

# IEG ICR Review

Independent Evaluation Group

1. Project Data:		Date Posted : 02/17/2010	
PROJ ID : P074018		Appraisal	Actual
<b>Project Name :</b> Gujarat Emergency Earthquake Reconstruction Project	<b>Project Costs (US\$M):</b>	503.70	480.50
<b>Country:</b> India	<b>Loan/Credit (US\$M):</b>	442.80	331.13
<b>Sector Board :</b> UD	<b>Cofinancing (US\$M):</b>		
<b>Sector(s):</b> Housing construction (61%) Roads and highways (14%) Irrigation and drainage (13%) Sub-national government administration (10%) Other social services (2%)			
<b>Theme(s):</b> Other urban development (23% - P) Rural services and infrastructure (22% - P) Participation and civic engagement (22% - P) Natural disaster management (22% - P) Rural policies and institutions (11% - S)			
<b>L/C Number:</b> C3637			
	<b>Board Approval Date :</b>		05/02/2002
<b>Partners involved :</b>	<b>Closing Date :</b>	10/31/2005	10/31/2008
<b>Evaluator :</b>	<b>Panel Reviewer :</b>	<b>Group Manager :</b>	<b>Group :</b>
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## 2. Project Objectives and Components:

### a. Objectives:

According to the DCA the objective of the Gujarat Emergency Earthquake Reconstruction Project (GEERP) was "to assist Gujarat in carrying out the second phase of a program of rehabilitation and reconstruction in the areas affected by the Gujarat earthquake of January 26, 2001, including restoration of housing and public buildings, restoration of basic infrastructure in the roads and irrigation sectors, and development of an institutional framework to allow better disaster mitigation and risk management for future natural disasters ."

As it was an emergency operation there was no PAD and the Memorandum of the President (MOP) provided the rationale for the project . However, the MOP had a different description of project objectives : (a) promoting

sustainable recovery in the disaster-affected areas, and (b) laying the foundations for sustainable disaster management capacity in Gujarat.

The DCA objectives are the basis for this Review .

The development outcomes anticipated at appraisal were :

- reduced vulnerability and subsequent saving of lives and property in future disasters through building houses and infrastructure to disaster resistant standards;
- increased community risk awareness of and preparedness for natural hazards through access to enhanced knowledge of hazards and disaster reduction techniques;
- enhanced emergency preparedness and response capacity of responsible units (such as fire and rescue brigades) leading to saving of lives and property .

In February 2008 the output targets were informally restructured to reflect reduced or increased demands under specific components shortly before project closing .

#### **b. Were the project objectives/key associated outcome targets revised during implementation?**

Yes

If yes, did the Board approve the revised objectives /key associated outcome targets?

Yes

Date of Board Approval: 12/23/2004

#### **c. Components (or Key Conditions in the case of DPLs, as appropriate):**

There were 5:

- **Repairs and reconstruction of permanent housing . Planned US\$ 197.2 million, actual US\$ 132.0 million.** This financed owner-driven housing construction (initiated under Phase 1) for 75,000 partially damaged and 135,000 fully damaged houses with associated capacity building support and training of masons and engineers . In 2008 these targets were reduced to 42,000 and 125,000 respectively.
- **Reconstruction of Public Infrastructure . Planned US\$ 236.9 million, actual US\$ 245.0 million.** This included: public buildings; repair and reconstruction of 1,200 residential and non-residential buildings in several government departments (increased to 2,200 in 2008); retrofitting of 500 (increased to 2,000 in 2008) undamaged critical public buildings located in highly vulnerable seismic zones IV and V; repairs to 222 dams and irrigation infrastructure (increased to 225 dams in 2008) in Kutch and Saurashtra and technical assistance in carrying out the repairs; rehabilitation /strengthening of 700 km of state roads (increased to 800 km in 2008) and associated technical assistance; and three new buildings for the Gujarat State Disaster Management Authority (DMA) and for the newly conceptualized Gujarat Institute of Disaster Management (IDM) and the Institute of Seismological Research (ISR).
- **Community Participation . Planned US\$ 12.5 million, actual US\$ 4.0 million.** This comprised information and communication activities, establishment of village level institutions, strengthening local governments, gender sensitization and community-based disaster awareness and preparedness programs .
- **Disaster Management . Planned US\$ 51.1 million, actual US\$ 73.5 million.** This included feasibility studies related to the setting up of an emergency response system, institutional capacity assessment for, and commissioning of, an emergency management system, hazard mitigation and related studies (such as digital hazard maps, inventories of hazardous buildings, building codes and regulations, procedures for community based disaster management planning), strengthening the DMA, and establishing the IDM and the ISR .
- **Project Management . Planned US\$ 6.0 million, actual US\$ 6.0 million.** This included DMA incremental operating costs.

#### **d. Comments on Project Cost, Financing, Borrower Contribution, and Dates:**

- US\$80.23 million was cancelled in June 2005. A further US\$35.01 million was cancelled in February 2007 because of project underspending and appreciation of the SDR .
- Project restructuring to include the polio eradication objective utilized US\$ 20 million of project savings.
- At project closing after 3 extensions totalling 3 years, US\$71.47 million was cancelled. Capacity constraints (particularly in the dams work), delays in urban planning (financed by another donor) and procurement problems caused an extension of closing by 2 years. A second extension (by 4 months) was caused by severe floods in 2005 and 2006. A third extension (by 8 months) was made to allow for completion of capacity-building.

### **3. Relevance of Objectives & Design:**

**Relevance of Objectives (Rating: High).** The project objectives were highly relevant at appraisal and continue to be

highly relevant to Gujarat, India and Bank's new CAS. The GOI's 11th five-year plan, 2007-2012, incorporates the aim of consolidating disaster preparedness, prevention and risk mitigation progress by integrating them into the development process. GEERP piloted such integration. The current India CAS (2009-2012) states that the WBG will assist in increasing the resilience of people and the economy to natural and man-made shocks.

**Relevance of Design (Rating: Substantial).** The institutional component supported Gujarat in achieving its long term goals of building institutions to better manage disasters and improve regulation of the buildings and infrastructure. The creation of the DMI to raise awareness and build local capacity, and the ISR to prepare hazard maps and monitor risks built on the recommendations in the Draft Disaster Management Policy and the Disaster Management Bill. Housing rebuilding and reconstruction introduced three successful innovations: a transparent and well-regulated system of awarding grants to self-managed building by home owners; recognition of women as joint owners of new property; and mandatory risk insurance valid for 10 years.

Notwithstanding these achievements, relevance of design was somewhat weakened through the following shortcomings: first, the credit was too large given fiduciary weaknesses and the need for capacity-building. While overestimating costs for reconstruction is typical for the immediate aftermath of a disaster, this second phase project could have assessed reconstruction costs more realistically. Second, the dam and irrigation components were so large and demanding that they may have been more appropriately managed under a separate project; their inclusion was the primary cause for project delays.

Overall, relevance is rated **Substantial** given the overriding importance of good design for emergency operations.

#### 4. Achievement of Objectives (Efficacy):

##### (1) Restoration of housing and public buildings and basic infrastructure of in the roads and irrigation sectors in the disaster-affected area (Rating: Substantial)

- **Housing:** According to updated outcome information provided by the Region (February 2010) pucca housing improved from the 66% base level in the rural areas before the earthquake to 97%, a 13% increase. Similarly in urban areas it increase from 85.6% to 99%, a 31% increase. 167,532 houses were reconstructed or repaired (appraisal target 210,000). Over 3,900 public buildings were repaired or reconstructed (target 1,200) and 2,848 public buildings were retrofitted to the required seismic standards (target 500).
- **Roads:** The transport system was improved: 870 km of roads (target 700 km) and 129 bridges were built. About 60% of urban and 65% of rural residents expressed satisfaction with the improved access that this resulted in. 62% of rural respondents and 60% of urban respondents reported a decrease in travel time.
- **Dams.** Dam safety was enhanced by the retrofitting process and the introduction of procedures for total quality management. The impact on water conservation and management is unknown. Dam break analyses have enabled flood hazard and risk zoning. 225 dams and related structures were rehabilitated or retrofitted to hazard-resistant standards (target 222).
- **Social Impact.** Women's status was enhanced by joint title to new property and as joint signatories on bank accounts. Women's incomes increased by 72% (ICR, page 46), although there is no counterfactual against which to assess this. Many young men benefited from training as masons and builders.
- **Quality controls were mostly effective.** The National Council for Cement and Building Material was appointed as third-party technical auditor. There was community participation in the design of the emergency recovery program. Damage assessments were conducted in public and an appeals mechanism using District Judges as ombudsman was established: 40,421 appeals were received and resolved. Grant awards for repair or reconstruction were neutral with respect to status and caste; and were deposited directly in the beneficiary's bank account. There was independent quality assurance inspection to ensure grants were correctly allocated and spent and that construction met seismic resistance criteria. Over 1,000 material banks were opened to ensure the quality and stabilize the price of building materials. However, the 14,300 families (8% of beneficiaries) that started repair/reconstruction late had to pay higher prices for materials and works following the full demobilization of material banks in 2006.

##### (2) Lay the foundations for sustainable disaster management capacity in Gujarat (Rating: Substantial)

- DMA achieved much but could have done more to build local capacity. Engagement with local government authorities and communities has waned and the Operations Plan outlining the staffing, training, deployment, operation, and maintenance of emergency management equipment in the Emergency Operations Centers has not been implemented. Some essential procurement of works and equipment is still outstanding. Four Emergency Response Centers have been completed but one has yet to start construction; 21 Emergency Operations Centers were built but 3 are not complete and one has yet to start.
- A comprehensive legal and institutional framework for disaster management in Gujarat was created through the state. The 2003 Gujarat Disaster Management Act authorized the DMA, the Emergency Operations and Recovery Centers, the IDM and the ISR. The project built capacity throughout the state to manage disaster

response and recovery at the district and local levels . However, the draft Emergency Response Centre's Operations Plan has not been implemented. This is critical given the need to consider sustainable solutions in the initial response (ICR page 18). It also appears that best practices introduced by the project are being ignored because of "waning institutional intermediation" (ICR, page 27)

- The Gujarat legislation supported development of the National Disaster Management Act in 2005 which also allowed for the formation of the National Disaster Management Authority (NDMA) in 2006. The NDMA is engaged in prioritizing and building capacity for risk mitigation programs across the country .
- State-level Disaster Management Plans were prepared covering 10,829 villages, 97 urban local bodies and 144 talukas (smallest administrative units). A pilot program emphasizing structural and non-structural School Safety targeted 100,000 students and 3,000 teachers. Disaster management plans were prepared for about 152 schools.
- A school earthquake safety initiative piloted by the DMA has been expanded state -wide. Disaster Management Committees were established in 10,829 villages to raise community awareness . An audit for seismic safety of all 55,000-school buildings is planned, to be followed by appropriate retrofitting . Gram Sabhas in 18,000 villages included disaster management on their agenda.
- The Gujarat Professional Civil Engineer’s Act (2006) ensures that only qualified structural engineers undertake design of building structures .
- Gujarat's hazard risk profile has been mapped and a vulnerability atlas is available to assist in development planning.

For the above reasons, overall efficacy is rated **Substantial** .

#### 5. Efficiency (not applicable to DPLs):

Efficiency was not assessed at appraisal or in the ICR because this was an emergency project . However, there are several positive factors . First, at appraisal, reconstruction/repair costs were estimated at US\$ 924 per house; the actual cost was US\$788 per house. Cost reduction was facilitated by placing house owners in charge of the contracting process; and through sound supervision . Second, over 6,700 public buildings were repaired or retrofitted to hazard-resistant standards compared with the 1,700 estimated at appraisal; and with only a 4% increase in cost. Third, greater than expected community outreach and capacity -building was achieved but at only one -third the estimated cost.

Efficiency is rated **substantial** .

#### a. If available, enter the Economic Rate of Return (ERR)/Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation :

	Rate Available?	Point Value	Coverage/Scope*
Appraisal	No		
ICR estimate	No		

\* Refers to percent of total project cost for which ERR/FRR was calculated.

#### 6. Outcome:

Project outcome was satisfactory, based on substantial relevance, efficacy, and efficiency . The project provided safe housing to disaster victims using an owner -based approach to reconstruction with a quality control mechanism, making women co-owners and providing insurance for 10 years. It also successfully reconstructed public buildings and took a long-term urban planning approach to road reconstruction . In terms of disaster management, and despite some waning of the capacity building in later years of projects implementation, the project created a comprehensive legal and institutional framework for disaster management in Gujarat, which also supported the development of the National Disaster Management Act and the formation of the National Disaster Management Authority (NDMA).

a. Outcome Rating : Satisfactory

#### 7. Rationale for Risk to Development Outcome Rating:

- Earthquakes are an ever-present hazard in Gujarat although project interventions to make building and infrastructure earthquake resistant, allied with better hazard mapping, response planning and better institutions,

have mitigated some of the risk.

- The draft Emergency Response Centre's Operations Plan has not been implemented . This is critical given the need to consider sustainable solutions in the initial response (ICR page 18). It also appears that best practices introduced by the project are being ignored because of "waning institutional intermediation" (ICR, page 27); technical audit found 7% of buildings did not conform to earthquake resistant construction standards . Delivery of about 20% of emergency equipment is outstanding (ICR page 48). The Region has subsequently stated (February 2010) that the DMA has invited bids for the procurement of Hazmat Rescue Vehicles, and that government is financing an initiative to mitigate cyclone risk along the coastal areas of Gujarat .
- At the time of the ICR there are some fiduciary weaknesses increasing the risk that unfinished project works will not be completed and disaster response planning will be underfunded . The Region has subsequently stated (February 2010) that the government has financed completion of most unfinished project works (including the 24 District Emergency Operation Centers), and procurement of disaster management equipment that has been allocated to various Emergency Response Centers spread across the State .
- The Region also notes: "while disaster management capacity did not fully meet the expectations originally envisaged, we now see that the government is continuing implementation of those activities, and in fact they have taken full ownership of the approach built through the implementation of the emergency earthquake reconstruction project."

**a. Risk to Development Outcome Rating** : Moderate

#### **8. Assessment of Bank Performance:**

**Quality at Entry** . The real value-added by the Bank was its focus on capacity -building and new institutions to establish an emergency response and recovery management capability (the IDM), better knowledge of hazard location and risks (the ISR), adding self-managed housing construction, independent oversight, gender equality and property insurance. The project was appraised in 11 months and drew extensively on the Bank's global experience of assisting disaster recovery and lessons from the ongoing Phase 1 Program.

**Supervision** . This was done very thoroughly and reporting was good . The missions put considerable emphasis on continuous social assessment, consultations with the other donors and NGOs and regular benefit monitoring studies that ensured compliance with safeguard concerns . The Bank supported the expansion of capacity-building for disaster management to the whole state and facilitated mid -term and later credit cancellations for other emergencies . In contrast, management should have been more pro -active in trimming the credit when it became clear that it was oversized . Changing the output indicators 8 months before project closing served no real purpose except to acknowledge actual progress .

**a. Ensuring Quality -at-Entry**: Moderately Satisfactory

**b. Quality of Supervision** : Satisfactory

**c. Overall Bank Performance** : Satisfactory

#### **9. Assessment of Borrower Performance:**

**Borrower** . Ownership was high as evidenced by the early approval of the Gujarat Disaster Management Act, establishment of institutions to manage disasters more effectively and consistent provision of counterpart funding. Staffing continuity was lost once the emergency reconstruction period was over, adversely affecting disaster management capacity-building and delaying implementation of the dams and irrigation subcomponents and procurement. Fiduciary issues could have received more attention despite the generally sound independent M&E (see Section 11 below).

**Implementing Agencies** . The DMA provided sound leadership to the disaster recovery process and successfully coordinated the many implementing agencies, NGOs and donors . This good performance was acknowledged by several international awards, including the UN's Sasakawa Award for Disaster Risk Reduction and the Bank's Green Award for successfully integrating environmental concerns into project activities. Even so, DMA slowed the pace of its capacity-building activities as the reconstruction activities wound down .The performance of the other line agencies was generally satisfactory, although there were some implementation delays .

**a. Government Performance** : Moderately Satisfactory

**b. Implementing Agency Performance** : Satisfactory

**c. Overall Borrower Performance** :Moderately Satisfactory

**10. M&E Design, Implementation, & Utilization:**

- **Design**. There is almost no information on M&E in the MOP but there was a agreement during negotiations with the Government of Gujarat (MOP para 40) that there would be "social and environmental analysis ...to assess both the positive and negative impacts on different stakeholders, especially vulnerable groups ". Third-party quality audits were included as a result of lessons learned from Phase I of the project . The supervision reports indicate that these surveys were well-designed (e.g housing beneficiaries were selected through a multistage stratified sampling technique and surveys of 8,000 households across 6 districts).
- **Implementation** . The ICR provides data to show that the Government of Gujarat's M&E systems at district level were effective. However, more attention could have been given to aggregating the findings (ICR, page 27).
- **Utilization** . Much use was made of the M&E information generated to monitor progress and fine tune project management, albeit with delay .

**a. M&E Quality Rating** : Substantial

**11. Other Issues (Safeguards, Fiduciary, Unintended Positive and Negative Impacts):**

- **Safeguards** . Four safeguard policies were applied to the project : Environmental Assessment, Involuntary Resettlement, Indigenous People, and Cultural Resources . Methodology and actions to address secondary relocation problems caused by the earthquake were based on consultations with the affected people . There was a robust grievance process, and the ICR reports outcomes were satisfactory . Tribal people affected by the earthquake received equitable benefits, since the project provided benefits based on the damage assessments not social or anthropological status . An Environmental Management Framework governed project activities and environmental issues were incorporated into contractual documents . No information is given in the ICR about cultural resources. Given that substantial rehabilitation and upgrading of 222 dams were included in the project (several of them "large" dams) the Dam Safety safeguard should have been invoked . In practice, however, independent review of works and institutions by the Bank found Gujarat in compliance and two GOG's senior staff were trained on dam safety measures by the United States Bureau of Reclamation .
- **Fiduciary** . The Bank noted in its 2004 restructuring proposal to the Board that "While the project is not under SOE suspension, the audit reports of previous years had many observations . The project has submitted an action plan to settle the observations as soon as possible ." GOG's independent ex-ante audit has clearly mitigated some of the fiduciary risks . It found that about 11,500 housing grants were incorrectly awarded (ICR page 10) and government is taking action to recover funds . To date about US\$1.1 million has been retrieved . The Bank's Post Procurement Review (April 2009) rated overall fiduciary risks of the GOG's Project Implementation Unit as "moderately risky."

<b>12. Ratings :</b>	<b>ICR</b>	<b>IEG Review</b>	<b>Reason for Disagreement /Comments</b>
<b>Outcome:</b>	Satisfactory	Satisfactory	
<b>Risk to Development Outcome:</b>	Moderate	Moderate	
<b>Bank Performance :</b>	Satisfactory	Satisfactory	
<b>Borrower Performance :</b>	Satisfactory	Moderately Satisfactory	Interest in sustaining government institutions waned after the reconstruction period was over .
<b>Quality of ICR :</b>		Satisfactory	

**NOTES:**

- When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as

warranted beginning July 1, 2006.

- The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate .

### 13. Lessons:

- **Disaster recovery operations need to allow enough time to tackle both reconstruction and disaster risk mitigation** . There is a political and humanitarian imperative to rebuild and care must be taken to ensure sufficient time for risk mitigation, capacity-building and establishment of disaster management institutions . While the Bank's Emergency policy at the time did not allow enough time for risk mitigation and institutional capacity building (ERLs were limited to 3 years), the revised March 2007 policy on Rapid Response to Crises and Emergencies OP/BP 8.00 now provides more time for reconstruction, risk-mitigation and capacity building.
- **Making homeowners responsible for housing reconstruction makes sense** . This is a good way to lower costs, providing the schedule and regulatory oversight is well planned and transparent; and providing adequate support is made available to homeowners that may have difficulty in coping . Grant funding also provides the opportunity to address equity issues in housing ownership (e.g. women's rights).
- **Activities that are high -cost, take long to implement and call for special skills may be best tackled through separate projects rather than being bundled into disaster -relief operations** . In this project, the dams and irrigation component accounted for a quarter of the credit; and dam safety mitigation and canal reconstruction significantly delayed the project.

14. Assessment Recommended?  Yes  No

### 15. Comments on Quality of ICR:

A very good summary of a complex operation that is well-supported by excellent annexes . There are some minor caveats. In addition it would have been helpful to know the sampling technique and sample size for the data presented in tables on pages 28 and 29 ( the Region responded that these tables were based on three sample surveys that covered 20,000 households in aggregate, and that the sampling technique was done within "a heuristic framework of focused group discussion and extensive field surveys covering all reconstruction typology "). The urban and rural averages in the first table of page 28 are not consistent with the size of the subcomponents . The Region has explained this difference was due to the baseline value and the definition of the indicator (e.g. for pucca housing the baseline was 85.6% in urban areas and rural areas it was 66%).

a. Quality of ICR Rating : Satisfactory