

**REPORT AND RECOMMENDATION
OF THE
PRESIDENT
TO THE
BOARD OF DIRECTORS
ON A
PROPOSED LOAN
AND TECHNICAL ASSISTANCE GRANT
TO
INDIA
FOR THE
GUJARAT EARTHQUAKE REHABILITATION AND
RECONSTRUCTION PROJECT**

March 2001

CURRENCY EQUIVALENTS

(as of 14 March 2001)

Currency Unit	–	Indian Rupee/s (Re/Rs)
Re1.00	=	\$0.021478
\$1.00	=	Rs46.56

The exchange rate of the rupee is determined by the Reserve Bank of India under a system of managed float. For the purpose of calculations in this report, a rate of \$1.00 = Rs46.50 is used. This was the rate generally prevailing at the time of appraisal.

ABBREVIATIONS

ADB	-	Asian Development Bank
CAAA	-	Comptroller of Aid Accounts and Audit
DMMP	-	disaster management and mitigation program
EA	-	Executing Agency
GEB	-	Gujarat Electricity Board
GOG	-	Government of Gujarat
GSDMA	-	Gujarat State Disaster Management Authority
GSDP	-	gross state domestic product
GWSSB	-	Gujarat Water Supply and Sewerage Board
IA	-	Implementing Agency
INRM	-	India Resident Mission
NGO	-	nongovernment organization
PMCU	-	Project Management and Coordination Unit
PRHD	-	Panchayats, Rural Housing and Rural Development Department
TA	-	technical assistance
UN	-	United Nations
UDHD	-	Urban Development and Urban Housing Department
US	-	United States

NOTES

- (i) The fiscal year (FY) of the Government of India and the Government of Gujarat ends on 31 March. FY before a calendar year denotes the year in which the fiscal year ends; for example, FY2001 begins on 1 April 2000 and ends on 31 March 2001.
- (ii) In this report, "\$" refers to US dollars.

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LOAN AND PROJECT SUMMARY

Borrower	India
Project Description	The proposed Project will rehabilitate and reconstruct damaged infrastructure and housing, and will provide support for livelihood rehabilitation in the earthquake-affected area of the State of Gujarat. It will enable people to rebuild, to resume their normal lives by restoring availability of basic services such as drinking water and electricity, provide housing to mitigate homelessness, and foster economic opportunities.
Classification	Poverty: Poverty Intervention Thematic: Economic Growth
Environmental Assessment	Category B
Rationale	<p>The intensity of the earthquake resulted in a major catastrophe with severe impact on the local population. The quake, which was the worst on record for the past half century, caused more than 19,000 confirmed deaths, about 200,000 injured and up to 1.7 million homeless. In addition, the quake completely destroyed 300,000 and damaged more than 600,000 dwelling units and much of the power, water supply, and sanitation systems in the affected areas.</p> <p>Because the quake's epicenter was in the Kachchh district of Gujarat, the impact on people's lives and economic activity was even greater, as this was the fifth major disaster to strike the northeastern part of Gujarat in the past four years. The four preceding events include two cyclones and two severe droughts, the second of which is still causing major distress to the poorest regions in the state. Therefore, the economic resilience of the Government of Gujarat (GOG) and civil society were already depleted and the estimated \$2.3 billion cost of rehabilitation and reconstruction of basic services, together with the further \$1 billion-\$1.5 billion of economic damage due to loss of production and lower fiscal revenues, would be impossible for the state to bear without assistance. By providing financing for the most urgently needed components and works, the loan will enable GOG to finance a portion of the overall reconstruction program, as well as help to restore the economic activity essential for survival of residents in the heavily affected areas.</p>
Objectives and Scope	The main objective of the Project is to support GOG's efforts to reconstruct and restore essential infrastructure damaged in the affected areas of the State, especially

the Jamnagar, Kachchh, Patan, Rajkot, and Surendranagar districts. This is essential to enable early restoration of economic and social activity in the affected areas, especially for the poor. The Project will focus on the highest priority areas, identified through consultations with GOG, public and private sector, nongovernment organizations (NGOs), and other civil society.

The Project will have the following parts.

Part A: Housing. Assistance will be for reconstruction of residential houses, focusing on rural areas and the poorer sections of the population.

Part B: Urban and Rural Infrastructure. Work will focus on urban and rural water supply, sewerage, sanitation, drainage, civic buildings, staff quarters, electrification, and lighting; and the development of sites and services.

Part C: Power. Substations, transmission lines, distribution systems, staff quarters, administrative and related buildings, switch gear and transformers, control systems and related equipment will be rehabilitated.

Part D: Livelihood Rehabilitation. Support will be provided for livelihood projects that would include financial and infrastructure support for skill-based affected persons including retraining of affected persons needing alternative line of work and livelihood.

Part E: Consulting Services and Incremental Administrative Support.

Part F: Multihazard Disaster Preparedness and Mitigation. Support will be provided for preparation of disaster management plans, disaster management information systems, and disaster management training.

Cost Estimates

The cost of the Project is estimated at \$625 million equivalent. Since a sector approach is being followed, the cost estimates are on a sectoral basis.

Financing Plan

Items	(\$million)		
	ADB	GOG	Total
Part A: Housing	200	50	250
Part B: Urban and Rural Infrastructure	173	44	217
Part C: Power	67	31	98
Part D: Livelihood Rehabilitation	20	0	20
Part E: Consulting Services and Incremental Administrative Support	15	0	15
Part F: Multihazard Disaster Preparedness and Mitigation	20	0	20
Front-End Fee	5	0	5
Total	500	125	625

Loan Amount and Terms	A loan of \$500 million is proposed from ADB's ordinary capital resources with a term of 30 years including a 7-year grace period. It will carry an interest rate determined in accordance with ADB's pool-based variable lending rate system for US dollar loans, and applicable charges. The Borrower will pay to ADB a front-end fee in an amount equal to one percent of the loan amount.
Period of Utilization	30 June 2004
Executing Agency	GOG and Gujarat State Disaster Management Authority (GSDMA).
Implementation Arrangements	<p>Overall coordination and guidance will be provided by GSDMA. GSDMA will also be responsible for coordinating assistance provided by other multilateral and bilateral development institutions, other aid and donor agencies, the private sector, and NGOs. A project management and coordination unit (PMCU) will act on behalf of GSDMA as the Executing Agency on routine matters and have decision-making authority to facilitate project implementation. The PMCU in conjunction with Implementing Agencies (IAs) and the participating districts, cities, and towns will prioritize and select subprojects under the Project. The PMCU will be supported by project management consultants providing specialized technical support and advice on earthquake and other natural calamities' engineering, financial management and accounting, beneficiary participation, benefit monitoring and evaluation, and capacity building.</p> <p>An IA will be appointed for each of the key sectors included under the Project reporting to the PMCU of GSDMA. The prioritization, technical preparation, and implementation of the eligible subprojects will be carried out by the respective IAs. In particular, the Panchayats, Rural Housing, and Rural Development Department (part A); Gujarat Urban Development Company and the Gujarat Water Supply and Sewerage Board (part B); Gujarat Electricity Board (part C); and the Department of Social Justice and Empowerment and the Industries and Mines Department (part D) will be the IAs for the respective project components. Part E will entail management and technical support to the PMCU and the IAs for smooth and efficient implementation including the design, procurement, quality control, accounting, monitoring, and reporting requirements for the Project. Part F will provide support for establishing an effective multihazard disaster preparedness and mitigation program.</p>
Procurement	Procurement of goods and services to be financed by the Project will be carried out in accordance with ADB's

Guidelines for Procurement. Since the value of contracts will be relatively small and scattered over a wide range of the affected areas of Gujarat, they are not likely to attract international suppliers. The equipment and materials will need to be delivered in as short a time period as possible due to the urgent nature of the Project. The tight delivery schedules would be unattractive to international suppliers through international competitive bidding procedures. These will therefore be procured through international shopping for goods not readily available in India, and local competitive bidding procedures for goods manufactured in India. This will not preclude international suppliers from bidding through their local outlets.

Consulting Services and Technical Support

All consultants will be engaged by the PMCU and the IAs in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for the engagement of domestic consultants.

Estimated Project Completion Date

31 December 2003

Project Benefits and Beneficiaries

Considering the extent of damage, the costs of rebuilding houses and infrastructure facilities are exorbitant both for affected households and for the state. Support both in terms of financial assistance as well as improved earthquake resistant technology will be of considerable benefit in protecting the poor and affected people from falling further into poverty. It will help families resettle, provide a safer and healthier environment, and stabilize livelihoods.

The rehabilitation of urban and rural infrastructure, particularly water supply and sanitation, will facilitate the provision of drinking water, reduce risk of health-related problems, and improve the quality of life. Support for physical reconstruction in key sectors like power would have positive secondary effects in reviving industries and agriculture. By rehabilitating public and community infrastructure, the Project will help restore economic and social activities disrupted by the disaster.

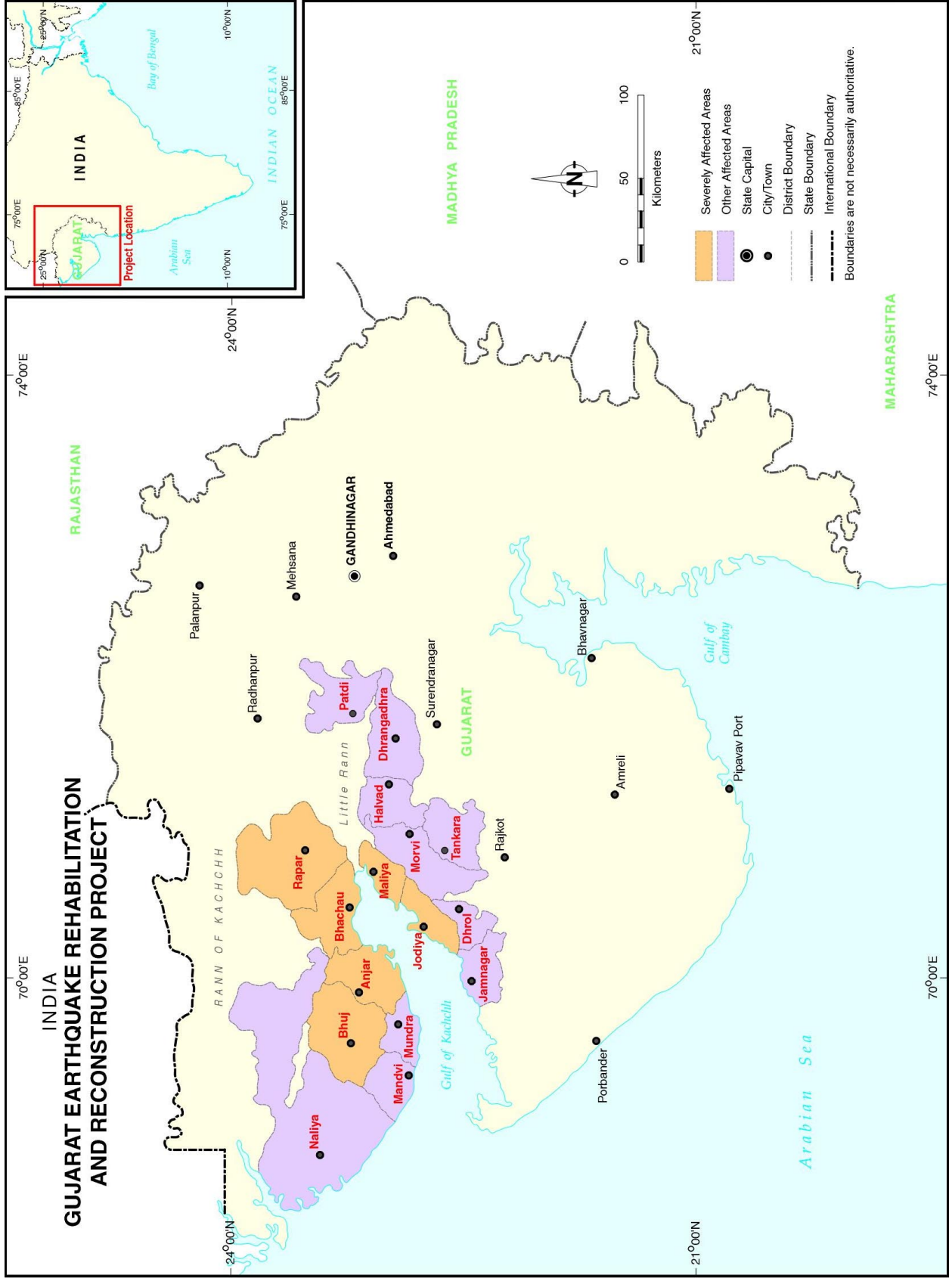
The Project envisages livelihood restoration that could help prevent the current adverse effects of the disaster on the affected poor. Livelihoods have been badly affected and this, along with the destruction of household investments, has been draining meager household savings and adversely impacting on levels of income and capability poverty in the region. The possibility of an adverse impact in terms of reduced consumption, migration, and increased child labor in poor families is increasing. The rehabilitation works will entail labor intensive civil works contracts, using unskilled and

semiskilled local labor, thereby providing employment opportunities for the poor. Livelihood rehabilitation for local artisans, craftsmen, and self-employed people in the affected area will facilitate recovery of the local economy, thereby restoring more long-term employment opportunities for them. The training envisaged for various categories of skills will help in the economic and social rehabilitation of the severely affected classes like the physically disabled persons and widowed women. The benefits of the Project will be evident through economic rehabilitation arising from speedy reconstruction of infrastructure and facilities, and livelihood restoration in the earthquake-affected areas.

Proposed Technical Assistance

A Technical Assistance (TA) for Capacity Building for Earthquake Rehabilitation and Reconstruction of Housing, is proposed to support the State's Panchayats, Rural Housing and Rural Development Department (PRHD) and the Urban Development and Urban Housing Department (UDHD) in implementing GOG's reconstruction program for earthquake-damaged housing.

The cost of the TA is estimated at \$1,650,000 equivalent, including \$480,000 in foreign exchange cost and \$1,170,000 equivalent in local currency cost. ADB will provide \$1,300,000 equivalent to fund the entire foreign exchange cost and \$820,000 equivalent of the local currency cost on a grant basis from the ADB-funded TA program. The Government and GOG will contribute \$350,000 equivalent in kind.



I. THE PROPOSAL

1. I submit for your approval the following Report and Recommendation on (i) a proposed loan to India for the Gujarat Earthquake Rehabilitation and Reconstruction Project, and (ii) proposed technical assistance (TA) for Capacity Building for Earthquake Rehabilitation and Reconstruction of Housing.

II. INTRODUCTION

2. On 26 January 2001, the state of Gujarat was struck by an earthquake of 6.9 magnitude on the Richter scale (measured by the Indian Meteorological Department — 7.7 as measured by the United States [US] Geological Survey). The earthquake—the strongest in the region in the past half century —has caused a large number of fatalities and extensive and widespread damage to physical and social infrastructure. On 29 January 2001, the Government of India (the Government) requested urgent assistance from the Asian Development Bank (ADB) and other multilateral institutions for the rehabilitation and reconstruction of the affected areas. ADB responded promptly by offering the possibility of immediate assistance to Gujarat by reallocating proceeds of existing loans and providing a new loan (para. 42). ADB fielded a Mission starting 12 February 2001 to prepare a proposal for ADB financial assistance.¹ The Mission concurrently undertook assessment of the earthquake damage as part of the Joint World Bank-ADB Mission, with participation from US Agency for International Development and the Netherlands Embassy in Delhi, and prepared a strategy for rehabilitation and reconstruction. Following the conclusion of the Joint Mission on 24 February, the ADB Mission completed appraisal of the proposed Project on 28 February 2001.

3. The missions undertook field visits, met with affected people, senior government officials at the central and state levels, and representatives of United Nations (UN) Agencies, and interacted with representatives from nongovernment organizations (NGOs), industry, and civil society at large. This report is based on the findings of the ADB Mission. The proposed ADB assistance, with assistance expected from other international and bilateral financing agencies, is in accordance with the state government of Gujarat's (GOG) overall recovery strategy, the time frame for assistance, as well as the state's absorptive capacity.

III. BACKGROUND

A. Natural Disasters in India

4. With its vast territory and varied geoclimatic conditions, the Indian subcontinent is exposed to frequent natural calamities, including cyclones, floods, and earthquakes, which

¹ The Mission comprised K. Gerhaeusser, Senior Programs Officer, PW2 (Mission Leader); M. Alam, Project Implementation Officer, INRM; A. Guha, Project Implementation Officer, INRM; A. Jorgensen, Senior Project Implementation Officer, INRM; H. Mukhopadhyay, Economist, INRM; N. Patel, Senior Project Specialist, IWOD; V.S. Rekha, Counsel, OGC (24-28 February); V.V. Subramanian, Investment Officer, INRM, 13-22 and 28 February); S. Vishwanathan, Social Economist, INRM; and J. Weinstock, Senior Poverty Reduction Specialist, OESD (12-19 February). Y. Iwasaki, Director, PWD, F. Polman, Resident Representative, INRM, and A. Thapan, Manager, AWWU held discussions in India during 8-12 February 2001 with officials of the Government of India and the Government of Gujarat (GOG) as well as with the World Bank. R. Nag, Deputy Director, PWD joined the Mission in meetings with GOG and the Government during 21-24 February. Further assistance was also provided by T. Kondo, Manager, IWTC; S. Chander, Senior Project Engineer, IWEN; M. Hamano, Project Engineer, IWEN; and V.B. Tulasidhar, until recently Senior Economist in INRM. The Mission was joined by J. Parker, A. Rego, and R. Sharpe, ADB TA consultants for disaster management and earthquake engineering, during 12-19 February 2001.

affect large numbers of the population. While vulnerability varies from region to region, a large part of the country is exposed to these natural hazards, which often cause significant loss of life and large-scale destruction of physical infrastructure, and have a long-lasting impact on society. Over the past decade, tens of thousands of people have been killed and millions affected by such disasters. The worst damage is caused by earthquakes, cyclones, and droughts (Table 1).

Table 1: Exposure to Natural Disasters in India (1991-2001)

Year	Type	Number of Persons	
		Affected (in '000)	Killed
1991	Earthquake	54	1,500
1992			
1993 (I)	Drought	1,175	—
(II)	Earthquake	166	9,475
1994	Cyclone	400	208
1995	Drought	—	558
1996	Cyclone	1,323	1,386
1997	Earthquake	22	43
1998 (I)	Cyclone	4,661	3,600
1998 (II)	Drought	—	2,541
1999	Drought	—	—
2000	Drought	—	—
2001 (as of 15 Mar)	Earthquake	19,660	19,200

— = not available.

Sources: Office of United States Foreign Disaster Assistance; and Center for Research on the Epidemiology of Disasters. *International Disaster Database*.

B. The Earthquake of 26 January 2001

5. The massive earthquake, with its epicenter about 20 kilometers (kms) northeast of Bhuj, in the district of Kachchh of Gujarat, about 1,140 km from New Delhi, was followed by more than 300 aftershocks ranging between 3 to 6 on the Richter scale during the subsequent two weeks. Although the quake was felt throughout most of western, northern, and southern India, the damage was most severe in Kachchh and the adjoining districts of Jamnagar, Patan, Rajkot, and Surendranagar. Ahmedabad, the commercial center of Gujarat with a population of about 5.4 million was also affected. So far, more than 19,200 people have been confirmed dead, with the toll likely to rise above 20,000. Almost 200,000 people were injured, and nearly 20 million people were affected. While roads and bridges sustained only relatively minor damage, other infrastructure services like water supply and sanitation, power transmission and distribution, and telecommunications received extensive damage. Health and education infrastructure was also severely impacted, with hundreds of hospitals and smaller health facilities damaged and thousands of classrooms destroyed. Moreover, civil administration was greatly affected, with office buildings destroyed and staff either killed, injured, or suffering the loss of family members and property. Many houses were either destroyed or damaged, rendering more than 1.7 million people homeless.

6. The calamity hit Gujarat at a time when the state was trying to recuperate from the severe flooding due to cyclones in 1998 and 1999, and droughts in 1999 and 2000. The most recent drought is reported to have affected 84 percent of the state's population, with 146 of 174 major water reservoirs holding less than 25 percent of the designated storage level; the impact on agriculture and animal husbandry was significant. The cyclones and droughts alone required additional state

spending equivalent to 0.2 percent of gross state domestic product (GSDP) in FY1999, about 0.3 percent in FY2000, and 0.5 percent projected for FY2001.

7. The population affected by the earthquake has little in the way of coping strategies, particularly the many who have lost all their possessions and currently face life without shelter. The evident immediate needs are for food, shelter, clothing, medicine, and sanitation facilities. Trauma counseling is also an urgent requirement. Restoration of transport infrastructure, water supply and sanitation, power, and housing will be a priority of the recovery strategy.

1. Physical Damage

8. The earthquake had a severe impact on the life and livelihood of people in the Kachchh region of Gujarat. So far, about 290,000 houses and huts are reported as destroyed and another 488,000 damaged in the earthquake-affected rural areas, and a further 141,000 housing units in affected urban areas. Moreover, several of the urban areas, including Anjar, Bhachau, Bhuj, Gandhidham, and Rapar are completely or almost completely destroyed and will need reconstruction.

9. Damage to infrastructure and household property was extensive. The agriculture, industry, and services sectors were also significantly affected, both in terms of lost assets as well as in loss of production and income. The total economic damage is estimated at about \$3.4 billion, or approximately 13 percent of GSDP. Damage to physical infrastructure accounts for about 65 percent of total economic damage (comprising direct and indirect, i.e., flow-related costs).² These estimates are based on initial rapid assessment combined with more detailed surveys undertaken by GOG, as well as field assessment by the Joint Mission. Preliminary estimates suggest that the cost of the rehabilitation and reconstruction of physical infrastructure including housing will be about \$2.3 billion over the next 2-3 years.

2. Economic Impact

10. The economic impact of the earthquake comprises (i) losses to immovable assets, (ii) losses to movable assets, (iii) economic losses due to business interruption, and (iv) economic costs to the public sector. Losses to immovable and movable assets reflect the direct economic costs due to destroyed or damaged buildings and other physical infrastructure, as well as the economic losses due to destroyed or damaged contents of public and private buildings, and equipment. Public sector economic costs accrue due to revenue losses and increases in budgetary expenditures for immediate relief, rehabilitation, and reconstruction.

11. The potential impact of the earthquake on Gujarat's GSDP comes in the wake of two consecutive droughts, which had already adversely affected agricultural production and state income. The loss in infrastructure facilities and productive capacity of almost Rs100 billion is likely to reduce state income by about Rs20 billion during the first year. The income loss (amounting to 2-3 percent of GSDP) is expected to be partly offset by the investment for reconstruction that will boost income by restoring supply capacity and stimulating demand. As a result, the loss of GSDP may be less than 0.5 percent of GSDP in FY2002. Given Gujarat's share in India's gross domestic product of about 6 percent, the impact of the earthquake on India's national income will be relatively minor. The earthquake had no perceptible impact on

² The total damage of about \$3.4 billion comprises (i) damage to physical infrastructure: \$2.3 billion; (ii) loss/damage to commercial buildings (excluding inventory): \$260 million; and (iii) projected output loss due to damaged infrastructure, and loss of fiscal revenues: \$830 million. There are some differences between the assessment of damages and rehabilitation costs made by the Joint World Bank-ADB Mission and GOG estimates; e.g. GOG estimated the value of lost household assets at par with the value of damaged housing; this would raise the figure on total economic damage by a further \$850 million-\$900 million.

the general price level or balance of payments. The adequate supply of essential commodities, including food-grain stocks, contributed to the maintenance of inflation stability. Notwithstanding, relative prices for individual commodities, such as cement and steel, have risen sharply in anticipation of the heightened demand associated with reconstruction.

12. The impact on GOG's public finances and its program of medium-term fiscal consolidation is likely to be more severe. The earthquake will have adverse effects on both the government's revenues as well as its expenditures. The loss of income in the affected region, decline in employment opportunities, and lower housing stock may lower revenues from sales tax, profession tax, and stamp duty and registration fees, by an amount equivalent to 0.2 percent and 0.5 percent of GSDP in FY2001 and FY2002, respectively. Higher outlays for relief and reconstruction will add pressure on the state budget. The cost for immediate financial assistance through cash compensation, food supplies, medical relief, and debris removal, as well as emergency restoration of water, power, and telecommunications amounted to Rs2.1 billion (\$45 million) in the first three weeks following the earthquake and is projected by GOG to total Rs6.5 billion (\$140 million), equivalent to 0.5 percent of GSDP by the end of March 2001, the end of the fiscal year. Although still tentative, GOG is anticipating expenditure on rehabilitation alone to exceed Rs100 billion (\$2.3 billion equivalent).³ Together with the loss in revenue, these additional expenditures are likely to raise the fiscal deficit by about 0.5-1.0 percent of GSDP in FY2001, and by 1.5-2.5 percent of GSDP in FYs 2002 and 2003 depending on the phasing of outlays and the inflow of additional receipts.⁴ The magnitude of the pressure on public finances will pose a major challenge to GOG for its prudent fiscal and debt management.

3. Social Dimensions and Impact on Poverty

13. Despite a more than 50 percent decline in the incidence of poverty from 47 percent of the population to 24 percent between 1972/73 to 1993/94,⁵ mainly on account of Gujarat's relatively higher levels of industrialization and higher economic growth, the absolute number of poor declined much less, from 13.5 million to 10.4 million, during that period. Of these, about 6.2 million live in rural areas, and 4.2 million in urban centers. Other indicators of poverty (e.g., child malnutrition levels, infant mortality) show that the poor—especially women and children—may be more disadvantaged than this figure suggests.

14. The worst quake-hit districts of Jamnagar, Kachchh, Patan, and Surendranagar have high levels of rural and urban poverty. Agricultural productivity is low, reflecting the arid and semiarid agroclimatic conditions, and capital intensity of industry and industrial value added is only a fraction of the state-wide average, given the preponderance of small-scale industry and informal sector activities. This is also reflected in the proportionately higher percentage of households occupying kachha and semipucca houses (Appendix 1, para. 2)—a type of house generally associated with the poorer sections of the population—particularly in Patan and Surendranagar. Nonetheless, basic amenities such as electricity and safe drinking water are more generally available in all the districts (except Surendranagar), although health and education facilities are distributed unevenly across the districts. The rural areas of Kachchh,

³ The figures for rehabilitation cost do not include damage to commercial buildings nor the cost of loss to inventory. GOG's financial burden for reconstruction and repair of private houses will depend on the extent of financial support it provides to the affected homeowners. In view of the relatively high incidence of poverty in the affected areas prior to the disaster, public funds will need to be provided to affected persons for private housing.

⁴ Under normal arrangements for transfer of external assistance as additional central plan assistance, 30 percent of the amount is provided as grant and 70 percent as loan.

⁵ The latest available official data are from the 1993/94 (quinquennial) national sample survey. A new census is currently being undertaken in all states.

Patan, and Surendranagar have lower male and female literacy rates, higher infant mortality rate, and lower life expectancy than the state-wide average.

15. The socioeconomic impact of the earthquake on the comparatively less-developed areas of Gujarat is severe. The social fabric of the quake-hit areas has been seriously affected by the large number of human deaths and injuries. In addition to the immediate suffering caused, a large number of families have been torn by the death or serious disability of a member. This will have long-term consequences on the well-being of other members, particularly widows (especially young women), single-parent children, orphans, and the elderly. More adult women died than men, and a large number of children were killed. Similar differences are likely among the injured.

16. Other social impacts of the quake include deep insecurity among those who have lost assets, including movable and immovable property, and increased vulnerability to poverty. The livelihoods of many families have been disrupted, particularly among residents in the worst affected towns and villages. The loss of lives, the loss of or damage to home/workplace, productive assets and/or industrial units has caused more severe disruption, while temporary disruption has occurred in the wake of the shock and fear caused by the earthquake, and of disruptions in financial services, markets, and distribution channels. Handicraft artisans and salt farmers are the most severely affected groups.⁶ Another important source of livelihood in the region is animal husbandry, about 18,000 cattle deaths have been reported. Economic recovery has been hampered by the outflow of people, including normally migrant workers, such as laborers on the salt farms in the affected areas.

C. Natural Disaster Response⁷

17. Although systems were in place to manage cyclones, drought, and floods, Gujarat was ill-prepared for earthquakes. No authority had responsibility for earthquake preparedness, and no contingency plans or policies had been adopted for dealing with such a catastrophe. Nonetheless, GOG responded quickly. At the district level, the damage suffered impaired the response, but arrangements were rapidly improvised. GOG immediately began emergency rescue operations, and initiated efforts to restore lost communication links, electricity, water supply, and civil supplies. The Government also launched a large-scale relief and rescue operation, mobilizing available resources and personnel to assist the victims.⁸ The relief efforts at the central level were coordinated by the Natural Disaster Management Control Room, which has worked closely with GOG's Control Room and the state relief commissioner. To coordinate the longer-term reconstruction, on 6 February 2001 GOG established the Gujarat State Disaster Management Authority (GSDMA) chaired by the chief minister, with nine members and its chief executive officer as member secretary. GSDMA has been registered as a society under the Societies Act. GOG has also established the high-level Disaster Management Task Force to advise on relief and reconstruction policies.

18. Local government response was impaired due to the severity of the damage and the near total loss of office infrastructure and communication, besides injuries to personnel and their family members as also the disruption to their normal life. Though constrained by the earthquake-related destruction, the district administration used its available resources and

⁶ Kachchh district alone accounts for 80 percent of India's salt production, and 80 percent of the facilities are reportedly dysfunctional.

⁷ This section captures only the main emergency response measures taken after the disaster.

⁸ The Government also provided Rs6.1 billion (\$130 million equivalent) from the National Calamity Relief Fund and the Prime Minister's Relief Fund as emergency cash assistance. In addition, the Reserve Bank of India permitted GOG to access ways and means advances beyond normal limits for emergency relief and rehabilitation until 31 March 2001

rapidly launched the rescue and relief measures together with local military units. Many local officials lost family members and their homes, yet returned to work quickly to salvage what office facilities could be recovered and coordinate relief activities.

19. As is typical in disasters, community members immediately mobilized resources, helped each other, and provided whatever assistance they could. The strong NGO network in Gujarat supported community efforts. Several well-known local and national NGOs such as the Self-Employed Women's Association are active in the area and are helping people restore livelihoods and meet other needs. A local NGO, the Kachchh Navnirman Abhiyan, was nominated as the coordinator of NGO activities, and has set up 22 local subcenters in the area to coordinate information and assistance, with encouragement and formal endorsement from GOG. Cooperation between international and national NGOs has also been extensive.

D. Aid Coordination and External Assistance

20. In the wake of the disaster, the international community responded with immediate support. The Office for the Coordination of Humanitarian Affairs sent a five-member UN Disaster Assessment and Coordination team on 27 January, the day following the disaster. The UN Disaster Management Team, assisted by staff from the United Nations Development Programme Emergency Response Division, were also deployed immediately to coordinate the UN response. The team established an on-site operation coordination center within the district collector's compound in Bhuj. This has enabled the development of a close working relationship and a continuous exchange of information between the chief relief coordinator, the collector and the UN system. The coordination center included a World Health Organization disease surveillance desk to monitor outbreaks of illness. The World Food Program initiated an emergency operation of more than \$4 million to provide relief food rations to 300,000 people. All other UN organizations have sent assessment teams to the affected area. For the rehabilitation and recovery phase, the United Nations Development Programme will be the focal agency for the UN system.

21. Several countries sent search and rescue teams and equipment. In addition, numerous countries have either pledged or provided cash and in-kind contributions on a bilateral basis, through NGOs or the UN system. The International Federation of Red Cross and Red Crescent Societies established a team in the town of Anjar and an emergency response unit hospital in Bhuj. They also issued an appeal that resulted in more than \$15 million being donated to address the immediate needs of affected communities, including shelter, medical services and supplies, and water and sanitation equipment.

22. Several donors and multilateral institutions have pledged support to the longer-term recovery efforts. In response to the request from the Government, ADB sent a team of experts on disaster management and earthquake engineering to Gujarat on 2 February 2001 to assist GOG with preliminary damage assessment and the institutional setup for disaster management.⁹ This was followed on 12 February by the fielding of the Joint Mission, to undertake a damage assessment, by ADB and the World Bank in partnership with GOG and the Government, and to assist in developing a comprehensive recovery strategy. After the Joint Mission, on 27 February an aid meeting was held in New Delhi to brief other multilateral and bilateral agencies on the assessment of damages and economic impacts of the earthquake, and on the rehabilitation and reconstruction program.¹⁰

⁹ These experts were part of the consulting team contracted under TA 3379-IND: *Strengthening Disaster Mitigation and Management at the State Level*, for \$1.0 million, approved on 28 December 1999.

¹⁰ Participants included representatives from the Department for International Development, European Commission, International Labor Organization, Japan Bank for International Cooperation, Japan International Cooperation Agency, Kreditanstalt fuer Wiederaufbau, GTZ (German Development Cooperation), as well as the embassies of

E. Lessons Learned

23. A review of ADB-wide experience with rehabilitation assistance¹¹ indicates the following essential factors: (i) projects must be prepared as quickly as possible; (ii) projects should focus on restoring facilities; (iii) rehabilitation works, to the extent possible, should be completed within two years; (iv) implementation will place a heavy burden on executing agency (EA) staff and therefore strong consulting support and ADB supervision is needed during implementation; and (v) efforts should be made to ensure that ADB's rapid response to disasters is matched by equally quick action by the government. Other lessons learned from ADB's earlier emergency projects include (vi) beneficiary participation must be ensured and increased in project preparation and implementation, especially in the maintenance of facilities; (vii) environment and social aspects should be considered during project implementation, even though the need for a rapid response may not permit a detailed treatment of these issues prior to the approval of the assistance; (viii) arrangements for disbursements—including retroactive financing and the use of imprest accounts—should give the EAs quick and simple access to funds; (ix) project objectives and scope need to be carefully defined; and (x) criteria for subproject selection should permit simple prioritization of subprojects and short implementation periods.

24. These lessons have been considered and incorporated in the design of the proposed Project. Indeed, ADB response has been very rapid: within a few days, a team of ADB-funded disaster management experts started to provide assistance to GOG; within two weeks of the calamity, a senior delegation from ADB visited Gujarat, and the Joint World Bank-ADB Assessment Mission was fielded to assist GOG in assessing the damage and in evolving a short- and medium-term recovery and rehabilitation strategy; and Board approval for the proposed assistance is being sought within less than two months from receipt of the Government's request for assistance. The implementation period for the rehabilitation Project is 33 months, with a shorter implementation period for urgent housing, and focuses on the immediate rehabilitation of the physical and social infrastructure in the affected areas and the restoration of livelihood for those affected. Simplified approval and implementation procedures have been agreed upon with GOG. Strong consulting inputs, for project management, design and construction supervision, procurement, and financial management and audit are included. Criteria for subproject selection have been developed, and environmental safeguards built in. Advance procurement action has been permitted and imprest accounts will be established to facilitate project implementation. Moreover, the proposed Project has been prepared with complementarity of assistance from other multilateral and bilateral agencies and donors in mind.

F. ADB's Country Operational Strategy

25. ADB's country operational strategy (COS) for India, prepared in 1996, is designed to support Government efforts in strengthening the economic and social development of the country. The overall strategic objective of the COS is to promote economic efficiency and higher sustainable growth to improve employment and reduce poverty. It has been operationalized with support for macroeconomic and structural reforms at the national and state levels; enhanced private sector participation; development of regulatory and institutional capacities; and enhanced resource mobilization through financial sector and capital market reforms. Consistent with India's development needs and ADB's strategic emphasis, increased focus is on poverty reduction. In the context of India's current inaccessibility to Asian Development Fund resources, the strategic priorities for ADB's contribution to reduce poverty include creating conditions for accelerated and

Belgium, Canada, Denmark, France, Norway, Portugal, Sweden, Switzerland, United Kingdom, and the United States of America, in addition to representatives from ADB and the World Bank.

¹¹ Benson, C. and W.T. Lincklaen-Arriens. 1999. *Rehabilitation Assistance after Disasters: A Review of Lessons Learned and Emerging Issues*, 3rd draft, ADB, Manila.

sustainable growth, expanding social opportunities for the poor, and developing comprehensive partnerships for state-level operations. A new country strategy is currently being prepared.

26. A key feature of the COS is a shift in ADB activities to support for comprehensive economic and structural reforms in selected states. ADB's assistance focuses on supporting macroeconomic reform and fiscal consolidation to improve public saving and enhance resource mobilization; increasing efficiency in resource use by rationalizing unproductive expenditure, and restructuring and divesting state-owned enterprises; strengthening local government and improving good governance; and reforming policies in key physical infrastructure sectors, especially power, the major cause of fiscal hemorrhage in most states. The state-level operations also focus on fostering human development by supporting the reallocation of budgetary resources to social sectors to thereby enable addressing vital cross-cutting concerns on a sustainable basis. Gujarat was the first state chosen for ADB's state-level operations and a loan and TA program was approved in 1996.¹² ADB assistance so far has focused on improving public resource management, reforming the power sector,¹³ and establishing of Gujarat Infrastructure Development Board as the first infrastructure project development facility of its kind in India.

27. The proposed Project will rehabilitate damaged infrastructure and housing, and will provide support for livelihood rehabilitation. It will enable people to rebuild to resume normal life by restoring availability of basic services such as drinking water and electricity, provide housing to mitigate homelessness, and foster economic opportunities. This is fundamental for resuming the socioeconomic development process in Gujarat, one of ADB's focal states. The Project is, therefore, in line with ADB's COS for India and in accordance with ADB's overarching objective of poverty reduction.

IV. THE PROPOSED PROJECT

A. Rationale

28. The intensity of the earthquake resulted in a major catastrophe, severely impacting the local population. The quake, the worst on record for the past half century, caused more than 19,000 confirmed deaths, and left 200,000 injured and up to 1.7 million homeless. In addition, the quake completely destroyed 300,000 and damaged more than 600,000 dwelling units and much of the power, water supply, and sanitation systems.

29. Because the quake's epicenter was in the Kachchh district of Gujarat, the impact on people's lives and economic activity was even greater, as this was the fifth major disaster to strike the northeastern part of Gujarat in the past four years. The four preceding events include two cyclones and two severe droughts, the second of which is still causing major distress to the poorest regions in the state. Therefore, GOG's and civil society's economic resilience were already depleted and the estimated \$2.3 billion cost of rehabilitation and reconstruction of basic services, together with the further \$1 billion-\$1.5 billion of economic damage due to loss of production and lower fiscal revenues, would be impossible for the state to bear without assistance. By providing financing for the most urgently needed components and works, the loan will enable GOG to finance a portion of the overall rehabilitation and reconstruction program, as well as help restore the economic activity essential for survival of residents in the heavily affected areas.

¹² Since then, Madhya Pradesh and Kerala have been selected as additional focal states for ADB's state-level assistance.

¹³ Loan 1803 and 1804-IND: *Gujarat Power Sector Development Program*, for \$350 million, approved on 13 December 2000 was the first sector development program loan to India.

B. Objectives and Scope

30. The main objective of the Project is to support GOG's efforts to rehabilitate and reconstruct essential infrastructure damaged in the affected areas of the state, especially the Jamnagar, Kachchh, Patan, Rajkot, and Surendranagar districts. This is essential to enable early restoration of economic and social activity in the affected areas, especially for the poor. The Project will focus on the highest priority areas, identified through consultations with GOG, public and private sector, NGOs, and other civil society. Based on the Joint Mission assessment (para. 2), incorporating complementarity with assistance from other agencies and donors, the sectors identified for the Project include housing, urban and rural infrastructure, power, and livelihood rehabilitation. In addition, the Project will provide assistance for institutional support, as well as multihazard disaster preparedness and mitigation.

31. The Project will have the following parts.

32. **Part A: Housing.** Houses with structural damage will be rehabilitated and strengthened, and new houses constructed if the houses were completely destroyed. Work will focus on the poorer sections of the population, particularly those living below poverty line and the economically weaker sections of the population in the affected rural areas (Appendix 1).¹⁴

33. **Part B: Urban and Rural Infrastructure.** Work will focus on urban and rural water supply, sewerage, sanitation, drainage, roads, streets and related structures, markets, bus and truck stations, civic buildings and staff quarters, electrification and lighting, administrative hardware, utility vehicles including water tankers, fire trucks, garbage collection and compactor equipment, development of sites and services, and commercial and industrial use and related debris removal and appurtenances (Appendixes 2 and 3).

34. **Part C: Power.** This part will focus on refurbishing and rehabilitating substations, transmission lines, distribution systems, staff quarters, administrative and related buildings, switch gear and transformers, control systems and related equipment and works (Appendix 4).

35. **Part D: Livelihood Rehabilitation.** Support will be provided for livelihood projects given the strong interlinkages between economic rehabilitation of the society, housing reconstruction, and access to basic needs. The specific projects will include financial and infrastructure support for skill-based affected persons, including retraining of affected persons needing alternative line of work and livelihood (Appendix 5).

36. **Part E: Consulting Services and Incremental Administrative Support.** Support will be provided for concerned state agencies and municipal bodies to implement the rehabilitation and reconstruction, capacity building, benefit monitoring, as well as incremental equipment, services, supplies, and incremental personnel costs incurred by the agencies responsible for project implementation.

37. **Part F: Multihazard Disaster Preparedness and Mitigation.** Support will be provided for GOG, to include preparation of disaster management plans, disaster management information systems, and disaster management training (Appendix 6).

¹⁴ The poorer section would include housing units proposed to be rehabilitated up to a unit size of 50 square meters, as defined only in each of the, rehabilitation packages No. 1, No. 2, and No. 3 of GOG's Resolution No. PNV-162001-1502 (1)-S.3, dated 23 February 2001.

38. The Project was developed in close cooperation with the World Bank and bilateral assistance agencies, who will also finance part of the reconstruction program.¹⁵ The Project will follow a sector approach to facilitate selection of the highest priority subprojects during implementation. The sector approach is a suitable modality for emergencies, as it allows quick response and maximum flexibility of both geographic coverage and components, within the agreed framework and selection criteria. It will also enable GOG to utilize the Project based on financial considerations related to access to alternate funding. The eligible urban centers comprise all cities and towns in the earthquake-affected areas, while in the rural areas all earthquake-affected districts and villages are covered.

39. The Project is an essential component of GOG's overall plans for recovery from the disaster and will focus on rehabilitating and reconstructing or replacing facilities, with due regard to technological improvement, changed circumstances, and disaster prevention by incorporating structural strengthening and improvements against future earthquake and other natural disasters. Special focus will be placed on the needs of the poorer sections of the population in terms of housing and access to basic services.

C. Cost Estimates

40. Cost estimates for the Project are based on the damage assessment of the Joint World Bank-ADB Mission and interactions with Government, GOG, and local authorities. GOG's initial estimates were reviewed and updated based on detailed assessments carried out by a joint team of about 35 persons from the two banks, supported by ADB TA consultants for disaster management and earthquake engineering (footnote 9), and various GOG and local officials. Through the one-week field mission to the damaged areas, the joint World Bank/ADB team trained GOG assessors through hands-on detailed inspection and analysis of on-site damage in three of the most severely damaged towns. Based on this training, GOG was able to update the damage assessments throughout the affected areas of Gujarat. The end result was coalesced into a joint assessment report. The damage estimates are based on rehabilitating and reconstructing the housing stock and various public infrastructure. These estimates were then refined to incorporate earthquake-resistant designs, materials, and improved technology. The damage assessments will continue to be updated as more detailed information becomes available as clean up continues. These will be updated during the detailed design phase of the various project components.¹⁶

41. The cost of the Project is estimated at \$625 million equivalent (Table 2). Since a sector approach is being followed, the cost estimates are on a sectoral basis. A summary of the cost estimates is available in Appendix 7.

¹⁵ In particular, the World Bank will provide assistance for the health, education, irrigation, and roads sectors in addition to public buildings and housing, and will finance the provision of temporary shelters and ongoing debris removal. Total World Bank lending from both nonconcessional and concessional sources will be \$1.0 billion. TA as well as support for the education sector is being considered by the United States Agency for International Development and the Netherlands.

¹⁶ ADB and the World Bank jointly conducted detailed assessments for several of the most damaged towns. For the urban infrastructure component under part B, the town of Anjar was used as the basis for assessing damage and the required rehabilitation and reconstruction for urban infrastructure. The basis for the rural infrastructure component was the damage assessment and reconstruction requirements developed in close conjunction with the Gujarat Water Supply and Sewerage Board. The estimates for power systems damage were based on the detailed assessment by Gujarat Electricity Board. These benchmarks were used to develop the eligibility criteria, the related scope and cost of the Project, and the implementation arrangements that are described in Chapter IV.F.

Table 2: Cost Estimate
(\$ million)

Item	Cost	Foreign Currency	Local Currency
Part A: Housing	250	30	220
Part B: Urban and Rural Infrastructure	217	45	173
Part C: Power	98	24	74
Part D: Livelihood Rehabilitation	20	2	18
Part E: Consulting Services and Incremental Administrative Support	15	1	14
Part F: Multihazard Disaster Preparedness and Mitigation	20	5	15
Front-End Fee	5	5	0
Total	625	112	513

Source: Staff estimates.

D. Financing Plan

42. The proposed ADB loan is for \$500 million equivalent, representing 80 percent of the total cost of the Project (Table 3).¹⁷ The loan will finance 80 percent of housing, and urban and rural infrastructure, including physical and price contingencies; the full cost of livelihood rehabilitation, consulting services and incremental administrative support; and about 68 percent of the power component. The Borrower will pay to ADB a front-end fee in an amount equal to one percent of the loan amount. The fee will be capitalized in the loan. GOG will meet the \$125 million equivalent of the local currency cost components of the Project. Although ADB's proposed share of financing is relatively high, it is justified in view of the special circumstances of this Project, and is in accordance with the provisions of ADB's Rehabilitation Assistance after Disasters¹⁸ and ADB's Graduation Policy for developing member countries.¹⁹

43. The Borrower will be India. The loan will be in accordance with the prevailing ADB policy on Rehabilitation Assistance after Disasters (footnote 18). The loan will be from ADB's ordinary capital resources with a term of 30 years including a 7-year grace period. It will carry an interest rate determined in accordance with the ADB's pool-based variable lending rate system for US dollar loans. The Borrower will treat the loan proceeds as an addition to the normal transfers allocated annually from the Government to GOG, i.e., as additional central plan assistance, and transfer such proceeds to GOG at the prevailing loan-to-grant ratio. The local currency cost financing of the housing, urban and rural infrastructure, and power components is justified given the tight fiscal situation in Gujarat already in place because of the successive years of cyclone and drought disasters and the extraordinary damage caused by the severe earthquake.

¹⁷ As noted in para. 2, as well as in the information paper to the Board (IN. 41-01: *India: Impact of the Earthquake in Gujarat and ADB's Proposed Assistance*, 19 February 2001), consideration was initially given to reallocating proceeds from three approved loans. A more detailed assessment by the Mission indicated that reallocation of existing loan proceeds may not be the most effective approach. The financing requirements of the different sectors required processing of a new sector-based loan for \$500 million, in accordance with the Government's request.

¹⁸ R191-88: *Rehabilitation Assistance after Disasters*, 2 February 1989, para. 47.

¹⁹ R204-98: *A Graduation Policy for the Bank's DMCs*, 23 November 1998, para. 87.

Table 3: Financing Plan
(\$ million)

Item	ADB	GOG	Total
Part A: Housing	200	50	250
Part B: Urban and Rural Infrastructure	173	44	217
Part C: Power	67	31	98
Part D: Livelihood Rehabilitation	20	0	20
Part E: Consulting Services and Incremental Administrative Support	15	0	15
Part F: Multihazard Disaster Preparedness and Mitigation	20	0	20
Front-End Fee	5	0	5
Total	500	125	625

ADB = Asian Development Bank, GOG = Government of Gujarat.

Source: Staff estimates.

E. Executing Agency

44. GOG established GSDMA, with a mandate to manage and execute the entire rehabilitation and reconstruction works. GSDMA and GOG jointly will function as the EA for the Project. GSDMA will also be responsible for coordinating the assistance provided by the multilateral and bilateral development institutions, other aid and donor agencies, the private sector, and NGOs.²⁰ The GSDMA is chaired by the chief minister, with nine members including the Minister of Finance, the chief secretary, the additional chief secretary (general administration), the principal secretaries of finance, urban development, and roads and buildings departments, the relief commissioner, and its chief executive officer as member secretary.

F. Implementation Arrangements

45. The implementation arrangements for the Project have been designed to follow the established procedures and practices under ongoing ADB-financed projects as much as possible to enable speedy and efficient implementation. ADB already has several ongoing projects in each of the main sectors where financing will be provided: housing, urban and rural infrastructure, and power, as well as disaster preparedness and mitigation (footnote 9). As such, the experience gained and lessons learned from these have been incorporated into the formulation of the works and design implementation.

46. To ensure timely Project implementation, the responsibility for project administration will be delegated to ADB's India Resident Mission (INRM) in Delhi. ADB will establish an extended mission in Gandhinagar,²¹ under INRM's management for the duration of project implementation. The extended mission will be headed by an INRM staff member. Moreover, consultants, who are familiar with ADB procedures and policies, particularly for procurement, accounts and audit, and benefit monitoring, will be recruited. The extended mission will assist INRM in administering the Project by closely monitoring compliance with ADB's requirements under the Project to ensure quality control, speedy implementation of subproject approvals and rehabilitation and reconstruction activities, and rapid assistance to implementing agencies (IAs) on any procurement problems or other project implementation matters. The extended mission will also support INRM in carrying out random and spot checks on procurement and accounts of the Project or the subprojects, and inspect project facilities reconstructed or rehabilitated under

²⁰ To this effect, the Gujarat Rehabilitation and Reconstruction Fund was established in mid-February 2001 and will be managed by GSDMA.

²¹ Gandhinagar is the administrative capital of Gujarat, and is located about 20 km from Ahmedabad.

the Project for quality control. The provisions of the “Agreement between the Government of India and the Asian Development Bank regarding the Resident Office of the Asian Development Bank” dated 18 November 1992 will apply to the extended mission, its premises, ADB staff members and consultants assigned to or associated with the extended mission.

1. Overall Coordination and Guidance

47. GSDMA will (i) guide and monitor overall project implementation to ensure that the policies, guidelines, and requirements of GOG and ADB are met; (ii) oversee preparation of detailed damage assessments, surveys, plans, designs, and monitoring of the various components, procurement, and works under the Project; (iii) provide executive decisions to ensure that rapid and efficient delivery of the reconstruction works is achieved; (iv) ensure close coordination between the activities financed by the Project and those sponsored by other agencies to prevent overlap and duplication; (v) ensure that counterpart funds are provided in the full amount in a timely manner; (vi) ensure that the specifications, plans, and quality control of the works are met; (vii) control and monitor the flow of funds to the IAs; (viii) ensure that proper accounts are maintained for the Project and the subprojects; (ix) ensure that each relevant IAs recruits enough staff and consultants to properly implement the Project and that sufficient related funds are allocated; and (x) ensure that ADB is informed in a timely manner of the progress and any issues arising during implementation. GOG has assured ADB that it will recruit and staff GSDMA with suitably qualified and experienced personnel.

48. GOG and GSDMA will also ensure that the various IAs including GOG’s line ministries and agencies, and city, town, and district authorities consult with local elected bodies, civic society, and the general public about issues related to the rehabilitation and reconstruction of housing and urban/rural infrastructure. GSDMA will facilitate and empower NGOs and community organizations to help the beneficiaries access information about the various project components, have input in the decision-making process, participate in construction where capability exists, and enable participatory monitoring. As a high-level agency, GSDMA will resolve any problems that may arise, including land acquisition, cooperation from other line ministries and agencies, and local elected bodies. GSDMA is establishing a project management and coordination unit (PMCU) to provide day-to-day assistance and guidance to the project IAs. GSDMA is also establishing a disaster management division to be responsible for disaster mitigation and management on a state-wide basis and development of the required administrative and institutional arrangements. Appendix 8 provides the organization chart.

2. Project Management and Coordination Unit

49. GSDMA will set up the PMCU to act on its behalf as the EA on routine matters and will have decision-making authority to facilitate project implementation. The PMCU in conjunction with the IAs and the participating districts, cities, and towns will prioritize and select subprojects under the Project. The PMCU will be supported by project management consultants who will provide specialized technical support and advice on earthquake and other natural calamities’ engineering, financial management and accounting, beneficiary participation, benefit monitoring and evaluation, and capacity building. The PMCU will conduct regular project implementation meetings with each IA. The ADB extended mission will provide advice and guidance related to ADB’s procedures and requirements.

3. Implementing Agencies

50. An IA will be responsible for each of the key sectors included under the Project reporting to the PMCU. The prioritization, technical preparation, and implementation of the eligible subprojects under parts A through D will be carried out by the respective IAs described in paras.

52-57. The IAs will be responsible for day-to-day implementation of the reconstruction works. They will conduct the detailed assessments, surveys, and planning of the reconstruction, including public consultations and input from the recipient local entities. They will then prioritize the works, prepare the detailed designs and specifications, schedules of quantities, cost estimates, bidding documents, contracts, and related documentation. They will also recruit design and supervision consultants, conduct procurement, support local entities that wish to do their own reconstruction work, supervise construction, conduct quality control, approve progress payments to contractors, maintain records and accounts, prepare regular reports for GSDMA and ADB, and ensure that benefit monitoring and auditing is carried out. The IAs will also keep separate up-to-date accounts for the Project and make these available to ADB, its missions, or its auditors for inspection. The IAs will be supported by design and construction supervision consultants under the Project.

51. To ensure timely project implementation, GOG has agreed to specific measures to ensure that the internal approval process for subproject selection and approval, contract tendering and signing, approval of progress claims, and provision of counterpart funds do not unduly slow reconstruction implementation. In this context, GOG has agreed that for each IA, applicable approval whether by GSDMA or within the concerned line ministry, will be given preferably within five working days, including request for additional clarification of additional information. The PMCU will be responsible for supporting GSDMA and line ministries with facilitation of and adherence to this arrangement.

52. The IA responsible for part A, housing, will be the Panchayats, Rural Housing, and Rural Development Department.

53. The IA responsible for the urban infrastructure component of part B will be the Gujarat Urban Development Company. The company will work closely with the recipient urban entities to complete the detailed damage assessments, prioritize works, planning, and beneficiary participation. The works eligible under this component include all urban infrastructure: water supply, sewerage and drainage, sanitation, roads, civic buildings, electrification, and related facilities.

54. The Gujarat Water Supply and Sewerage Board (GWSSB) will be the IA for the rural infrastructure component of part B, including the reconstruction of all water supply and sanitation works in the rural areas and villages, as well as for the bulk water supply to the participating urban bodies. GWSSB is the agency responsible for bringing bulk water supply to all villages and district cities and towns, and is currently operating and maintaining these systems. The villages and towns are responsible for distribution inside village and urban boundaries. On a case by case basis, these entities may opt to have GWSSB operate these facilities on their behalf. Other villages and towns have privatized the operation and maintenance, and GSWWB will coordinate closely with these operators. GWSSB is experienced with planning, design, and construction management, and will interact with and support the Gujarat Urban Development Company in the urban reconstruction.

55. For part C, power systems reconstruction, the IA will be the Gujarat Electricity Board (GEB). GEB has extensive experience with planning, design, and construction of power distribution facilities. It is the recipient of the previously approved power sector loan (footnote 13). The implementation of the reconstruction component will be similar to those already in place for the ongoing power sector project.

56. For part D, the IAs will be the Department of Social Justice and Empowerment, and the Industries and Mines Department, and such other state departments as may be agreed between the ADB and the GOG.

57. Part E will entail management and technical support to the PMCU and the IAs for smooth and efficient implementation, including the design, procurement, quality control, accounting, monitoring, and reporting requirements for the Project. The component will also provide support for capacity building of the responsible agencies focusing on operation and maintenance after reconstruction. In addition, the component will support GOG with the cost of the incremental administrative outlays for project implementation. Part F will provide support for establishing an effective multihazard disaster preparedness and mitigation program.

4. Selection and Approval of Subprojects

58. Subprojects will be identified, evaluated, and selected by the IAs, and endorsed by the PMCU, on the basis of the following criteria:

- (i) will rehabilitate and reconstruct the quake-damaged infrastructure including housing;
- (ii) will include works to restore the damaged facilities, incorporating strengthening to multihazard standards, with adequate provision for technological improvement, and quality control;
- (iii) will follow cost effective and least-cost alternatives;
- (iv) will not involve overlap with funding from other agencies, although other agencies such as bilaterals and NGOs could be involved in cofinancing, as well as in the delivery of specified additional support such as monitoring, capacity building, and poverty reduction, in which case they will be clearly identified;
- (v) except as otherwise agreed by ADB, is scheduled to be completed not later than 31 December 2003, provided that in the case of part A an earlier completion date may be scheduled;
- (vi) will incorporate beneficiary consultation and input in the selection process; and
- (vii) will comply with applicable ADB requirements, i.e., the involuntary resettlement policy,²² *Environmental Assessment Requirements of the ADB*, and the *Environmental Guidelines for Selected Infrastructure, Industrial, and Power Development Projects*.²³

59. The first subproject to be carried out by each IA will be subject to prior review and approval by ADB. Subsequent subprojects exceeding \$500,000 equivalent will be sent to the PMCU and ADB for information only, while all subprojects exceeding \$3 million equivalent will require prior review and approval by ADB. Any subproject involving significant resettlement will require preparation of a resettlement plan in accordance with ADB's guidelines for involuntary resettlement (footnote 22) and be agreed with ADB before carrying out the subproject.

5. Consulting Services

60. Given the tight time schedule and the shortage of well-trained and experienced staff in GOG and GSDMA, substantial support is required for the PMCU and the IAs. Consulting

²² ADB. 1998. The Bank's Policy on Involuntary Resettlement. In *Handbook on Resettlement*. Appendix 1. Manila.

²³ No components or works require environmental impact assessment.

services are required due to the need for (i) careful and detailed assessment and analysis of the earthquake damage in each sector; (ii) prioritization of the subprojects; (iii) preparation of subprojects in accordance with GOG and ADB requirements; (iv) incorporation of earthquake resistance; (v) rapid planning, design, and implementation of the works; (vi) support for the PMCU and IAs because the massive scale of the reconstruction will result in new demands and additional workload; (vii) intensive supervision of works to ensure quality control and transparency is maintained by contractors and local bodies carrying out smaller works; and (viii) provision of detailed accounting, auditing, and reporting to the PMCU and ADB.

61. The project management consultants required to support the PMCU will help with (i) overall project coordination and management; (ii) maintenance of accounts and operation of the imprest account for the Project in accordance with ADB guidelines; (iii) provision of guidance to IAs in identifying, selecting, and preparing subprojects on a priority basis; (iv) evaluation of the initial and large subprojects and liaison with ADB to ensure early approvals; and (v) meeting the reporting requirements. The outline terms of reference for the consultants are in section A of Appendix 9. About 60 person-months of international and 132 person-months of domestic expertise will be required.

62. The PMCU will also require independent consultants for benefit monitoring and evaluation of the subprojects. The benefit monitoring and evaluation consultant would be a larger NGO operating in the affected areas with linkage to other NGOs active in the subproject areas, supported by specified outside experts. The outline terms of reference are also in section A of Appendix 9. About 320 person-months of domestic expertise is required.

63. The design and construction supervision consultants will support the individual IAs with the day-to-day reconstruction requirements, including (i) identification, prioritization, and formulation of subprojects; (ii) detailed surveys and damage assessment of earthquake-related damage; (iii) preparation of plans, designs, specifications, including earthquake resistance and cost estimates; (iv) preparation of prequalification, tender, and contract documents; (v) evaluation of bids and contract awards; (vi) supervision of construction, quality, cost and schedule control, measurement, and approvals of contractors' work and progress claims; (vii) issuance of completion certificates; and (viii) preparation of subproject accounts, audits, and reports. The outline terms of reference for each of parts A, B, and C of the Project are in sections B-D of Appendix 9. About 1,300 person-months of domestic expertise will be required, supported by up to 5,000 person-months of domestic technical inspectors.²⁴

64. Extensive capacity building and training will be required for city, town, village, and other administrations that will be responsible for operating and maintaining the reconstructed works. This will be accommodated under the consulting services, and includes support to the Disaster Management Unit under GSDMA as outlined in Appendix 6, and for monitoring and analyzing the groundwater and aquifer conditions in the Kachchh region to determine the impacts of the earthquake. This is essential as groundwater provides 90 percent of the drinking water for more than a million people living in the district.

65. All consultants will be engaged by the PMCU and the IAs in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for the engagement of domestic consultants.

66. Since the rehabilitation and reconstruction work to be financed under the Project must be completed within 33 months due to the nature of the Project, expeditious selection and

²⁴ GOG is fielding 3,000 technical engineers and inspectors to assess the earthquake damage. They provide on-site inspection and monitoring of the works in 15 cities, towns, and 1,100 villages damaged in the earthquake.

fielding of consultants is necessary. Accordingly, GSDMA and the IAs may recruit directly from consultants already engaged for ADB-financed projects in India and providing services similar to those required for the Project for design and construction supervision. This arrangement will provide an efficient way to recruit consultants under the circumstances. At the request of GOG, ADB will assist in the selection process, shortlisting, solicitation, and evaluation of proposals, as well as contract negotiations.

6. Procurement

67. Procurement of goods and services to be financed by the Project will be carried out in accordance with ADB's *Guidelines for Procurement*. Since the value of contracts will be relatively small and scattered over a wide range of the affected areas of Gujarat, they are not likely to attract international suppliers. Equipment and materials will need to be delivered as quickly as possible due to the Project's urgent nature. The tight delivery schedules will be unattractive to international suppliers through international competitive bidding procedures. These will therefore be procured through international shopping for goods not readily available in India, and local competitive bidding procedures for goods manufactured in India. This will not preclude international suppliers from bidding through their local outlets.

68. The civil works contracts will generally be of low value, below \$1 million equivalent, except for a few that may be in the \$3 million-\$5 million range. These contracts will be for works in several towns, districts, and villages spread across the affected areas of Gujarat. This combined with the local conditions caused by the disaster, requiring construction camps with limited facilities, will make interest from international contractors unlikely. All civil works will be carried out through local competitive bidding procedures acceptable to ADB. No separate prequalification requirements are needed, and the classification and registration procedures for contractors already well established in GOG will be followed in most cases. However, because of the enormity of the reconstruction requirements, national contractors who are not already registered with GOG's system will be encouraged to register and participate in the bidding process by submitting their qualification information along with their bids. Two-envelope bidding procedures will be employed as appropriate. The qualification criteria used for similar works under ADB-financed projects elsewhere in India will be used as references in the preparation of bidding documents. ADB will also provide the responsible IAs with a list of national contractors who have qualified and successfully completed similar works on other ADB-financed projects.

69. All contracts for equipment and materials valued at \$100,000 equivalent or less will be procured using direct purchase procedures acceptable to ADB. Prior ADB concurrence will be required for all contracts in excess of \$3 million equivalent before award of contracts. The IAs will be able to award contracts valued below \$3 million directly, after their consultants have evaluated the bids per ADB procedures and requirements. The contracts for equipment and materials with a value less than \$3 million can be procured by international shopping or local competitive bidding. ADB will need to approve the first contract awarded by each IA, regardless of value to ensure ADB procedures are met. However, for the power sector, procurement of equipment packages valued at more than \$100,000 equivalent but less than or equivalent to \$5 million will follow international shopping procedures, and equipment packages with a value exceeding the equivalent of \$5 million will follow international competitive bidding procedures. In the case of housing by individuals (up to Rs90,000), procurement of materials and reconstruction works will be in accordance with established commercial practices and satisfactory implementation arrangements acceptable to ADB.

7. Advance Action

70. Given the urgency of the Project, ADB has approved advance action for the procurement of equipment, materials, and civil works, and the recruitment of consultants, provided such advance action incorporates compliance with ADB's requirements and that this takes place on or after 12 February 2001, the starting date for project appraisal. The Government and GOG have been advised that approval of such advance action does not commit ADB to finance any part of the Project.

8. Retroactive Financing

71. Retroactive financing is required for the financing of immediate rehabilitation of essential facilities such as water, sanitation, power, housing, and consulting services. The Project therefore proposes provision of retroactive financing for eligible expenditures incurred not earlier than 12 February 2001 (date of appraisal), provided that the expenditures are in accordance with agreed procedures and are certified by the IAs and consultants, and the certification is acceptable to ADB. Retroactive financing will not exceed \$50 million equivalent (10 percent of the loan). The Government and GOG have been advised that the proposal for provision for retroactive financing does not commit ADB to finance any part of the Project.

9. Implementation Schedule

72. ADB and GOG have agreed that the implementation will be completed in two phases. The first phase is the restoration of critical and essential facilities such as housing, power, water, and basic sanitation, necessary to provide the more than one million affected people with minimum services during the reconstruction period until housing and services are fully restored. The second phase will involve implementation of the remaining facilities and is scheduled for completion not later than 31 December 2003. In view of the importance of shelter, implementation of part A, housing, is scheduled to be completed within a shorter time frame. The implementation schedule is provided in Appendix 10.

10. Imprest Accounts

73. Imprest accounts in India are normally operated by the Government through the Comptroller of Aid Accounts and Audit (CAAA). The proceeds of the imprest advance are normally retained by CAAA and released to the EA as reimbursement of expenditures already incurred under a project. However, in view of the need for immediate funding of rehabilitation and reconstruction under this Project, and the severe pressures on GOG's budget, the existing procedure need to be modified for this exceptional case. GSDMA will establish a second-generation imprest account and the advances made to the imprest account maintained by CAAA will be immediately and fully transferred through GOG to the second-generation imprest account. The imprest accounts will be operated by CAAA and GSDMA in accordance with ADB's *Loan Disbursement Handbook*. The statement of expenditures procedures may be used for reimbursement of eligible expenditures to liquidate advances into the imprest account in accordance with ADB's *Loan Disbursement Handbook*. Any individual payment to be reimbursed or liquidated under the statement of expenditures will not exceed \$100,000 equivalent. The imprest accounts will be replenished on an as-required basis, within the total loan amounts for each of parts B, C, D, and F subject to confirmation by ADB that sufficient progress has been achieved in terms of actual implementation compared with the expenditures incurred. Similarly, replenishment for part A, housing, related to housing support for the poorer sections of the population, will be made after inspection and confirmation of the delivery of funds for the specified use and satisfactory progress on house construction and incorporation of earthquake strengthening measures.

74. The Government and GOG requested initial disbursement under the loan for \$100 million in view of the expenses already incurred and estimated to be incurred in the coming six months.

11. Reports, Reviews, Accounts, and Audits

75. Overall project monitoring will be conducted by GSDMA, through the PMCU. The PMCU will establish a reporting system for performance monitoring, issues resolution, and quarterly action plans. These will serve as management feedback to update and improve procedures, and provide the basis for quarterly reports to ADB. The action plans will incorporate quantitative and time-bound implementation targets and budget requirements. The action plans will be approved by the IAs, PMCU, and GSDMA. ADB will be invited to attend the quarterly and other key meetings required to facilitate project implementation. Regular field review will also be carried out by staff from the ADB's extended mission (para. 46) in conjunction with the PMCU to monitor the physical progress of the subprojects and compliance with other ADB requirements such as procurement, quality control, proper accounts, beneficiary participation, and NGO consultations.

76. The Government and GOG will maintain separate accounts and records for the Project and its subprojects in accordance with sound accounting principles. GOG will ensure and monitor that proper audit and accounting procedures are in place by the PMCU, GSDMA, and IAs to ensure efficient and economical use of the loan proceeds for the beneficiaries. Separate accounts and financial statements in relation to the Project and subprojects adequate to identify the goods and services financed from the loan proceeds, financing resources, expenditures incurred, and the use of local funds will be maintained. Such accounts and financial statements will be maintained in accordance with sound accounting principles and certified by independent private auditors acceptable to ADB. GSDMA will provide to ADB (i) reports on such accounts and financial statements on a quarterly basis within 45 days of the close of each quarter, and (ii) accounts and financial statements as audited and certified, on a semiannual basis within 60 days of the close of each semiannual period. The Government and GOG will facilitate ADB representatives to carry out spot or random checks on flow of funds through the imprest account maintained by the Government, and the second-generation imprest account maintained by GSDMA. Within three months of the physical completion of each part of the Project, GOG will submit to ADB a detailed completion report on the implementation, costs, benefits, and other information required by ADB. Annual certified audited accounts and financial statements will be provided by GSDMA through GOG within nine months of the close of each financial year.

12. Operation and Maintenance

77. All public facilities reconstructed under the Project will be operated and maintained by relevant agencies during and after completion of the works. For the infrastructure component under part B, this refers to the participating towns, cities, and villages supported by GWSSB. If requested, bulk water supply will be operated by GWSSB and the town and village facilities by the local committees. GUDCO will support the larger towns in exploring privatization of operation and maintenance of revenue generating services. For part C, power systems rehabilitation, the reconstructed facilities will be operated and maintained by GEB. For each of the two components under part B—urban infrastructure, and rural infrastructure (water supply and sanitation)—extensive capacity building of the responsible agencies, in particular the urban and rural departments, is essential. The initial operation and maintenance cost for one year after the completion of such facilities may be financed under the Project.

13. Community Participation

78. Beneficiary and community awareness and participation is essential to ensure that the rehabilitation meets their requirements and needs, and that the local beneficiaries have ownership. This aspect is particularly important in the wake of the disastrous earthquake that claimed numerous lives and directly affected almost two million people through loss of their housing and livelihood. For some communities, relocation of some residences to alternative sites may be required or desirable because of the complete destruction of homes and facilities and their location along seismic fault lines. The tradition of community awareness and NGO support is strong in the affected areas. The rural local government system, the Gram Panchayat, already utilizes a public consultation and participation approach involving NGOs and community organizations that will be strengthened and supported under the housing and rural infrastructure components. GOG has made strong commitments to collaborate with suitable NGOs to carry out rehabilitation and reconstruction work at the local government level. Such NGOs will act as IAs at the village level and will be appropriately compensated for their services.

G. Environmental and Social Measures

79. The Project is classified as a Category B environmental project, as it is unlikely to have any significant adverse environmental impacts. Civil works will involve rehabilitation and reconstruction of damaged or destroyed housing and infrastructure. Generally this will follow existing alignments. For relocation of housing, the sites and services will be located near existing cities, towns, or villages. Land will be acquired from public lands as far as possible. The heavily impacted areas of Kachchh, where this may be necessary, has low population density, little or no agricultural activity, and extensive space providing options for acquiring additional land. Any land acquisition and resettlement under the Project will be undertaken in accordance with ADB's policy on involuntary resettlement (footnote 22). Hazardous waste from the debris, if any, will be disposed of in an environmentally sound manner satisfactory to ADB.

80. All subprojects will be designed to follow environmental safeguards and technical specifications established for ongoing ADB-financed projects, which have already been subjected to ADB's initial environmental examination procedures. The subprojects will follow the requirements of ADB's environmental guidelines for selected infrastructure, industrial, and power development projects. If a subproject involves land acquisition or new alignments, the responsible IA will submit an initial environmental examination for ADB's review and approval.

H. The Proposed Technical Assistance

1. Objective and Scope

81. The objective of the TA, Capacity Building for Earthquake Rehabilitation and Reconstruction of Housing, is to support the Panchayats, Rural Housing and Rural Development Department (PRHD) and the Urban Development and Urban Housing Department (UDHD) in implementing GOG's reconstruction program for earthquake-damaged housing. The TA will help:

- (i) PRHD and UDHD (a) upgrade standards, and (b) build capacity to develop and implement regulatory systems and codes, land use planning, and zoning and development planning;
- (ii) generate capacity for PRHD, UDHD, and their various supportive and agencies, and for NGOs to oversee the housing rehabilitation and reconstruction;

- (iii) implement the system for monitoring cash flow to confirm proper construction before release of funds; and
- (iv) generate techniques and simple procedures for monitoring the structure to confirm that the required standards and construction techniques have been incorporated.

2. Cost Estimates

82. The cost of the TA is estimated at \$1,650,000 equivalent, including \$480,000 in foreign exchange cost and \$1,170,000 equivalent in local currency cost. ADB will provide \$1,300,000 equivalent to fund the entire foreign exchange cost and \$820,000 equivalent of the local currency cost on a grant basis from the ADB-funded TA program. The Government and GOG will contribute \$350,000 equivalent in kind.

3. Implementation Arrangements

83. The implementation office jointly established by PRHD and UDHD will be the Executing Agency. The TA consultants will also support and work closely with the districts, municipalities, village entities, and NGOs involved in housing reconstruction in the earthquake-affected areas. The consultants will report directly to INRM and liaise closely with the project consultants and ADB's extended mission in Gandhinagar.

84. The TA will finance 115 person-months of consulting services: 15 person-months of international and 100 person-months of domestic consulting input. Expertise will include house and building construction, design of structures incorporating strengthening for earthquake and cyclone resistance, building codes, land use zoning, urban planning, seismology, and microzoning related to structural designs, disaster management, and training. The consultants will be recruited in accordance with ADB's *Guidelines on the Use of Consultants* on the basis of simplified technical proposals. Reports will be prepared on a quarterly basis summarizing progress to date and work programs for the next quarter. The TA is expected to commence in June 2001 and be completed by April 2002.

V. PROJECT JUSTIFICATION

A. Impact on Poverty and Other Benefits

85. The earthquake has been as much a socioeconomic disaster to individual households as a disaster to physical infrastructure. About 1.3 million people in rural areas and 0.45 million in urban areas have been rendered homeless; many have lost all their basic survival necessities including clothing and household essentials. The 770,000 houses, destroyed or damaged in five of the worst affected districts of Jamnagar, Kachchh, Patan, Rajkot, and Surendranagar, account for nearly 45 percent of all households in these areas. Since damage is more intense in certain villages and towns, the percentage of households affected in these locations would be markedly higher, implying that a higher percentage of the people have entered the ranks of the poor. Considering the extent of damage, the cost of rebuilding houses and infrastructure facilities is exorbitant both for affected households and for the state. Support both in terms of financial assistance as well as improved earthquake resistant technology would be of considerable benefit in protecting the poor and affected people from falling further into poverty. It would help families resettle, provide a safer and healthier environment, and stabilize livelihoods.

86. The rehabilitation of urban and rural infrastructure, particularly water supply and sanitation, will facilitate the provision of drinking water, reduce the risk of health-related problems, and improve the quality of life. Support for physical reconstruction in key sectors like power would have positive secondary effects in reviving industries and agriculture. By rehabilitating public and community infrastructure, the Project will help restore economic and social activities disrupted by the disaster.

87. The Project envisages livelihood restoration that could help prevent the current adverse effects of the disaster on the affected poor. Livelihoods have been badly affected and this, along with the destruction of household investments, has been draining meagre household savings and adversely impacting on levels of income and capability poverty in the region. The possibility of an adverse impact in terms of reduced consumption, migration, and increased child labor in poor family is increasing. The rehabilitation works will entail labor intensive civil works contracts, using unskilled and semiskilled local labor, thereby providing employment opportunities for the poor. Livelihood rehabilitation for local artisans, craftsmen, and self-employed people in the affected area will facilitate recovery of the local economy, thereby restoring more long-term employment opportunities. The Project's component for livelihood restoration will benefit poor families as well as those forced into poverty by the disaster. The training envisaged for various categories of skills would help in the economic and social rehabilitation of those severely affected, like the physically disabled and widows. The benefits of the Project will be evident through economic rehabilitation arising from speedy reconstruction of infrastructure and facilities and livelihood restoration in the earthquake-affected areas.

B. Risks

88. Risks related to the ambitious implementation period, and GOG's ability to assign the necessary priorities, staff, and budgets could affect implementation of parts A, C, and D. Thus IAs to implement the Project must be experienced and the recovery strategy must be properly sequenced to distinguish between immediate and medium-term measures. In this way, scarce managerial and implementation capacity will be focused on priority issues and avoid spreading available resources too thinly. For the Project, experienced IAs were selected, including GEB for power sector rehabilitation; the Panchayats, Rural Housing and Rural Development Department, and GUDCO and the Urban Development and Urban Housing Department for parts C and B, respectively. Moreover, the Department of Social Justice and Empowerment, and the Industries and Mines Department, as IAs for part D, are already implementing livelihood support schemes and have adequate experience. Some risks are associated with part B in view of the large number of geographically dispersed urban localities, and the relative unfamiliarity with the sector approach at the local level, which may delay progress in implementation. Strong consultant support is therefore being provided for assistance with design and construction, tendering and bid evaluation, account maintenance, reporting, and audit. Moreover, consultant support for overall management of the rehabilitation project is provided to GSDMA. The risk of governance-related issues is addressed by the detailed selection criteria, transparent implementation and monitoring mechanisms, and specific financial controls including regular as well as random audits. As discussed with GOG during appraisal and in meetings with the Government, implementation of part A will be carried out under proper identification and accounting procedures considering that the large number of beneficiaries under the housing component will be individuals who have lost personal identification records and belongings in the earthquake. Furthermore, with the proposed establishment of ADB's extended mission in Gandhinagar (para. 46), ADB will play a proactive role in addressing implementation problems and in encouraging proper financial management.

VI. ASSURANCES

89. The Government and GOG have given the following specific assurances, in addition to the standard assurances, which have been incorporated in the legal documents:

- (i) GOG will ensure that all facilities rehabilitated and reconstructed under the Project are operated and maintained by GSDMA, and thereafter by the relevant agencies taking over from GSDMA after completion of the works. GOG will make available, on a timely basis, the necessary funds for operation and maintenance of all the rehabilitated and reconstructed public facilities during and after implementation.
- (ii) GOG will allocate, on a timely basis, adequate counterpart funds from its budget for each fiscal year during project implementation.
- (iii) GOG will ensure that the GSDMA is adequately staffed by competent and qualified personnel for the effective implementation of the Project.
- (iv) The PMCU and IAs will actively seek NGO and community involvement and participation in the implementation and monitoring of rehabilitation and reconstruction of infrastructure under the Project.
- (v) The Government will upon receipt of the loan proceeds immediately and fully transfer such proceeds to the second-generation imprest account established by GSDMA. Such transfers will be treated as additional central plan assistance to GOG.
- (vi) GOG will ensure that the reconstruction of affected houses and other urban and municipal infrastructure under the Project will proceed, incorporating strengthened seismic, high wind (cyclone), earthquake, and flood resistant specifications and provisions. To this extent, GOG will monitor and ensure quality control of the construction, materials to be used in the reconstruction of infrastructure and houses, and clearing and approval of contractors and builders for the reconstruction, where applicable.
- (vii) GOG will initiate administrative approvals to ensure compulsory comprehensive insurance of reconstructed public infrastructure and housing property, and encourage similar insurance for private property; this will include insurance against natural calamities such as earthquake, cyclones, and flood.
- (viii) GOG will ensure and monitor that proper audit and accounting procedures are in place to ensure efficient and economical use of the loan proceeds for the beneficiaries. Accounts and financial statements in relation to the Project and subprojects will be maintained and certified by independent private auditors acceptable to ADB. GSDMA, through GOG, will provide to ADB (i) reports on such accounts and financial statements on a quarterly basis within 45 days of the close of each quarter, and (ii) accounts and financial statements as audited and certified, on a semiannual basis within 60 days of the close of each semiannual period. The Government and GOG will allow ADB representatives to carry out spot or random checks on flow of funds through the imprest account, to be maintained by the Government, and the second-generation imprest account, to be maintained by GSDMA.

VII. RECOMMENDATION

90. I am satisfied that the proposed loan and technical assistance would comply with the Articles of Agreement of ADB and recommend that the Board approve:

- (i) the loan of \$500,000,000 from ADB's ordinary capital resources to India for the Gujarat Earthquake Rehabilitation and Reconstruction Project, with a term of 30 years, including a grace period of 7 years, and with interest to be determined in accordance with ADB's pool-based variable lending rate system for US dollar loans, and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan and Project Agreements presented to the Board; and
- (ii) the provision of technical assistance on a grant basis in an amount not exceeding the equivalent of \$1,300,000 to the Government of India for Capacity Building for Earthquake Rehabilitation and Reconstruction of Housing.

TADAO CHINO
President

16 March 2001

APPENDIXES

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SUPPLEMENTARY APPENDIXES

(available on request)

A	Socioeconomic Indicators of Gujarat and the Worst Earthquake-Affected Districts of the State
B	Poverty Assessment
C	Gujarat Earthquake Damage
D	External Assistance for Relief
E	Detailed Description of Part A
F	Detailed Description of Part B (Urban)
G	Detailed Description of Part B (Rural)
H	Detailed Description of Part F
I	Detailed Terms of Reference for Consulting Services
J	Assessment Report – A Joint Report by the World Bank and the Asian Development Bank, March 2001

HOUSING

A. Rationale

1. The earthquake caused damage to civil structures, in particular to houses in 21 of the 25 districts in the Gujarat State. The impact was most severe in Kachchh district, although Ahmedabad, Jamnagar, Patan, Rajkot, and Surendranagar districts also experienced extensive damage to human lives and property. The destruction in Kachchh was massive. The most severely affected subdistricts (talukas) were Anjar, Bhachau, Bhuj, Gandhidham and Rapar. Tens of thousands of structures completely collapsed, while the remaining have either been damaged or developed cracks rendering them unsafe for occupation. The indicative dimensions of the damage in rural and urban areas are summarized here:¹

1. Rural Housing

2. The rural population comprises 65 percent (27 million) of the state population. The total households in rural Gujarat prior to the earthquake numbered 4.8 million. The majority of the people in rural areas reside in kachha (stone rubble masonry set in mud mortar with structural roof) or semipucca (same as kachha but with thatch roof) houses. The earthquake has damaged or destroyed housing in 1,100 villages. According to preliminary estimates, about 180,700 houses have collapsed completely and 413,000 are partially damaged. In addition, about 110,000 huts have been destroyed and another 75,000 huts partially damaged.

2. Urban Housing

3. The estimated number of housing units affected in larger towns and municipalities is 23,979 and 117,666 respectively.

3. Indirect Damage

4. The earthquake rendered over 300,000 rural families homeless. Further, due to the continuing aftershocks, most of the other 400,000 households, whose houses have been partially damaged, are afraid to reoccupy their houses. These households have also lost most of their personal effects, including property deeds, bank statements and other valuables. The Government of Gujarat (GOG) estimates the loss of personal effects to exceed \$1 billion. The quake has led to a sharp drop in market prices and demand for apartments in multistory buildings in all cities and towns. A further impact is on the housing finance sector. In many cases the value of damaged housing is insufficient collateral for the housing finance companies and other financial institutions holding the loans. GOG has therefore taken steps to ensure that affected families are protected.

B. Gujarat Rehabilitation and Reconstruction Program for Housing

5. GOG has prepared a comprehensive rehabilitation and reconstruction program including housing reconstruction. As an immediate measure, GOG has announced a preliminary rehabilitation and reconstruction package for housing.

6. A detailed assessment of the degree of destruction of the housing stock is currently being undertaken. Discussions are also under way with the residents of the 256 villages that were completely destroyed to determine if relocation is favored over reconstruction at the current site (in situ reconstruction). In all cases, when reconstruction is to take place, rubble

¹ Detailed assessment on a house by house basis is now under way by trained teams to update the numbers.

removal must be carried out with due regard to the foundation conditions required for earthquake resistance.

C. Project Scope

7. The Project comprises reconstruction of damaged houses of the poorer segments including (i) all huts, (ii) economically weaker section, and (iii) lower income group (LIG) houses, up to a maximum unit size of 50 square metres (m²).² Repair of such housing units will also be undertaken to facilitate early rehabilitation and avoidable displacement of people in the damaged houses. This is essential for livelihood restoration and economic activity rejuvenation in the area. Geographically the focus will be on housing in the rural areas.

8. The initial rehabilitation policy announced by GOG will provide grants for rebuilding houses and shelters. Given the enhanced cost of building earthquake resistant houses, minimum grant of about \$900 equivalent per unit in rural areas has been proposed, which would enable replacing huts with earthquake resistant structures. An examination of the vulnerability maps for the region³ indicates that 52 percent of the houses in Jamnagar, 70 percent in Kachchh, 48.8 percent in Rajkot, and 85.5 percent in Surendranagar have a Category A type of structure using unburned bricks, clay, and field stone, all of which have low earthquake resistance. The CASHPOR House Index⁴ indicates that semipermanent materials for the construction of various parts of a house are also indicators of poverty.

9. For the lower income group with a house size of up to 50m², the extent of assistance will be a maximum of Rs90,000. Based on available data, 40 percent of the affected households fall into the lower income group.

D. Cost Estimates

10. The total cost for house reconstruction under the Project is estimated at \$250 million equivalent, of which the foreign exchange cost component comprises 12 percent or \$30 million while the equivalent local currency cost is \$220 million (Table A1). The proposed loan of \$200 million will finance all of the foreign exchange cost and \$170 million equivalent of the local currency costs. GOG will finance the remaining local currency costs of \$50 million equivalent.

Table A1: Cost Estimate and Financing Plan for Housing Reconstruction
(\$ million)

Item	Foreign Exchange	Local Currency	ADB Financing	GOG Financing	Total Cost
Reconstruction and rehabilitation	30	220	200	50	250
Total	30	220	200	50	250
Percent	12	88	80	20	100

ADB = Asian Development Bank, GOG = Government of Gujarat.
Source: Staff estimates.

² This covers rehabilitation packages No. 1, No. 2, and No. 3 of GOG's Resolution No. PNV-162001-1502 (1)- S.3, dated 23 February 2001.

³ Government of India. 1997. *Vulnerability Atlas of India-Gujarat*. Building Materials & Technology Promotion Council, and Ministry of Urban Development and Employment, Delhi.

⁴ Simanowitz A., B. Nkuma, and S. Kasim. 1999. Overcoming the Obstacles of Identifying the Poorest Families: Using Participatory Wealth Ranking. Paper presented at Micro Credit Summit Meeting of Councils in Abidjan, Ivory Coast.

E. Implementation Arrangements

11. The Gujarat State Disaster Management Authority (GSDMA) will be the Executing Agency (EA) for the Project. The Panchayats, Rural Housing, and Rural Development Department will be the Implementing Agency for the rural housing. A project implementation unit will be established under the PRHD. The unit will implement a beneficiary registration system including issuance of picture identification before release of the second payment for the housing component.

F. Disbursement of Loan Proceeds

12. Disbursement procedures will be in accordance with Asian Development Bank's (ADB) *Loan Disbursement Handbook*. An initial imprest advance commensurate with requirements will be provided. ADB's statement of expenditures procedures will be followed for the reimbursements of expenditures, and for the liquidation of the imprest account for payment.

G. Implementation Schedule

13. Implementation will commence in April 2001 and is expected to be completed during 2002.

H. Consulting Services

14. Consulting services will be required to monitor the quality of construction of new housing units, with particular reference to incorporation of earthquake-resistant features. This monitoring will involve domestic consultants, government and supportive/facilitating nongovernment organizations and other representation from the local community. They will be responsible for checking quality and costs, and will signoff on all progress claims by contractors or individuals. Approximately 3,600 person-months of consulting input for about \$5 million are required. Should GOG decide to retain the 3,000 engineers and technicians currently being fielded to conduct damage assessments, they could be financed from this contract.

15. The outline terms of reference for the consulting services are provided in Appendix 9.

URBAN INFRASTRUCTURE

A. Rationale

1. The earthquake impacted 21 of the 25 districts of Gujarat. While 80 percent of the damage was in 4 districts, the impact on the urban municipal infrastructure varied widely. Fifteen towns in Kachchh, Rajkot, Surendranagar districts and Ahmedabad corporation suffered severe damage. In Kachchh, the municipalities and cities particularly affected were Bhuj, Anjar, Rapar, Bhachau, Gandhidham, and Mandvi; in Rajkot: Morvi and Wankaner; in Surendranagar: Surendranagar, Limdi, Thangadh, Dhrangdhara, Halwad, and Wadhwan; and in Ahmedabad: Ahmedabad.

2. Further to the ongoing relief efforts focusing on food, medical care, and temporary shelters, essential services such as water supply and sanitation need to be improved on immediately. The lack of basic amenities such as water and sanitation, closure of commercial activities, damaged municipal buildings, lack of health centers, and damaged schools, are creating extreme hardship for those affected. The Project will help install the immediately required minimum services to sustain life for those affected, while rehabilitation and reconstruction of all facilities are carried out over the next 33 months.

B. Objective and Scope

3. The main objective of this project component is to finance both the immediately required minimum services, and the reconstruction of all services, incorporating multihazard resistance for earthquake, cyclone, and drought, which are all prevalent in the affected areas. All the damage to urban infrastructure caused by the recent earthquake will be eligible. Eligible subcomponents include water supply, treatment, and distribution; wastewater collection and treatment; sanitation; solid waste management; drains; roads and street lighting; municipal and public buildings; municipal markets; community center; library; fire brigade complex and equipment; tax collection post; stores and godowns and related equipment and facilities; and rubble removal and disposal. The scope and cost of this component will be adjusted through detailed planning, damage assessments, surveys, and designs.

4. In the most severely affected towns of Anjar, Bhachau, Bhuj, Rapar, Gandhidham, and Morvi, the densely populated town core areas were completely devastated.¹ The water supply system is severely damaged; civil structures, pumps and motors, bore wells, and generator sets need major repairs, and in many cases complete replacement. The sewerage system piping is damaged, and drains are destroyed. At many of the sites, the electrical lines have snapped. The roads are generally intact except for minor damage to the pavement structures. In addition to these areas, other towns suffered various degrees of damage. Ahmedabad, the state capital was also damaged, though less severely.

5. The overall damage assessment, scope, and cost estimates were based on a thorough on-site evaluation by a joint Asian Development Bank (ADB)/World Bank team, supported by state, district, and local officials. Anjar with a prequake population of 77,000 is typical of the six worst hit towns; 4,000 people died, 35,000 were injured, and more than 6,000 houses were severely damaged or outright destroyed, making 30,000 people homeless. Based on this detailed analysis, government teams updated their initial assessment in the other affected towns.

¹ Restructuring of these areas will need to follow proper planning including widening of streets and increase in minimum lot size.

6. The city core (5 of the 12 municipal wards) of Anjar, with a prequake population of about 25,000, suffered severe damage to all buildings, and urban infrastructure. Anjar's water supply system consists of a network of 15 deep bore wells, sumps, multistage pumps, overhead reservoirs, and a 45 kilometer (km) long distribution network of asbestos cement and polyvinyl chloride pipes. Reconstruction works include replacement of 8 bore wells, the water disinfection and chlorination plant, pumping house, and about 25 km of the water distribution piping network ranging from 75 millimeter (mm) to 450 mm diameter, some 50 percent of the total will have to be relaid using earthquake resistant pipe material such as cast or ductile iron. Three high ground-level reservoirs have developed cracks and will require a thorough investigation to determine their structural integrity. All related civil structures will be reconstructed incorporating earthquake and cyclone resistance.

7. The sewerage system in Anjar, consisting of open gutters, utility holes, and 66 km of gravity sewers (150 to 450 mm diameters, mainly reinforced concrete cement and glazed stone ware) has suffered extensive cracks and damage. The extent of damage to the reticulation has to be confirmed using appropriate equipment. A conservative estimate indicates that half of the sewerage network will have to be relaid.

C. Cost Estimate

8. The total cost of the component is \$86 million equivalent as summarized in Table A2: about 20 percent (\$17 million) for foreign exchange costs and 80 percent (\$69 million) for local currency costs.

Table A2: Cost Estimates
(\$ million)

Item	Estimated Cost
A. Repair and reconstruction of 15 towns with upgrading for multihazard strengthening	50
B. Repair and reconstruction of other smaller towns with upgrading for multihazard strengthening	8
C. Provision of residential sites and services	8
D. Removal of debris and rubble from public roads and right of ways	10
Subtotal (A+B+C+D)	76
E. Physical and price contingencies	10
Total	86

D. Implementation Arrangements

9. The Gujarat State Disaster Management Authority (GSDMA) will assume implementation of all components under the Project, including urban infrastructure, through its Project Management and Coordination Unit (PMCU), which will be the Executing Agency. Under the PMCU, the Gujarat Urban Development Company (GUDCO),² a semiautonomous financing and implementation utility under Urban Development and Urban Housing Department of the Gujarat Government, will be the Implementing Agency for this component. GUDCO will assign a senior level project director and a core group of experienced specialists from line departments

² GUDCO will also receive training, standard bidding documents, and instructions on ADB's procurement, monitoring, reporting, and other procedures from the project management consultant supporting the PMCU.

or by hiring new staff to implement this project component. GUDCO will work closely with the Gujarat Water Supply and Sewerage Board, the parastatal utility responsible for bulk water supply to both urban and rural areas, and with the local municipal committees to ensure their full involvement.

E. Consulting Services

10. GUDCO will be assisted by a team of domestic design and construction supervision consultants reporting to the project director. The consultants will have expertise in detailed damage assessments, surveys, planning, design, specifications, bidding, quality control, and contract management including institutional strengthening and capacity building support. The consultants will be recruited following ADB's *Guidelines on the Use of Consultants* and other arrangements acceptable to ADB for the engagement of domestic consultants. About 426 person-months of professional consulting input, and 880 person-months of technical input will be required, at an estimated cost of \$3.3 million. The areas of expertise include team leader and municipal engineer, procurement specialists, water supply and wastewater engineers, contract management specialist, earthquake engineer, construction engineers, construction inspectors, and quantity surveyors. Outline terms of reference are provided in Appendix 9.

F. Implementation Schedule

11. Implementation of the immediate requirements is ongoing and will be completed by June 2001, before the monsoon, following procedures acceptable to ADB. Recruitment of consultants commenced and full scale operation is expected to start in July 2001, with completion by December 2003, as indicated in Appendix 10.

RURAL INFRASTRUCTURE (WATER SUPPLY AND SANITATION)

A. Rationale

1. While 80 percent of the quake-damage was in the four districts of Ahmedabad, Kachchh, Rajkot, and Surendranagar, the impact on the bulk water supply and village water systems varied widely among the affected districts. Of 1,100 villages in these four districts, 256 were completely destroyed and the remaining 850 suffered varying degrees of damage. Furthermore, water supply for both villages and towns, consisting mostly of well fields and related pipeline and infrastructure, were severely damaged. The Project will help provide the immediately required basic services improvement, while rehabilitation and reconstruction of all facilities are carried out.

B. Objective and Scope

2. The main objective of this component is to finance restoration of the bulk and rural water supply systems, incorporating multihazard resistance against earthquake, cyclone, and drought, which are prevalent throughout the area.

3. All the damage caused by the recent earthquake will be eligible for Asian Development Bank (ADB) assistance. The damages were assessed by the joint ADB and World Bank team supported by the Gujarat Water Supply and Sewerage Board (GWSSB). The main scope of the bulk and rural water supply component includes

- (i) restoring temporary water supply by providing tankers, tractors/trailers, diesel generator (DG) sets, and mobile laboratory units;
- (ii) repairing 400 deep tubewells and pumping installations;
- (iii) conducting detailed leak detection, and repairs or replacement;
- (iv) rehabilitating local distribution systems in 1,100 villages;
- (v) replacing an estimated 2,000 kilometer (km) of asbestos cement transmission pipelines with metallic pipes (mild steel, ductile iron) which are less susceptible to earthquake effects; and
- (vi) providing institutional strengthening, capacity building, damage assessment surveys and aquifer exploration study, and domestic design and construction supervision.

C. Cost Estimate

4. The rehabilitation and reconstruction cost of the bulk and rural water supply component is estimated at \$132 million equivalent as summarized in Table A3. About 21 percent (i.e., \$28 million) is for foreign exchange costs and 79 percent (i.e., \$104 million) local currency costs.

Table A3: Cost Estimates
(\$ million)

Item	Estimated Cost
A. Restoring temporary water supply	5.3
B. Repair and reconstruction of water supply systems with upgrading for multihazard strengthening	102.2
C. Equipment (leak detection, water quality, and aquifer monitoring)	1.5
D. Rubble removal	8.0
Subtotal (A+B+C+D)	117.0
E. Physical and price contingencies	15.0
Total	132.0

D. Implementation Arrangement

5. The Gujarat State Disaster Management Authority (GSDMA) will be responsible for implementation of all project components, including bulk and rural water supply, through the Project Management and Coordination Unit (PMCU), which will be the Executing Agency. Under the PMCU, the GWSSB,¹ a parastatal utility under the State Water Supply Department, will be the Implementing Agency for the component. GWSSB has assigned a senior project director and a core group of experienced specialists to oversee implementation. GWSSB and the consultants will interact closely with the Gujarat Urban Development Company (GUDCO), the district, town, and village administrators and civic society to ensure beneficiary participation.

6. For towns and villages that operate and maintain their own internal distribution systems, the Community Management and Support Unit, previously established by GWSSB with assistance from the Government of Netherlands, will ensure that communities participate actively in planning, design, and monitoring of works.

E. Consulting Services

7. GWSSB will be assisted by a team of domestic design and construction supervision consultants, reporting to the project director, and providing expertise in detailed damage assessments, surveys, planning, designs, specifications, bidding, quality control, and general contract management, including training of local village operators. The consultants will be recruited following ADB's *Guidelines on the Use of Consultants* and other arrangements acceptable to ADB for the engagement of domestic consultants. The consultants will provide about 389 person-months of professional input, and 1,000 months of inspector and quantity surveyor support, at an estimated cost of \$2.3 million. The specific expertise includes team leader and water supply engineer, procurement specialist, hydrogeologist and aquifer specialist, contract management specialist, leak detection expert, management information system and information technology specialist, earthquake engineer, construction engineers, quantity surveyors and support staff. Outline terms of reference are in Appendix 9.

¹ GWSSB is responsible for capital works and operation and maintenance of the bulk water supply and rural water distribution systems, but to ensure compliance with ADB requirements GWSSB will obtain the standard bidding documents and instructions on ADB's procurement, monitoring, reporting and other procedures from the project management consultants supporting the PMCU.

F. Implementation Schedule

8. Implementation of the immediate requirements is ongoing and will be completed by June 2001, following procedures acceptable to ADB. Recruitment of consultants has commenced and full scale operation is expected to start in the second quarter of 2001, with completion by end-2003, as indicated in Appendix 10.

POWER

A. Rationale

1. While some of the thermal power stations (Kachchh Lignite Thermal Power Station, the Sikka Thermal Power Station, and the Dhuvaran Thermal Power Station) suffered minor damage, the transmission and distribution systems in Banaskatha, Jamnagar, Kachchh, Rajkot, and Surendranagar districts were severely affected. In particular, damage occurred at the 220 kilovolt (kV) substations at Anjar, Nakhatrana, and Nani Kakhar, at two 132 kV substations (Bhuj and Samkhyali), and at 44 substations at 66 kV level in Bhuj, Jamnagar, Rajkot, and Surendranagar. Control rooms collapsed, power transformers toppled over, and equipment was damaged. Extensive damage also occurred to the distribution system (11 kV feeders and 0.415 kV low-tension lines), affecting most of the villages in the region. Disruption of power supply impacts on the provision of normal basic services, particularly water supply and sanitation.

B. Objectives and Scope

2. The objective of the Project is to restore reliable and efficient power supply to the affected areas. The project scope includes (i) replacement of damaged equipment, construction of substation buildings, and houses for the operating staff; and (ii) renovation and strengthening of the transmission and distribution systems. This will enable the Gujarat Electricity Board (GEB) to achieve the level of service provided prior to the earthquake.

3. Existing designs of the power system are not appropriate to effectively minimize the impact of earthquake. Therefore, replaced assets will need to incorporate technologies for earthquake resistance. However, as the replacement of damaged (old) equipment will create an imbalance in reliability of different parts of the system, renovation and strengthening of transmission lines and substations will be required to ensure matching reliability of the power system. Moreover, technical systems upgrading will be required to improve efficiency by (i) converting the low-tension feeders to the more efficient high-tension system; and (ii) installing capacitors and meters.

C. Cost Estimates

4. The total cost of the Project for the power sector component is estimated at \$97.9 million equivalent as summarized in Table A4. The estimate is based on a detailed analysis of the damages caused, cost of replacement equipment and materials, and the number of buildings and staff quarters that need reconstruction.

Table A4: Cost Estimates
(\$ million)

Item	Estimated Cost
Generation System	2.8
Transmission System	36.1
Distribution System	35.7
Civil Works	11.5
Subtotal	86.1
Physical and Price Contingencies	11.8
Total	97.9

D. Implementing Arrangements

5. GEB will be the Implementing Agency for the power sector component of the Project. A GEB task force will be constituted to oversee implementation. The task force will operate under the overall guidance of the Gujarat State Disaster Management Authority (GSDMA). The Asian Development Bank Cell of GEB will be responsible for procurement; assistance to supervision staff in implementation; overall management, coordination, and oversight; audit of project accounts and financial statements, and preparation of regular progress reports and project completion reports. The heads of the Civil, Transmission, Distribution and Generation divisions of GEB will be responsible for implementing the subprojects under their respective divisions.

E. Consulting Services

6. For the power sector component, a total of 24 person-months of domestic consulting services at an estimated cost of \$0.15 million equivalent will be required to prepare the specifications and designs of the foundations, substation buildings, houses, and site supervision. The consultant should be an experienced structural design engineer, with particular experience in the design of multidisaster resistant structures.

LIVELIHOOD REHABILITATION

A. Rationale

1. The earthquake has disrupted the economy of the affected areas through widespread damages to the assets, tools, implements, raw materials, and work places, and of human capital itself. The main economic activities in the affected areas included dry-land farming, animal husbandry, handicrafts, handlooms, salt production, construction, and other trades including gems and jewelry. Livelihoods of not only the existing poor, but of many others who had a fragile economic stability, have now been adversely affected.

B. Objectives

2. Livelihoods have been affected and packages for restoration will have to address various categories differently. The needs of the affected can be broadly grouped under three categories: (i) livelihood restoration through financial and infrastructure support, (ii) livelihood restoration through retraining, and (iii) economic compensation for loss of livelihood.

3. **Livelihood Restoration through Financial and Infrastructure Support.** This will cover the categories of affected persons whose skill base is intact, but who need support in terms of restoration of assets, tools, and work places. This category will require support in terms of supply of tool kits, seed money, and assistance in marketing for some interim period. Livelihood restoration support requirements include (i) replacement of tools and facilities lost, (ii) production credit to cover the cost of basic materials, and (iii) marketing support.

4. **Livelihood Restoration through Retraining.** Many women have been left destitute by the quake and over 2,500 families are left with members with permanent disabilities. Many families of the 200,000 injured have also been left with members with physical disabilities that require a change in economic activity to more sedentary jobs. In the case of such households, the issue is to build up a skill base to equip them to take up economic activities in the first place before providing financial and infrastructure support. Comprehensive training programs have to be carried out for destitute women and other family members in the case of the disabled. A restoration program will require (i) training of young women and other family members to replace those who have died or been permanently disabled, (ii) alternate means of employment to the physically handicapped who have to give up existing lines of employment but can manage to be economically active, and (iii) provision of production credit to cover the cost of basic materials and seed money for alternate work.

5. **Economic Compensation for Loss of Livelihood.** Many children have been orphaned and old people left without support as a result of the quake. In these categories the situation is one of total loss of family economic livelihood with no scope for restoring it. This class of dependants needs to be economically provided for their basic needs by the state until some of the children are old enough to receive vocational training.

C. Scope

6. This project component will cover livelihood restoration for categories (i) and (ii) in para. 2. The trades to be covered will include artisans, craftsmen, handicraft workers, small traders, and skills suitable to the sociocultural and economic milieu of the specific areas for the destitute women and handicapped. Many dry land farmers, salt pan workers, and those engaged in

animal husbandry are also affected. The Government of Gujarat (GOG) is already in touch with the national Government for additional support through centrally sponsored and assisted schemes. Nongovernmental organizations (NGOs) have also indicated interest in providing support, particularly for salt pan workers. Large-scale reconstruction activity for housing is to be taken up under the Project. Construction workers, including masons, carpenters, plumbers, and electricians will be gainfully employed in the process. A specific component for tool-kit distribution, construction of work places, and marketing support is being included. The Project will also support training programs and restoration of livelihoods for destitute women and disabled persons.

D. Cost Estimates

7. The total cost estimate is based on information on unit cost for individual components such as tool-kits and work place. The total cost estimate is \$20 million as detailed in Table A5.

Table A5: Livelihood Restoration Projects

Department of Industries & Mines	Rs million	\$ million
Manav Kalyan Yojana	25	0.5
Toolkits for 10,000 artisans (Rs2,500 each)		
Handicraft artisans	100	2.2
Toolkits for 10,000 artisans (Rs10,000 each)		
Handloom weavers	24	0.5
Toolkits for 2,400 weavers (Rs10,000 each)		
Working capital support (through NGOs)	150	3.3
Permanent workshed		
Workshed (10 x 10 ft) for 7,000 artisans	140	3.0
Workshed (10 x 17ft) for 2,500 artisans (tie and dye, block prints etc)	63	1.3
	502	10.8
Department of Social Justice and Empowerment		
Assistance for Disabled (6,500 persons)	225	4.8
Viklang Sahay Yojana/Ashta Vakra Scheme		
Destitute women (training, tools, and marketing support)	150	3.2
	375	8.0
Contingency	55	1.2
Total	932	20.0

E. Implementation Arrangements

8. The Department of Industries and Mines will be the Implementing Agency for livelihood restoration of artisans, weavers, and small traders. The Department of Social Justice and Empowerment will be the Implementing Agency for training and livelihood restoration for the disabled persons and destitute women. These two main agencies have been identified in consultation with GOG.

F. Implementation Schedule

9. Implementation is expected to commence in April 2001 and be completed by end-2003.

MULTIHAZARD DISASTER PREPAREDNESS AND MITIGATION

A. Rationale

1. Gujarat is prone to a variety of natural hazards, including cyclones, drought, and earthquake. Due to its extensive industrialization, and being home to a significant percentage of India's chemical industry, it also faces industrial and chemical hazards. Therefore, the state's Disaster Management and Mitigation Program (DMMP) must necessarily be multihazard-focused and broad-based, dealing with preparedness (predisaster activities to develop and maintain capabilities to respond rapidly and effectively to disasters) and mitigation (activities to reduce disaster risk and minimize impact of consequences), besides relief and recovery.

2. The current earthquake and the Government of Gujarat (GOG) response to it revealed weaknesses in communication systems; availability of trained human resources and equipment; prearranged systems for mobilizing response resources; government and community awareness of hazards; response actions and mitigation measures; and mechanisms for incorporating hazard resistance into structures, infrastructure, and planning.

3. On 6 February 2001, GOG established the Gujarat State Disaster Management Authority (GSDMA), with the following aims and objectives:

- (i) provide relief against natural calamities and restore normalcy through social and financial activities for rehabilitation and reconstruction;
- (ii) prepare and implement programs to early warning to natural disasters and minimize its impact;
- (iii) assess reasons behind natural disasters and recommend solutions; and
- (iv) coordinate assistance from various resources and agencies including multilateral and bilateral agencies, public and private sector, nongovernment organizations (NGOs), and individuals, and ensure efficient and transparent use of funds.

B. Objectives and Scope

4. The main objective of this component is to (i) initially build GSDMA's capacity to undertake the immediate reconstruction and rehabilitation efforts; and (ii) develop GSDMA's institutional capacity to become an apex organization and focal point for multidisaster-related efforts and issues in the state, from prevention and mitigation, to relief and reconstruction.

5. GSDMA will have two distinct but interrelated units to serve its dual functions:¹

- (i) The Earthquake Reconstruction Management Division (ERMD) will serve as the project management unit for the reconstruction program. ERMD will serve as Executing Agency for the loan projects from multilateral and bilateral agencies. In view of the enormity of the task, ERMD will require necessary support to build capacity to manage such a program.

¹ An international consulting firm has been tasked to prepare the detailed organizational structure including staffing, as well as preparing the specifications for management information system and financial management system.

- (ii) The Disaster Management Division (DMD) has as its main task to develop and implement the DMMP for all hazards faced by the state. While in the initial period, DMD will also provide technical support to the implementation of the reconstruction program, by the end of the reconstruction program, the core technical departments from the reconstruction program would come under this division.

6. The scope of work includes

- (i) preparation of a multihazard DMMP (risk analysis comprising hazards and vulnerability assessments; inventory of response resources; standard operating procedures (SOPs) on early warning, alert, warning dissemination, and activation of response; and SOPs for response action including search and rescue, medical aid, relief supply, emergency shelter, health and sanitation, infrastructure restoration, and damage and needs assessment);
- (ii) disaster management information system (detailed district assessment of hazards, vulnerabilities, response resources, and capacities; and vulnerability of housing and critical infrastructure);
- (iii) disaster management training (capacity building and training on disaster management, and developing capacity for delivering training);
- (iv) drought mitigation program (develop and implement a comprehensive drought mitigation program that includes practical methods of water conservation, rainwater harvesting, appropriate changes in cropping patterns, and livestock protection);
- (v) disaster management control rooms and communications network (phased program to establish a district disaster control room in each district headquarters and a statewide communications network);
- (vi) enhancement of first responder capacity (program to upgrade search and rescue capacities in urban areas; and development and training of community-based first response teams);
- (vii) community-based disaster management program (training of disaster preparedness volunteers in the dissemination of warning, assistance in evacuation, rescue and first aid, and mitigation program geared to protecting and incorporating disaster resistance in community and family assets);
- (viii) urban disaster management program (development of a city-level mitigation and preparedness program, building on capacity in the local bodies through establishment of a disaster management cell and citywide disaster management committee); and
- (ix) cyclone preparedness program (warning system improvement, warning dissemination, and community volunteer-based evacuation system by identifying buildings that could serve as cyclone shelters and a system of community-based volunteers to disseminate warnings and facilitate evacuation).

C. Cost Estimate

7. The total cost of this component is estimated at \$20 million. The cost includes about \$4 million for consulting capacity building and training, and \$16 million for basic disaster management equipment and structures.

D. Implementation Arrangement

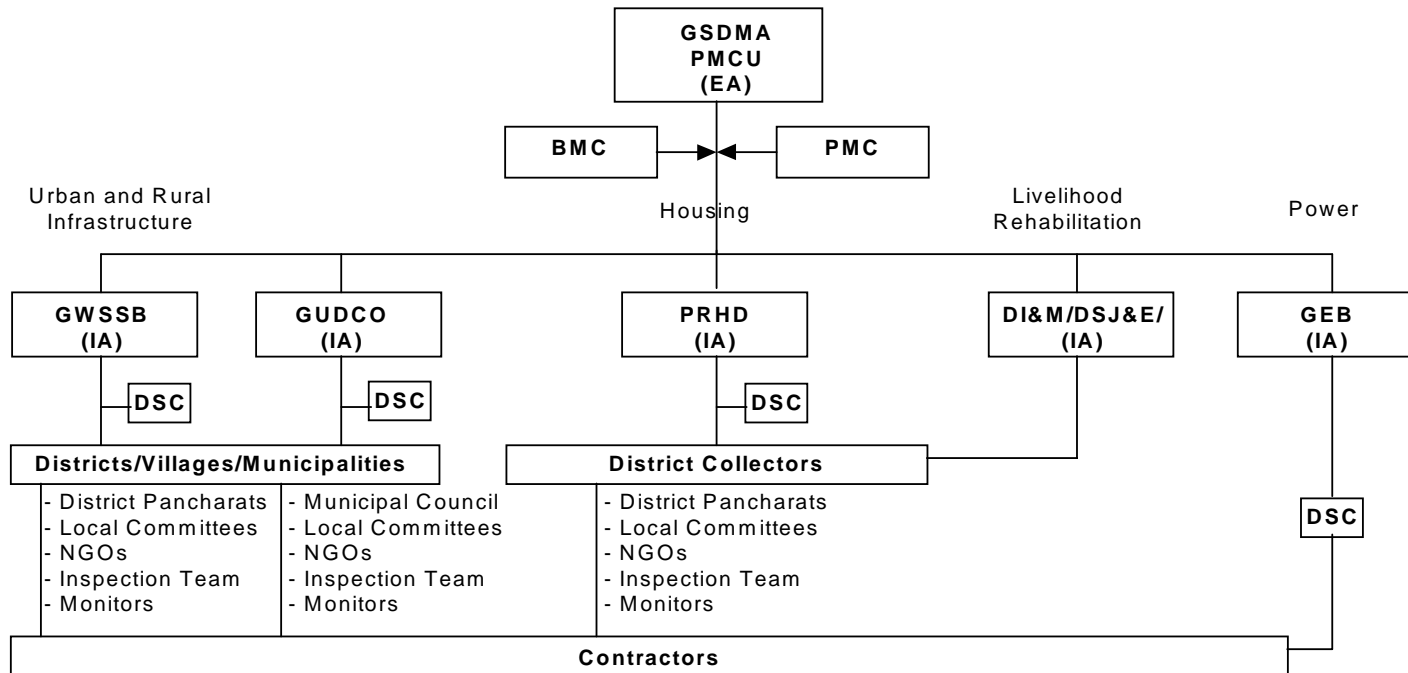
8. GSDMA will be the Executing Agency for this component. GSDMA will appoint a project director to coordinate all the activities related to this component, within GSDMA and outside of it with other government, public and private agencies, and NGOs. A team of technical and administrative officers will support the project director, who with a team will coordinate closely with ERMD and DMD units within GSDMA.

SUMMARY OF COST ESTIMATES
(\$'000)

Item	Cost Estimate			Financing	
	Foreign Exchange	Local Currency	Total Cost	ADB	GOG
A. Housing	30	220	250	200	50
B. Urban and Rural Infrastructure	45	173	217	173	44
1. Urban	17	69	86	70	16
a. Equipment and Materials	10	6	16	16	0
b. Civil Works	7	63	70	54	16
2. Rural (Water Supply and Sanitation)	28	104	132	103	29
a. Equipment and Materials	19	9	28	28	0
b. Civil Works	9	95	104	75	29
C. Power	24	74	98	67	31
1. Equipment and Materials	23	63	86	59	27
2. Civil Works	1	11	12	8	4
D. Livelihood Rehabilitation	2	18	20	20	0
E. Consulting Services and Incremental Administrative Support	1	14	15	15	0
F. Multihazard Disaster Preparedness and Mitigation	5	15	20	20	0
Front-End Fee	5	0	5	5	0
Total	112	513	625	500	125

ADB = Asian Development Bank, GOG = Government of Gujarat.
Source: Staff estimates.

**GUJARAT EARTHQUAKE REHABILITATION AND RECONSTRUCTION PROJECT
Organization Chart**



BMC = benefit monitoring consultant
 DI&M = Department of Industries and Mines
 DSC = design and construction supervision consultants
 DSJ&E = Department of Social Justice and Empowerment
 EA= Executing Agency
 GEB = Gujarat Electricity Board (IA for part C)
 GSDMA = Gujarat State Disaster Management Authority
 GUDCO = Gujarat Urban Development Company (IA for part B [Urban])
 GWSSB= Gujarat Water Supply and Sewerage Board (IA for part B [Rural])
 IA = Implementing Agency
 NGOs = nongovernment organizations
 PMC = project management consultant
 PMCU = Project Management and Coordination Unit
 PRHD = Panchayats, Rural Housing and Rural Development Department (IA for part A)

OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES

A. For the Project Management and Coordination Unit

1. Project Management Consultant (192 person-months)

1. The project management consultant (PMC) will provide support to the Project Management and Coordination Unit (PMCU) of the Gujarat State Disaster Management Authority (GSDMA). The PMCU will be the implementing arm of GSDMA for the Government of Gujarat's (GOG) rehabilitation and reconstruction program. The PMC will report to the director of the PMCU and provide experts in the key areas to help build capacity of the PMCU and the Implementing Agencies (IAs) for each sector financed under the Asian Development Bank (ADB) Project. The PMC will include a team leader, procurement specialist, project accountant, housing construction specialist, earthquake specialist, and community participation specialist and nongovernment organization (NGO) liaison. The tasks of the PMC will include

- (i) support to the PMCU in carrying out the state-wide reconstruction program, including overall planning and sequencing of activities;
- (ii) technical support and advice to the design and construction supervision consultant (DSC), for detailed damage assessment, planning, specifications, design standards, and quality control of reconstruction works;
- (iii) develop and monitor accounting procedures and subproject accounts;
- (iv) develop and support capacity building and training requirements of the PMCU, IAs, line ministries, local administrations, and the DSC; and
- (v) support ADB's extended mission in Gandhinagar, India Resident Mission (INRM), and ADB missions.

2. Benefit Monitoring Consultant (320 person-months)

2. The benefit monitoring consultant (BMC) will provide an independent monitoring and feedback mechanism to GSDMA and ADB, as well as support local NGOs and community organizations in carrying out monitoring, quality control, and reporting to bring transparency to the various reconstruction activities, with special focus on housing. The BMC will work closely with the PMCU and the PMC, design and construction supervision consultants, line ministries, IAs, urban bodies, as well as NGOs and civil society. The BMC will be a larger NGO with contacts throughout the earthquake-affected areas. The BMC will report to the director of the PMCU and provide full-time staff to support the activities of several NGOs and local organizations. The BMC will establish direct links with a number of NGOs in the affected areas and finance specific monitoring activities by these NGOs. The BMC will monitor and report on activities in each of the parts A through D of the Project. The BMC will include team leader, NGO specialists, accountants, housing construction specialists, and community participation specialists and NGO liaison. The tasks of the BMC will include the following:

- (i) Develop a detailed benefit monitoring program for each of parts A through D of the Project: housing, urban and rural infrastructure, power, and livelihood rehabilitation, respectively.

- (ii) Establish contact and mechanisms for monitoring with various NGOs, local community groups, and other local entities, and train them to conduct monitoring and feedback. A major focus will be to assist local groups and individual low income recipients under the housing component with monitoring of the quality of the work done by contractors, to ensure incorporation of earthquake and cyclone strengthening of the rehabilitated or new houses.
- (iii) Implement a feedback system that will provide house owners, urban and rural bodies, state agencies, PMCU, and ADB with real time input that can be used to adjust and improve plans, designs, reporting, accounting, and transparency.
- (iv) Prepare recommendations for steps and initiatives required to help restore economic activities, with a focus on the poorer sections of society, including women.
- (v) Develop public participation and awareness programs including involvement of local administrations, civic bodies, NGOs, and the public.
- (vi) Develop and support capacity building and training of local district and municipal administration.
- (vii) Generally support ADB's extended mission in Gandhinagar, INRM, and ADB missions.

B. For Project Part A — Housing

3. Housing Design and Construction Supervision Consultant (3,600 person-months). A housing design and construction supervision consultant (HDSC) will provide support to the PMCU, IAs, and the district and municipal agencies responsible for overseeing the construction of housing units for the urban and rural areas. The HDSC will be responsible for monitoring the quality of construction, with particular focus on the incorporation of earthquake-resistant features. The HDSC will certify that each structure being constructed has incorporated such technology, at the following stages: plinth level, roof level, and full completion. The HDSC will liaise closely with the local communities, Gram Panchayats, and NGOs in planning, designing, and implementing the housing units. The HDSC will undertake the following tasks:

- (i) Provide technical advice on construction aspects to ensure that disaster resistant techniques are incorporated, and provide technical support and advice to the Gram Panchayats, NGOs, and individuals in construction works including specifications, design standards, and quality control of reconstruction works.
- (ii) Monitor the progress and ensure quality of construction.
- (iii) Develop and monitor accounting procedures and subproject accounts.
- (iv) Certify quality of works, physical progress, bill of quantities, and approval of payment to the contractors.
- (v) Develop and support benefit monitoring and evaluation requirements.

- (vi) Prepare reports, taking into account the accounting and auditing requirements of ADB.
- (vii) Generally support ADB's extended mission in Gandhinagar, INRM, and ADB missions.

C. For Project Part B — Urban Infrastructure

4. **Design and Construction Supervision Consultant—Urban** (426 person-months of professional staff input). The design and construction supervision consultant (DSC) will provide support to the Gujarat Urban Development Company (GUDCO), the IA with overall responsibility for implementing the rehabilitation and reconstruction of urban infrastructure and associated facilities, including water supply, sewerage, sanitation, drainage, roads, markets, and public buildings. The DSC will include team leader and senior engineer, town planners, water supply design engineers, sewerage design engineers, road design engineers, solid waste specialist, structural design engineers, architects, estimators and costing specialists, procurement specialists, construction supervisors, project accountants, quality control specialists, and quantity surveyors. The DSC will undertake the following tasks:

- (i) Conduct town planning to help redesign the cities that were almost completely destroyed and the areas of other towns where damage was heavy.
- (ii) Design the rehabilitation and reconstruction incorporating measures and specifications to provide earthquake resistancy.
- (iii) Prepare detailed schedules of quantities, construction schedules and quality control requirements.
- (iv) Prepare pre-qualification, bidding and contract documents and related advertising for bids following ADB's guidelines, procedures and formats.
- (v) Oversee the tendering process, evaluate the bids, and prepare the bid evaluation report.
- (vi) Oversee the bidding process, ensuring that all requirements have been met vis-à-vis bid bonds, performance bonds, financial guarantees and related documents.
- (vii) Check the contractors progress, measure quantities and quality of completed works, review progress payments and recommend payments or penalties.
- (viii) Complete as built drawings and issue completion certificates.
- (ix) Liaise with GUDCO, the PMC, the Benefit Monitoring Consultants, the beneficiary municipalities, ADB's extended mission in Gandhinagar, INRM, and ADB missions.

D. For Project Part B — Rural Infrastructure (Water Supply and Sanitation)

5. **Design and Construction Supervision Consultant—Rural** (389 person-months of professional staff input). The DSC will provide support to the Gujarat Water Supply and Sewerage Board (GWSSB), the IA for the rural infrastructure component of the Project. GWSSB will establish a dedicated project management unit (PMU) with overall responsibility for the

reconstruction of the rural water supply systems damaged by the earthquake. The PMU will be headed by a senior project director and staffed by a core group of experienced specialists. The DSC will report to the project director and provide experts in the key areas to carry out detailed damage assessment, surveys, planning, designing, and implementation of the project component, and help build the capacity of GWSSB. Design will need to take into account measures and specifications to provide earthquake resistancy. The DSC will liaise very closely with the local communities and NGOs in planning, designing, and implementing the schemes, and the Community Management and Support Unit (CMSU) set up by GWSSB with assistance from the Government of Netherlands. The DSC will include team leader and water supply specialist; water supply engineer; procurement specialist; contract management specialist; leak detection expert; hydrogeologist; geophysicist; civil/earthquake and structural engineer; environment specialist; mechanical engineer; electrical engineer; management information system and information technology specialist; construction engineers, and quantity surveyors. Services provided by the DSC to the GWSSB will include the following:

- (i) provide technical support and advice to GWSSB and Gram Panchayats with respect to detailed damage assessment, planning, specifications, design standards, and quality control of reconstruction works;
- (ii) undertake technical studies on aquifer exploration, assessment of groundwater availability and quality, hydrogeological study, and leak detection surveys;
- (iii) carry out all the procedures for procurement of goods and services including bid documents, invitation to bid, and evaluation of bids;
- (iv) develop and monitor accounting procedures and subproject accounts;
- (v) certify quality of works, physical progress, bill of quantities, and approval of payment to the contractors;
- (vi) help with public participation and awareness programs including involvement of local administrations, civic bodies, NGOs, and the public;
- (vii) develop and support capacity building and training requirements of GWSSB, CMSU, NGOs, and Gram Panchayats to operate the systems;
- (viii) assist with reports, accounts, and audit requirements of ADB; and,
- (ix) generally support ADB's extended mission in Gandhinagar, INRM, and ADB missions.

E. For Project Part C — POWER

5. **Design Consultant** (24 person-months). The Gujarat Electricity Board (GEB) will be IA for the power component. Since GEB is an experienced power utility and will be recruiting domestic consultants under the recently approved Gujarat Power Sector Development Program (para. 26, footnote 11), consulting support is required only for an experienced civil engineer to provide the following services:

- (i) assist GEB with detailed assessments of earthquake-related damage to control room buildings, staff quarters, and switchyard equipment foundations;

- (ii) prepare designs, specifications, and bid packages for civil structures taking into consideration all disaster mitigating factors, including documentation and contracts in accordance with ADB requirements;
- (iii) assist GEB in evaluating bids; and
- (iv) assist GEB with testing and quality control during the reconstruction.

IMPLEMENTATION SCHEDULE

Description	2001				2002				2003			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
A. Housing (Identification & Implementation)		■	■	■	■	■	■					
B. Urban & Rural Infrastructure												
a. Immediate Phase (Minimum Basic Services) ^a	■	■										
b. Medium Term												
(i) Design/Procurement	■	■	■	■								
(ii) Implementation				■	■	■	■	■	■	■	■	■
C. Power												
a. Immediate Phase ^a	■	■										
b. Design/Procurement	■	■	■	■								
c. Implementation				■	■	■	■	■	■	■	■	■
D. Livelihood Rehabilitation												
a. Immediate Phase ^a	■	■										
b. Beneficiary Identification		■	■	■								
c. Reconstruction/Implementation	■	■	■	■	■	■	■	■	■	■	■	■
E. Consulting Services	■	■	■	■	■	■	■	■	■	■	■	■
F. Multihazard Disaster Preparedness & Mitigation												
a. Establishing PMCU	■	■										
b. Establishing Disaster Mitigation Unit	■	■	■	■	■	■	■	■	■	■	■	■

PMCU=Project Management and Coordination Unit.

^a Retroactivity commencing from 12 February 2001.

Source: Staff estimates.