

Rising from the Rubble: Reconstruction and Rehabilitation after the 2001 Gujarat Earthquake

By Maria Christina Dueñas

- **In January 2001, the state of Gujarat in India experienced the worst earthquake to hit the state in the last 50 years. Destruction was massive and widespread.**
- **Knowing that post-disaster assistance must come swiftly, focused on restoring facilities and services, and should be matched by equally quick action by the affected government, ADB formulated and approved the Gujarat Earthquake Rehabilitation and Reconstruction Project in less than 2 months. The project harnessed the energies of 19 Gujarat agencies.**
- **Establishing a consultative system for defining priorities and focusing on the results it yields will ensure that the most urgent and requisite actions take place as needed.**

Background

26 January 2001, India's 51st Republic Day¹, took on a different significance as a massive earthquake struck the state of Gujarat. The earthquake, which registered 6.9 on the Richter scale, was the worst to hit the state in the last half century.

The 2-minute quake, plus its month-long aftershocks ranging between 3–6 on the Richter scale, left four Gujarat districts in ruins and affected another 21. The death toll rose to 20,000. More than 200,000 persons were injured, almost 2 million were left homeless, and no less than 20 million were affected. The bulk of the devastation centered on five districts—Jamnagar, Kutch, Patan, Rajkot, and Surendranagar.

The Gujarat government, at that time already taxed trying to recuperate from the effects of severe flooding in 1998–1999 and punishing droughts in 1999–2000, requested assistance from the donor community. Within days, a team comprising disaster management and earthquake engineering experts from the Asian Development Bank, the World Bank, and bilateral donors assessed the damage. Their joint assessment report estimated that \$2.3 billion would be needed for rehabilitation and reconstruction, and another \$1–1.5 billion to counter economic damage from loss of production and lower fiscal revenues.

Recognizing the need for speedy rehabilitation and reconstruction, ADB processed an emergency project that took on a major chunk of the joint assessment's recommendations. Two months after the earthquake, on 27 February 2001, ADB approved the [Gujarat Earthquake Rehabilitation and Reconstruction Project](#).



Photos of the same spot immediately after the earthquake and after project intervention

Approach

The \$500 million project's main objective was to reconstruct and restore damaged infrastructure in Gujarat, especially in the five worst-hit districts.

Components. The project had several components. The housing component ensured that residential homes, particularly those of the poor, were reconstructed. The urban and rural infrastructure component dedicated resources to restoring and improving water supply, sewerage, sanitation, drainage, civic buildings, staff quarters, electrification, and lighting facilities and services. The power component rehabilitated substations, transmission lines, distribution systems, and myriad power-related facilities. The livelihood rehabilitation component provided financial and capacity development assistance to skills-based people affected by the disaster. The multi-hazard disaster preparedness and mitigation component prepared the Gujarat government for further disasters through the formulation of disaster management plans and information systems, and conduct of disaster management training.

Prioritization. The earthquake's devastation resulted in a long list of work that needed to be undertaken as quickly as possible. Resource constraints, however, required a systematic way for prioritizing this work. Through continuous dialogue with stakeholders, the project divided the work into highest priority and second priority clusters. The first 3 years of project implementation focused on the former. Items in the second cluster were addressed during the project extension period. Financing for this cluster came from project savings generated mainly through stiff competition among bidders, resulting in lower costs, and tax benefits for Indian suppliers.

Dedicated Entities. Before the earthquake, Gujarat had no entity responsible for earthquake preparedness and no contingency plans or policies for dealing with such disasters. Two weeks after the earthquake, the Gujarat government established the Gujarat State Disaster Management Authority to coordinate long-term construction. The Authority served as primary coordinator for the activities of the project. Complementing it was

¹ One of three national holidays in India, Republic Day commemorates the date on which the Constitution of India came into force.

ADB's Extended Mission in Gandhinagar, Gujarat, set up to ensure timely and speedy project implementation. The mission focused on early restoration of economic and social activities in the affected areas.

In addition to the above entities, the project initially worked with five agencies responsible for specific components. By the time of its completion, another 14 agencies had been pulled in to help, thereby ensuring ownership and decentralized implementation.

Results

ADB eventually turned over a segment of the housing component to the World Bank, which was also financing part of the reconstruction program, because of World Bank's better loan terms. However, it continued to finance the reconstruction of rural housing, with the work undertaken by nongovernment organizations in partnership with the Gujarat government. By project completion, almost 42,000 houses in 286 villages were fixed, exceeding the target by almost 13%. The workmanship in those houses improved on pre-quake standards, and the proportion of houses with separate toilets doubled.

In terms of infrastructure and services, close to 80% of affected households gained access to piped water supply, as opposed to 30% prior to the earthquake. Some 3,600 kilometers of major district roads and village access roads in 12 districts were rehabilitated and upgraded. More than these, however, were the improvements brought about by holistic planning. For instance, for the towns demolished by the earthquake, development plans were completed at an accelerated pace, including the conduct of some 180 public consultations in 8 months. Building code regulations were amended to include higher standards for seismic and cyclone safety. Land use zoning addressed congestion and aesthetics and reduced future vulnerability.

Restoration of the power supply was the most critical activity upon which all other relief and restoration measures depended. The project, through the Gujarat Electricity Board, immediately repaired substations and provided temporary accommodation



Newly constructed housing in the relocation site



Photos of the same road prior to the quake and after road construction

for operations staff. Next, it replaced damaged equipment, transmission lines, and transformers to ensure steady supply and distribution of power.

Livelihood interventions also raised employment levels, from 54% soon after the earthquake to 93% upon project completion. Most of the beneficiaries were women as the project's self-employment schemes targeted them.

Finally, Gujarat gained the ability to monitor earthquake activity online round the clock, thanks to seismic equipment procured and installed at 40 seismological observatories in Gujarat and linked to the Institute of Seismic Research in Gandhinagar. To better prepare for future disasters, the government also procured sophisticated medical emergency equipment,—i.e., cardioscope pulse oxymeters, transport ventilator, and defibrillator,—and 116 ambulances; these ambulances were distributed among local urban bodies.

Conclusion

The 2001 earthquake caused major disruption in the lives of Gujarat residents. With persistence, focus, and the support of development partners, the government and its people successfully rebuilt their towns for the better. It helped that assistance, especially ADB's project, came quickly, defined and focused on priorities, and tapped the resources of local entities, thereby promoting ownership and sustainability.

For further information, contact

Maria Christina Dueñas, Knowledge Management Officer, Knowledge Management Center (cduenas@adb.org), Asian Development Bank.

The [Asian Development Bank](#) is dedicated to reducing poverty in Asia and the Pacific.

www.adb.org/knowledgeshowcases

The [Knowledge Showcases](#) highlight innovative ideas from ADB technical assistance and other knowledge products to promote further discussion and research.

The views expressed in this publication are those of the author(s) and do not necessarily reflect the views and policies of ADB or its Board of Governors or the governments they represent. By making any designation of or reference to a particular territory or geographic area, or by using the term "country" in this document, ADB does not intend to make any judgments as to the legal or other status of any territory or area.