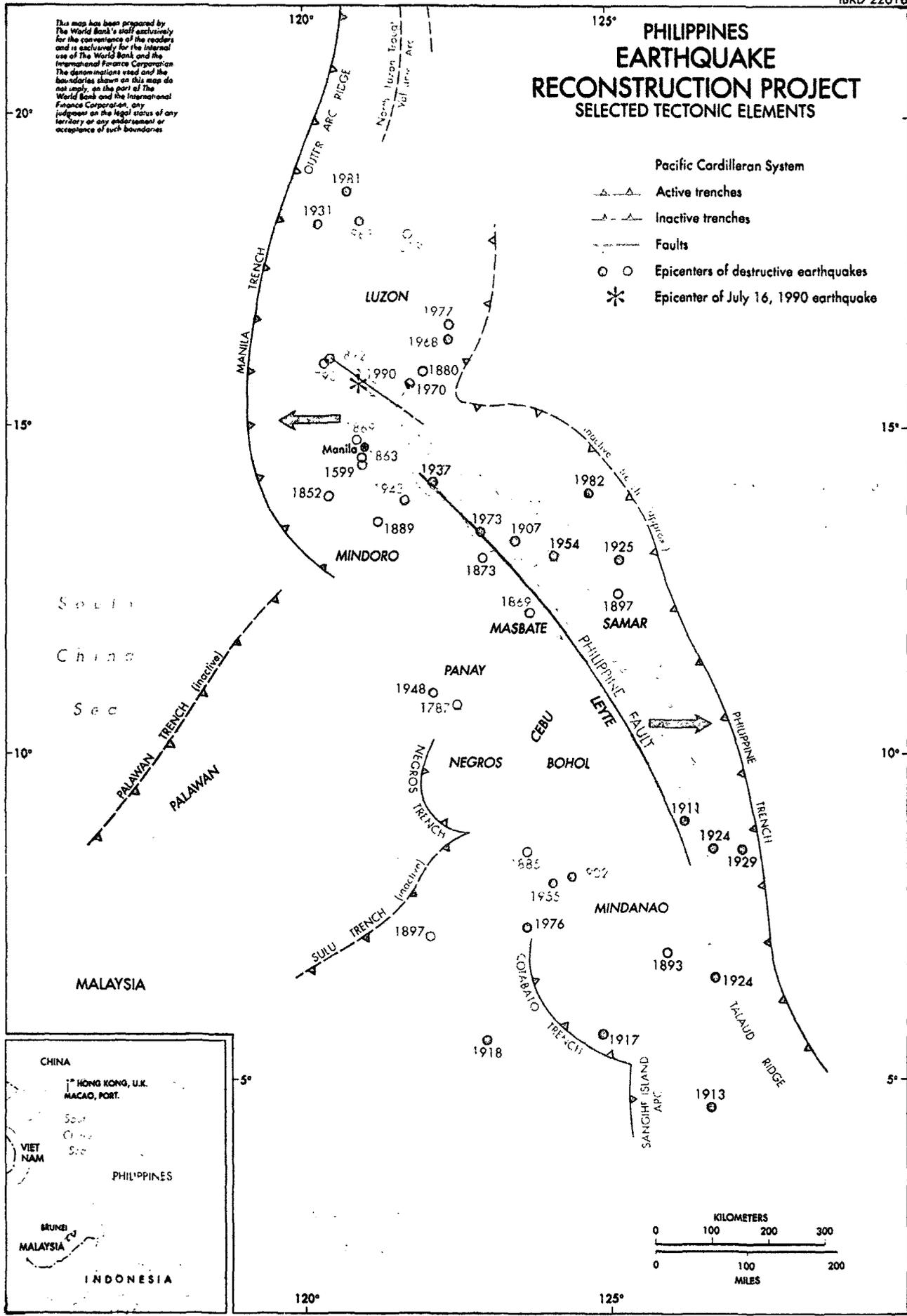
This map has been prepared by The World Bank's staff exclusively for the convenience of the readers and is exclusively for the internal use of The World Bank and the International Finance Corporation. The designations used and the boundaries shown on this map do not imply, on the part of The World Bank and the International Finance Corporation, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.

# PHILIPPINES EARTHQUAKE RECONSTRUCTION PROJECT

## SELECTED TECTONIC ELEMENTS

### Pacific Cordilleran System

- Active trenches
- Inactive trenches
- Faults
- Epicenters of destructive earthquakes
- Epicenter of July 16, 1990 earthquake



# PHILIPPINES EARTHQUAKE RECONSTRUCTION PROJECT ROAD REHABILITATION WORKS

● Laoag

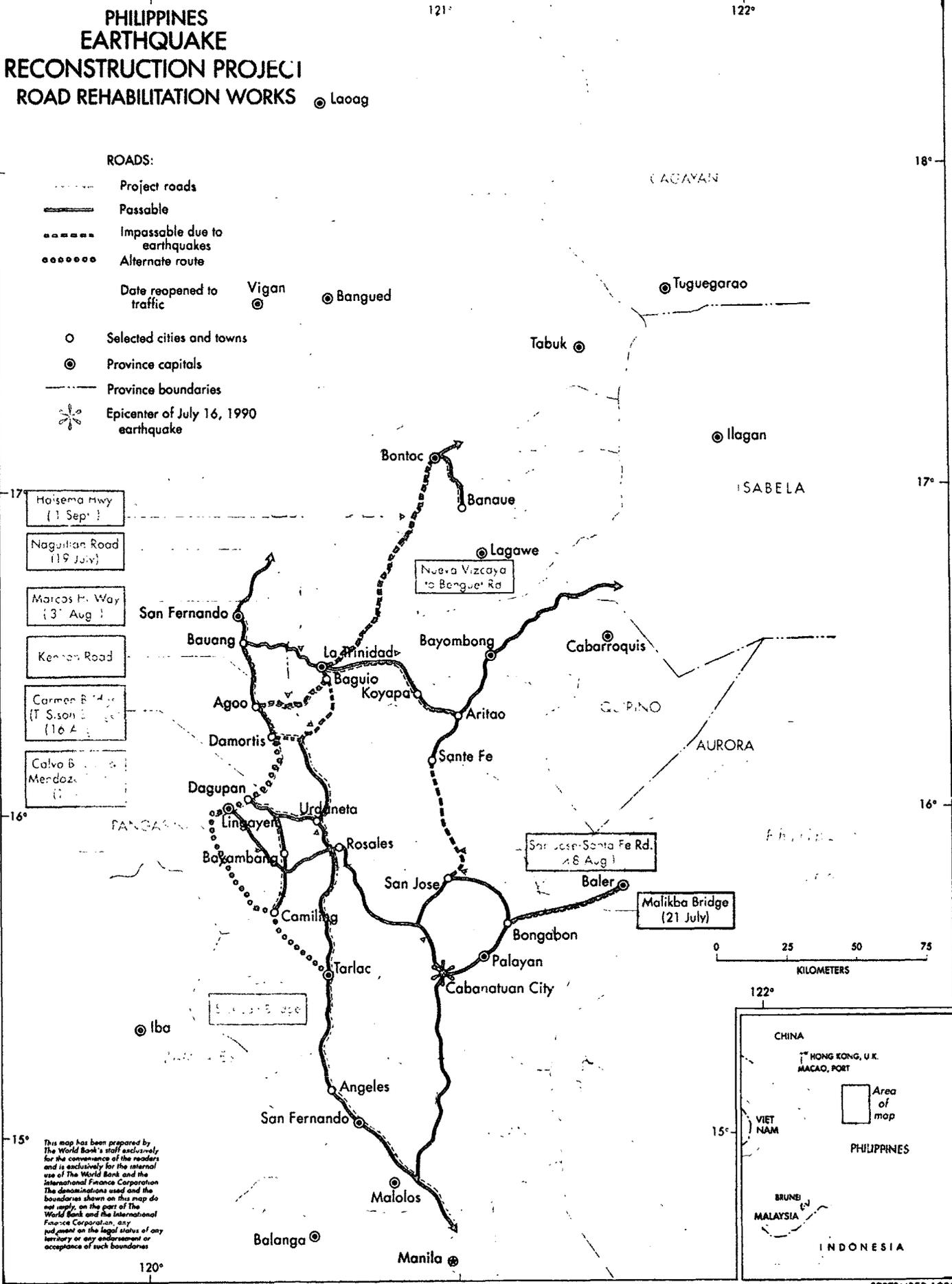
### ROADS:

- Project roads
- Passable
- - - - - Impassable due to earthquakes
- Alternate route

Date reopened to traffic

- Selected cities and towns
- Province capitals
- Province boundaries
- ✱ Epicenter of July 16, 1990 earthquake

- Maizema Hwy (1 Sep.)
- Naguilatan Road (19 July)
- Marcos H. Way (3 Aug.)
- Kennedy Road
- Carmen B. ... (T. Sison) (16 Aug.)
- Calvo B. ... Merdoza (17 July)



This map has been prepared by The World Bank's staff exclusively for the convenience of the readers and is exclusively for the internal use of The World Bank and the International Finance Corporation. The denominations used and the boundaries shown on this map do not imply, on the part of The World Bank and the International Finance Corporation, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.