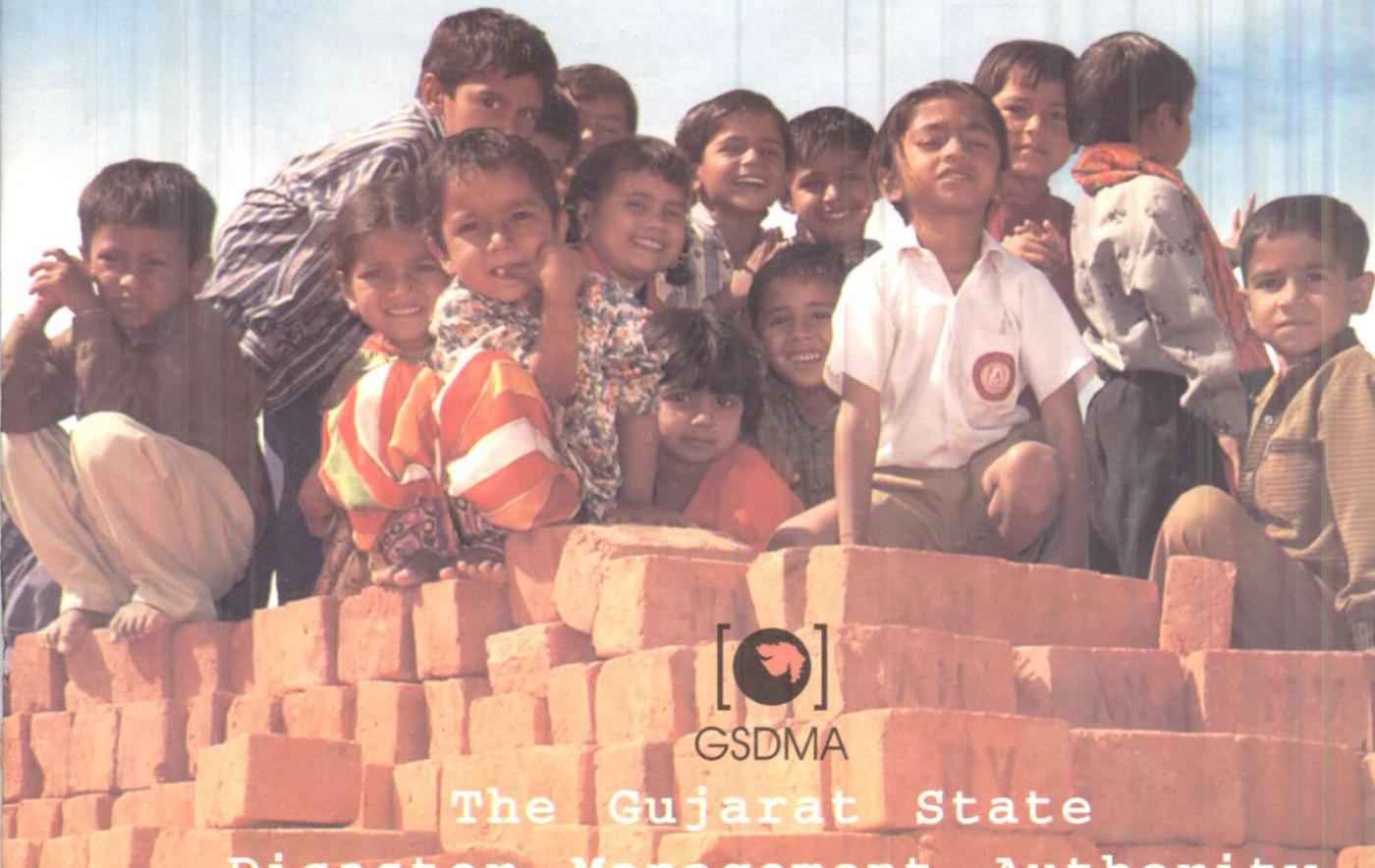


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# beyond reconstruction



GSDMA

The Gujarat State

Disaster Management Authority



**26** January, 2001, a devastating earthquake shook Gujarat, causing widespread loss of life and property.

Immediately after the rescue and relief phase, the Government of Gujarat launched a comprehensive reconstruction and rehabilitation program encompassing all aspects of human life. Reconstruction after any massive disaster is a challenging task. The task was tough due to the heavy damage, the geographical spread and remoteness of the affected areas. The program had to have balance between desires and needs, expectations and realities, strengths and limitations. Short term objectives and long term objectives had to be blended to produce a realistic as well as futuristic program.

Time is a relative term. While for the earthquake victims a period of two years is a long duration of suffering but in view of the enormity of reconstruction and rehabilitation it is rather a short duration. But even in this short duration what has been achieved in the field of reconstruction and rehabilitation is unparalleled. The pace of reconstruction and rehabilitation has compressed two decades into two years in terms of

rebuilding and repairing such a large number of houses.

We have been publishing newsletters and reports periodically to inform all the partners, funding agencies and well wishers about the progress achieved in reconstruction and rehabilitation. This publication is not only to inform all concerned about the status of reconstruction, but is also to acknowledge their efforts and contributions.

It is difficult to capture in words all the efforts, challenges and successes of a massive reconstruction program and is still more difficult to present them in a small booklet. Yet I am confident that this booklet provides a glimpse of the joint efforts of the people of Gujarat, the Government of Gujarat and many other organizations that participated in a great endeavor.

**P.K. Mishra**  
Chief Executive Officer  
GSDMA

March 31, 2003  
Gandhinagar



# Strength to Resist Hazards

What is the biggest achievement in a housing recovery program? Is it the number of houses repaired and reconstructed in such a short span of time? Is it setting up an international record in faster reconstruction? Is it covering such a vast geographical area of 7633 villages in 19 districts, comprising both urban and rural? Yes. These are achievements for which any state would like to be credited with. But what we have achieved in the housing recovery program goes beyond just facts and figures, comparisons and contrasts. It is the conversion of the housing recovery program into the largest disaster preparedness program with people's participation in every possible way.

Lintel band, gabel band and retrofitting have become the buzzwords with people in the earthquake-affected areas. Government has been able to convert housing reconstruction in the affected areas into a participatory long-term disaster preparedness program against earthquake and cyclone by adopting owner driven reconstruction strategy and assisting owners financially, technically and by providing materials.

In order to speed up the recovery the government could have easily contracted out the housing program. But this would have resulted in stereotyped houses not catering to individual needs and aspirations of people.

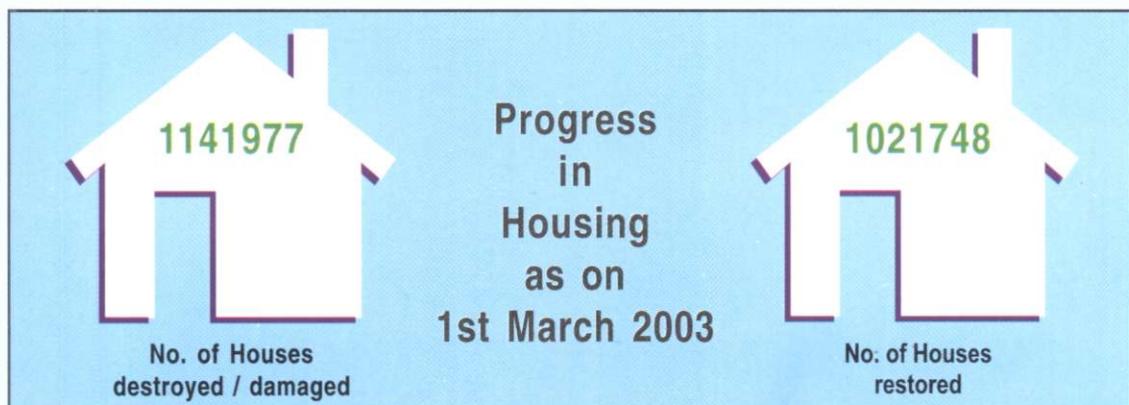
## Rebuilding Gujarat Brick by Brick



In the face of a tragedy of giant magnitude, it required a great deal of patience on part of the victims. What was destroyed in less than 10 minutes of ground shaking would have required about as many years to rebuild. But people of Gujarat showed patience, resilience and confidence and it became possible to restore 1021748 houses in less than two years.

If you walk in the remotest areas of rural Kutch and talk to anyone, be it an old lady, a school boy or an illiterate, one can learn more about multi-hazard resistant reconstruction and retrofitting than what one would learn in a university or college. Words like plinth band,

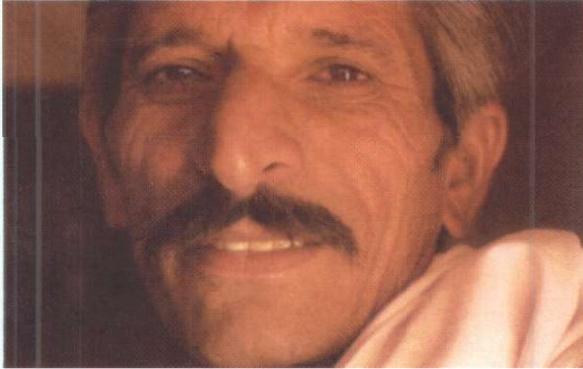
But it would have not led to awareness creation, education and capacity building of the communities. It would not have led to the creation of thousands of masons and engineers trained in multi-hazard resistant construction and retrofitting. Government opted the hard



way in the long-term interest of the state and the community by preferring owner driven reconstruction program.

Along with owner driven approach public private partnership program was also evolved to join hands with non-government agencies for better outreach and transparency.

— *Not just my home that I rebuilt...* —



for all natural calamities, and are also registered in the joint names of husband and wife thus empowering women.

## Highlights

- The biggest ever housing reconstruction program undertaken in the entire world in terms of numbers and geographic area

**Says a Sarpanch who was actively involved in reconstruction of homes of fellow villagers with compensation from the Government of Gujarat and also coordinated with engineers for technical inputs.**

All the newly reconstructed houses are tested for quality by third party quality audit over and above the regular supervision and monitoring by the engineers appointed for this purpose.

All the newly constructed houses are insured

- Housing assistance packages announced in a record time
- Choice of relocation or in-situ reconstruction decided by the village community
- Minimal relocation and no secondary displacement



**Construction is the most visible activity after the earthquake. About 1.8 crore bags of subsidised cement have been used in the last two years in reconstruction of houses.**

- Appointment of engineers in villages to supervise housing construction and provide technical guidance
- Payments in three installments for new construction to ensure multi-hazard resistant construction. The payment of second and third instalment only after verification and certification by engineers
- Masons and engineers trained for multi-hazard resistant housing reconstruction. Over 27000 masons and 6000 engineers trained
- Excise duty exemption for building materials produced in Kutch
- Massive information, education and communication activities undertaken to educate people on multi-hazard resistant construction
- Safe housing construction and retrofitting was taken up as an agenda in the gram sabha in the 18000 villages of Gujarat
- Separate guidelines prepared and distributed for technical personnel as well as for laymen on housing reconstruction and repair
- Guidelines prepared keeping in mind the local needs, designs of houses and availability of local material
- An exemplary work of preparing special guidelines for repair, reconstruction and retrofitting of masonry buildings
- Masons training manual in local language with easy to understand terminologies prepared and distributed for house reconstruction and retrofitting
- Committees at village- and district-levels have been constituted for grievance redressal and for strengthening the implementation program
- District Judge appointed as the Ombudsman to enquire into any complaints and petitions received from people and direct the administration to do the needful

*Reconstruction is the slogan in Gujarat...*



After the earthquake and terms like 'retrofitting', 'steel-band', 'gable-band' have become buzzwords echoing all over Kutch. The laymen who did not know anything about construction work are now able to guide masons and workers in terms of correct use of steel and cement for multi-hazard resistant houses.

### Progress in Housing under the Public Private Partnership Program as on 1st March 2003



Houses to be constructed



Houses constructed



Houses under construction

# A system that never stopped...

The agony of the earthquake could have been several times more severe had the health system not been able to deliver despite vast damage to its own infrastructure. Even though over five thousand buildings belonging to the public health system were either damaged or destroyed, the health system never stopped functioning.

As the Arabian proverb rightly puts it, where there is health there is hope and where there is hope there is everything. The first and foremost task in the affected areas was to bring the health system back to its routine

was that there was no epidemics out-break even after such a massive disaster. Both preventive and curative aspects were taken care of. A unique surveillance system was launched to check all the communicable and water-borne diseases. Information, education and communication campaigns were carried out for public awareness and vaccination drives were also conducted on a large scale.

Reconstruction of health sector is not merely recreation of structures, as they existed before but it also meant

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**W**hy not? was the answer ...

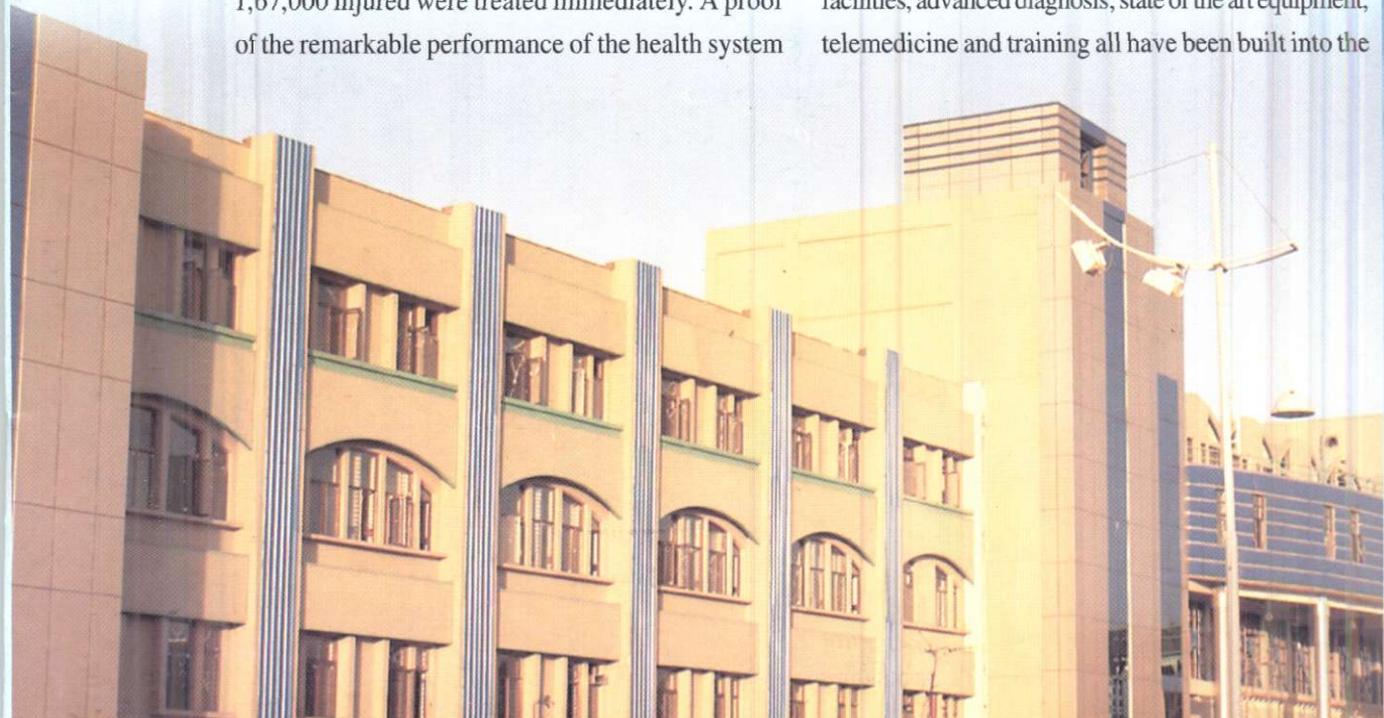
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**“Why not?” was the answer of Government of Gujarat to every proposal of reconstructing a health facility. As a result, the people in the worst affected areas of Kutch have some of the best health facilities.**

function to bring back hope. The hope was brought back by making all the health units functional immediately in 4,134 temporary and alternative arrangements. More than 17,000 orthopedic operations were performed and 1,67,000 injured were treated immediately. A proof of the remarkable performance of the health system

upgrading and equipping them properly. In order to provide better facilities, a utility survey was carried out in all the affected areas through professional agencies. Improvement of quality of service, up-gradation of facilities, advanced diagnosis; state of the art equipment, telemedicine and training all have been built into the



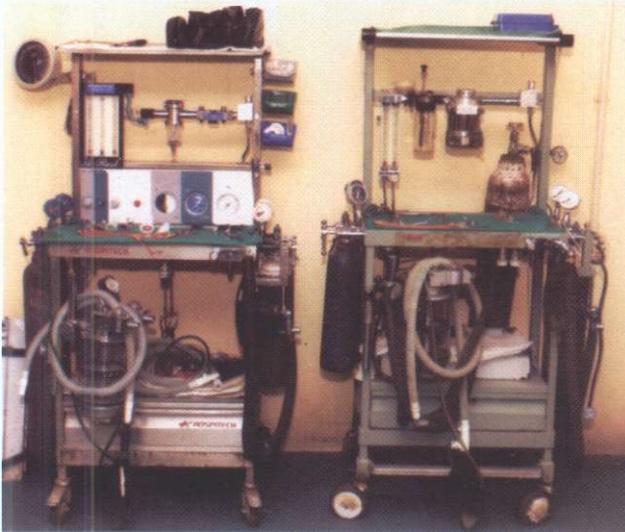
program. Majority of the repair and reconstruction of the health facilities are being done by donors and voluntary organizations.

Apart from treating physical illness, the department has also taken special care of mental trauma through counseling and therapy on a continuous basis.

Now health is back and so is hope. The people in the affected areas look forward for a healthy and safe future.

- 118 Anganwadis reconstructed and 212 in progress with upgraded facilities and improved structures
- Repairs of 1976 anganwadis completed with works for 249 in progress
- As many as 29 important health buildings repaired
- A total of 200 health buildings reconstructed and work in progress for 227 other health infrastructure buildings
- Quality improvement of service and training envisaged as part of the programme

*You name it and we have it ...*



**Most government health facilities have now become better equipped. Now they have sophisticated gadgets and equipment with specialist doctors and technicians. It means more facilities have trickled down to the grassroots.**

### **Highlights:**

- All hospitals and health units were made functional immediately in temporary and alternative arrangements
- No epidemic outbreak
- Orthopedic rehabilitation of more than 8000 handicapped persons by supplying crutches, walkers, seats, callipers, artificial limbs, tricycles etc
- Financial assistance to the injured and handicapped depending on the degree of injury and handicap
- Special monthly pension of Rs 2000/- for all the 105 paraplegic cases, and continuous therapy and treatment
- Bhuj civil hospital reconstructed by PMO at a cost of Rs 100 crores with base isolation technology, the first of its kind in Asia-a building that can withstand major earthquakes

**Anganwadis have not only been rebuilt but they have been strengthened to deliver a range of services in addition to nutrition supplement, day care and working as a focal point for pregnant and lactating mothers.**



# Learning without interruption

The earthquake left the education system completely shattered with over eight thousand classrooms completely destroyed and over forty two thousand rooms damaged. The first and foremost task was to save the academic year of the children. The Government of Gujarat, using its own resources and donor assistance, erected temporary shelters to start the schools in time and saved the academic year for thousands of children.

In order to involve the communities in the reconstruction program the repair of schoolrooms was entrusted to the village civil works committee. These committees by their active involvement repaired all the 42678 damaged schoolrooms in a record time. More than 7500 schoolrooms have already been reconstructed. The government of Gujarat has not restricted its efforts only to reconstruction and repair of the damaged schoolrooms, but the mission goes far beyond and nearly four thousand schoolrooms are coming up anew. All the new

schoolrooms are multi-hazard resistant with amenities like safe drinking water, child friendly spaces and furniture and space for sports activities.

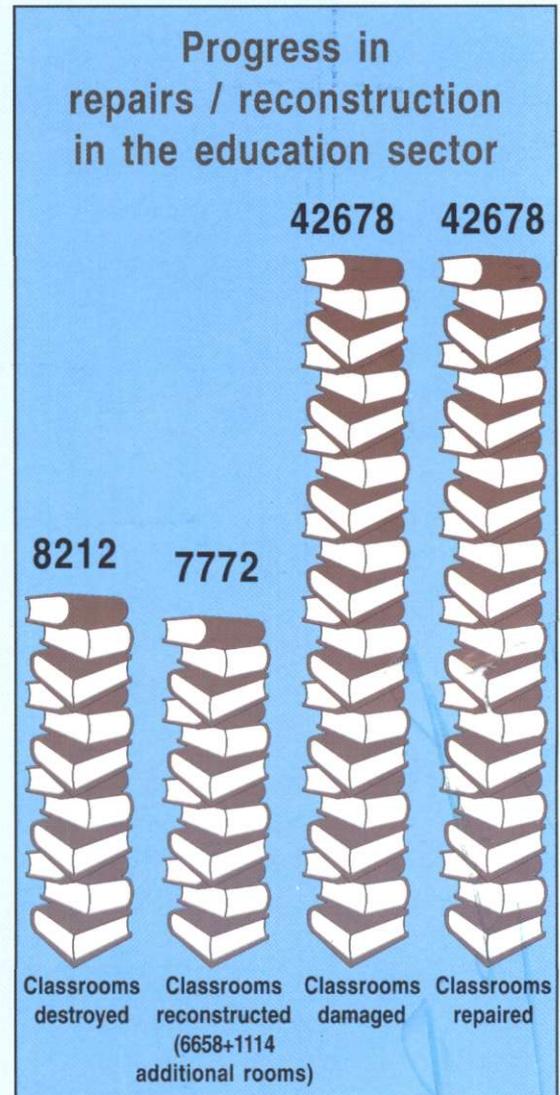
The recovery program not only covers primary education but also higher, technical and medical education. The repair and reconstruction of all the associated structures/buildings are also being taken up through various schemes. The colleges and technical education institutions would now have equipment and facilities, which did not exist earlier.

In order to make disaster preparedness a way of learning, the syllabi of engineering colleges and polytechnics have been revised to incorporate seismic engineering as a subject in the civil engineering courses. Lessons on disaster preparedness and natural disasters have also been introduced at the school level in 3<sup>rd</sup> and 4<sup>th</sup> standard.



## Highlights

- All schools reopened in time in temporary shelters saving the academic year for thousands of children
- Repairs of all 42678 damaged primary classrooms completed in a record time
- The schools are being reconstructed with multi-hazard resistant technologies
- Quality Assurance Consultants appointed for repair and reconstruction of classrooms
- Technical institutions are being reconstructed as centres of convergence with features like desalination plant for drinking water, rainwater harvesting, non-conventional energy sources for energy conservation and internal fiber-optics cabling for communication and latest equipments
- Bhuj Engineering College to be reconstructed as autonomous college at a cost of Rs 40 crores
- School syllabus to be revised to include lessons on disaster preparedness and response, for all levels
- The concept of ward civil works committee introduced for repair of urban/municipal schools
- Total reconstruction in education sector at a cost of Rs 760 crores



# Better skills for higher income

The earthquake rendered many not only homeless but also jobless. Restoration of livelihood is one of the most important aspects of Gujarat earthquake reconstruction and rehabilitation program, which makes the program truly all encompassing.

Government did not merely aim at restoration of lost livelihood but all the efforts are being made towards providing sustainable livelihood and reduction of economic vulnerability by empowering women.

The Government of Gujarat evolved a three-pronged approach for sustainable livelihood — immediate restoration of livelihood, enhancing the skills of artisans and empowering the artisans to market their skills.

Livelihood packages were declared to address the needs of a wide range of people from agriculturalists to rural artisans, from salt farmers to widows.

The assistance included free distribution of kits, financial assistance for reconstruction of lost structures, working

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## *Kutch handicrafts go global ...*

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For thousands of women and men in Kutch their traditional skills in handicrafts will now generate more substantial income as the rural artisans have been organised, imparted higher skills, supplied tools and given a marketing platform.

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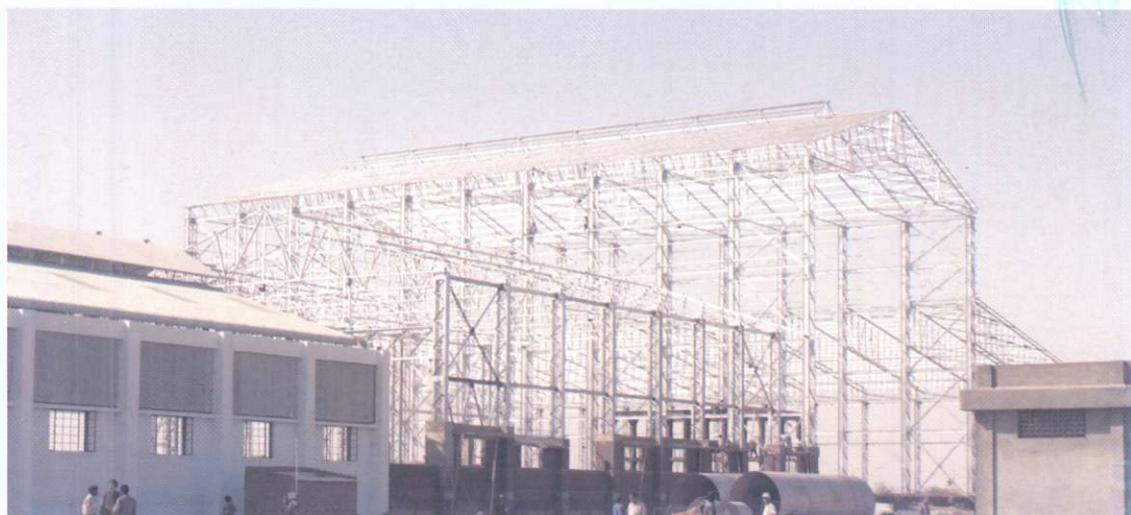


capital assistance, loans with principal and interest subsidy, marketing linkages and establishment of sales outlets, training and capacity building.

Government has also tied up with many premier institutions like National Institute of Design and National Institute of Fashion Technology to make the products of the artisans internationally competitive. A design institute is being set up in Kutch for training artisans. Livelihood creation and restoration for women is not a program to make them mere supplementary income resources but to make them have equal say on the home front. Training for both skill up-gradation and leadership are being provided to women. The livelihood restoration project for women intends to cover more than 17,000 women in the affected areas through 13 projects, which include the conventional sources like handicrafts to innovative ones like growing Aloe Vera.

### Highlights

- Over 58,000 farmers provided with input kits containing tarpaulins, spray pumps, farming tools, storage bins, seeds, chemical fertilizers and pesticides at a cost of Rs 6786 lakhs
  - Nearly 47000 farmers given assistance for farm structures like engine rooms, store rooms, etc at a cost of Rs. 1936 lakhs
  - Over 78000 farmers provided with irrigation assets including tube wells, motors, etc at a cost of Rs. 1110 lakhs
  - About 3000 handloom weavers provided with looms at a cost of Rs. 417 lakhs and as many as
- 1250 handloom weavers provided with working capital assistance of Rs. 125 lakhs
  - More than 30,000 tool kits distributed to artisans and handicraft artisans at a cost of Rs. 1054 lakhs
  - 1494 units of small industries provided with subsidy assistance at total cost of Rs 6763 lakhs
  - 13164 units of kiosks and shops provided with cash assistance at a total cost of Rs 517 lakhs
  - Subsidy and interest subsidy given to over 2000 service and trade units to the tune of Rs 2346 lakhs
  - 17320 women targeted as beneficiaries under women's livelihood restoration project. Till date 7636 women covered in five of the Earthquake affected districts
  - Total 174 self-help groups have been formed benefiting 3064 women
  - 2400 women covered under the scheme for providing self-employment to women in the form of working capital assistance, revolving fund for their entrepreneurial skills
  - Re-schedulement of loans to 7063 units (including Trade and Business)



# Rebuilding the state

Infrastructure is the mantra of development. In order to achieve the vision of going beyond reconstruction and making Gujarat economically vibrant, agriculturally and industrially competitive, it was necessary to reconstruct the damaged public infrastructure with improved standards keeping in mind the need and demand over a period of two to three decades. Thus the ambitious infrastructure reconstruction program covers both lifeline and utility infrastructure, which includes public buildings, dams, roads, heritage buildings, power, water supply and bridges. All the infrastructure facilities are being made multi-hazard resistant to withstand future disasters.

The Government is undertaking reconstruction and repair/retrofitting of large number of public buildings which include buildings occupied by civil administration, Home Department and Panchayat offices. The program also includes number of buildings that are classified as heritage structures and public buildings of urban local bodies. Other than repairs and reconstruction, retrofitting activity has also been taken up with the objective to retrofit selected unsafe public buildings for ensuring safety



Bridging the gaps of life - The earthquake caused major damage to a number bridges rendering far

in future earthquake and also to have a demonstrative effect to build confidence and promote retrofitting.

Roads, bridges and associated structures are being repaired and reconstructed. The rural roads are also being strengthened, reconstructed and resurfaced to provide connectivity to the affected villages. Improved roads due to speedier reconstruction in this sector have led to faster recovery in the affected areas by facilitating

like storage systems, reconstruction of water distribution networks, strengthening of water pipeline transmission systems and up-gradation of pumping and captive power generation system. The eleven water supply schemes, and eight bulk water supply schemes and village water supply schemes have been launched covering 1862 villages and towns.

The water supply department is doing a commendable

## *Public buildings restored to public ...*



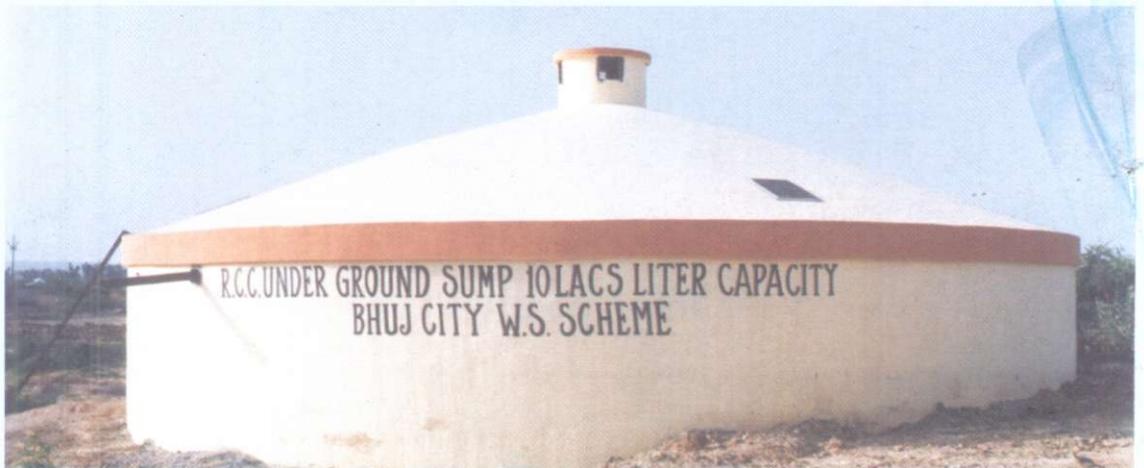
**Reconstruction of Taluka Panchayat Office Building at Sami What appeared to be a mammoth task - rebuilding or repairing 6284 public buildings - has been nearly accomplished.**

mobilisation of manpower and material to the affected areas.

Though water supply in the affected areas has been restored through water tankers, drilling of bore-wells and laying of pipelines, the long term reconstruction plan aims at providing permanent solution to the problem of drinking water in the drought prone earthquake affected areas. The activities planned under this component are —reconstruction of village level facilities

job by completing works ahead of the implementation schedule – making a record of finishing the entire project faster than any other recovery program.

The dams and other irrigation or water storage infrastructures in the Kutch and Saurashtra regions were severely damaged, thus at an estimated cost of Rs.2850 million, the restoration work has been planned into two phases, the Phase-I wherein 245 dams were emergency repaired before the onset of 2001 monsoon



and Phase II in which a total of 222 dams (185 dams in Kutch and 37 dams in Saurashtra) are to be strengthened. The design works have been taken up as per latest BIS codes under the close supervision of two Dam Safety Review Panels comprising independent national and international experts.

Power supply was also badly affected. The 9 towns of Kutch were in darkness and 925 out of 949 villages in Kutch were affected. The earthquake had caused severe damage to the power infrastructure in the affected areas, predominantly in the Kutch District. The short term objective of the government in the power sector is focused on the repair and reconstruction of substations and accommodation of operating staff using disaster resistant technology. The medium term objective is to replace redundant and damaged equipment, transmission lines and transformers to ensure reliable functioning of power transmissions and distribution systems and to improve systems efficiency. Also the low tension agricultural lines of over 3000 km length will be upgraded to high tension lines.

## Highlights

### (1) Public Buildings

- 6284 buildings have been repaired and 425 buildings reconstructed
- All the reconstructed public buildings have multi-hazard resistant features

- Implementation of rain harvesting system in all the projects of police housing
- Other than repairs and reconstruction, retrofitting is also taken up for ensuring safety in future earthquake and also to have a demonstrative effect to build confidence
- Third Party quality assurance and technical audit for repairs, reconstruction and retrofitting to ensure quality
- The valuable exhibits including the gold crown inlaid with precious and semi precious stones salvaged successfully from the Bhuj Museum by the Department of Archaeology
- Financial assistance ranging from Rs 50,000 to Rs 5.00 lakhs to owners of private heritage buildings for restoration

### (2) Roads and Bridges

- Suraj Bari bridge which was damaged has been repaired and reopened for transportation of relief material in six days
- 1469 kms out of the 1494 kms of state roads strengthened
- Reconstruction of additional 1060 km length of roads envisaged and work will commence shortly
- 90 bridges and associated structures restored
- All restoration work done for strengthening roads and bridges to withstand increased traffic due to heavy reconstruction work



**Putting the wheels of life back in motion. Kilometer by Kilometer- over a total of 1469 Kilometers of state roads have been reconstructed and repaired.**

- Quality assurance consultants have been appointed for monitoring the implementation of the environmental mitigation measures

### (3) Dam Safety and Irrigation

- All emergency repairs of 245 dams completed before monsoon of 2001
- Out of 222 dams to be strengthened, 150 are at various stages of design and tendering
- The Government of Gujarat has constituted two Dam Safety Review Panels for expert input in strengthening works of dams
- The strengthening work is being carried out as per latest BIS codes and will enable the dams to resist/withstand earthquakes in future and to make the dams cyclone resistant
- A consultant is being appointed for quality control and implementation progress monitoring

### (4) Rural Water Supply

- 19 water supply schemes launched
- 190 tube wells drilled and 1162 kms out of the planned 1848 kms of pipeline already laid for the water supply schemes

- 320 irrigation structures in progress
- Rural Water Supply Schemes planned and implemented at village level with participation of NGO/CBO's
- Use of hazard resistant construction technology and materials with specifications for earthquake resistance
- Replacement of damaged pipes with corrosion resistant metallic pipes with flexible joints
- Demand projection made for 30 years while planning of the system

### (5) Power

- Power was restored partially to the Bhuj town within 48 hours and to other 8 towns within 4 days. Power was restored in stages in the 925 villages within 6 days
- Work for repair and strengthening of transmission and distribution network is under progress
- 78% of work for repair of transmission equipment in Kutch and 100% in Rajkot, Surendranagar, Jamnagar, and Banaskantha is complete



## .... It is good to be alive

It takes time for the wounds to heal; it takes time to accept the loss of one's husband, one's parents, and one's children. Like the tongue which goes to the empty place when a tooth falls, the mind will again and again think of the loss. Government of Gujarat has done everything to rehabilitate the orphans, widows, aged and handicapped by declaring financial assistance, death compensation, residential facilities, provision for education and skill up-gradation, medical aid, therapy and counselling.

incomplete. Government of Gujarat recognized the need for a comprehensive rehabilitation policy to address the needs of the vulnerable section of the affected population and thus not only provided financial and material assistance but also psychological and moral support.

The foster parent scheme ensured that orphans are brought up by their relatives so that they are not uprooted from their social and cultural background. Pension is provided for the aged and widows in addition to the

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### *Putting things behind and ...*

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**The people of Gujarat are known for their persistence — the determination never to allow their energy or enthusiasm to be dampened even in face of tragedies like Jan. 26 earthquake.**

**Now the same characteristic persistence of Gujarat is seen in their efforts of rebuilding the state and attaining a higher level of preparedness.**

Without proper rehabilitation of orphans, widows, aged and handicapped any recovery program would be

death compensation given to them for their deceased family members. The physically handicapped are not

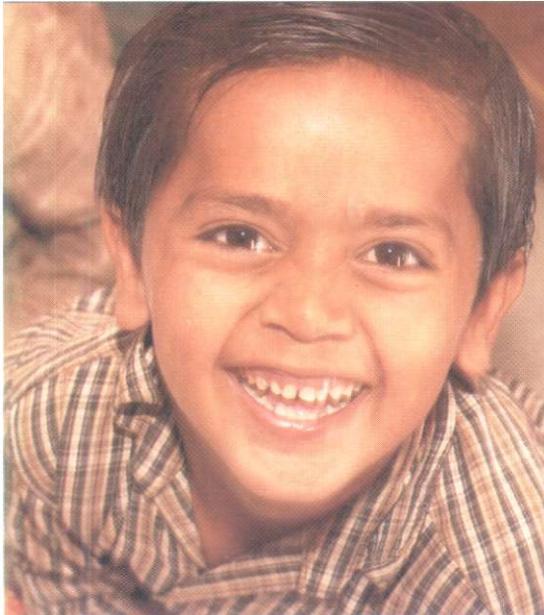


only provided with material and emotional assistance but also training for skill up-gradation, so that they can work and earn despite their limitations. The social rehabilitation efforts of the government have brought meaning to the lives of many — as an orphan puts it, “it is good to be alive.”

## Highlights

### (a) Orphans and Single Parent Children

- Compensation paid to 1758 orphaned children on the death of either or both parent in the form of joint account of Collector / DDO and the child



- 91 children are provided with monthly assistance of Rs 500/- under the foster parent scheme

- A surveillance mechanism established with the help of UNICEF and NGOs to keep a regular track of well being of orphans

- Total 14 Child Lines have been established with the help of National Childrens’ Fund. Five of these are in Bhuj, Anjar, Rapar, Bhachau and Gandhidham, which are run by local NGOs for providing assistance to the destitute women, children as well any person who is in need of help

- Three Bal Kutirs and three Balika Kutirs have been established for orphans and single parent children one each at Bhuj, Anjar, and Bhachau

### (b) Widows and Old Persons

- 999 widows and 651 old persons covered under monthly pension scheme
- Three Old age homes are functional in Bhuj, Bhachau and Anjar

### (c) Disabled

- Disability cards have been issued to 830 disabled persons which entitled them to avail various concessions and facilities
- 3017 supportive devices provided to disabled people through Blind Peoples’ Association funded by Ministry of Social Justice and Empowerment, Govt. of India

### (e) Destitute Women

- Service cum training center for earthquake affected women sanctioned
- Four training courses sanctioned for 550 women



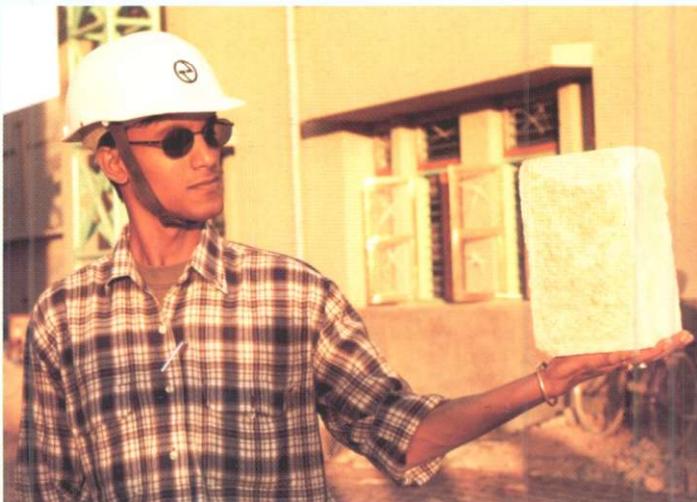
# Turning a tragedy into opportunity

Opportunity often comes in the form of misfortune says Napoleon Hill. The misfortune which fell on Bhuj, Anjar, Bhachau and Rapar, the four municipal towns of Kutch in the form of near total devastation in the earthquake is being transformed into an opportunity by Government of Gujarat. The four towns are being reconstructed as state-of-the-art towns by government at a cost of about Rs.414 crore. Urban infrastructure is also upgraded in the ten other severely affected towns in the state.

Recreating the infrastructure facilities in the four towns

process with people. Area Development Authorities have been constituted in these towns to stream line the process. To ensure compliance to the building codes for safety the General Development Control Regulations have been amended to incorporate BIS codes for seismic and cyclone safety. The height of buildings in these towns has been restricted to two storeys. Wider roads, decongestion by proper layout, revised zoning for regulated development in the town planning will not only ensure the aesthetic beauty both functionally and form wise but will also reduce the vulnerability and enable speedier emergency response in future.

## Gujarat goes hi-tech ...



**Latest construction technology makes Gujarat boast the only quake-proof building of its kind in the entire Asia. Built at a cost of Rs. 100 crore from the new District Hospital building in Bhuj can withstand an earthquake of high magnitude. Here an engineer shows a large pre-fab block which is light enough to float in water. The entire building is made of such blocks using latest designs and techniques.**

of Kutch as they existed before would have sped up the urban recovery program but speed is not the only criteria in this reconstruction programme. To avoid adding to the vulnerability of the four towns of Kutch by laying upgraded high quality infrastructure in the same old unplanned and unregulated towns, government decided to prepare development plans with 50 years perspective and town planning with 20 years growth in view.

The first and foremost task was to ascertain the rebuilding of towns in the same place on scientific basis. The Department of Urban Development conducted about 19 scientific studies to ascertain the safety of rebuilding these towns *in-situ*. Development plans and town planning was completed in a record time in a consultative

The four towns will also have modern infrastructure facility for water supply, internal roads, lighting, public building and sewerage. The urban infrastructure in the other ten towns is also reconstructed with upgraded facilities at a cost of about 125 crore.

Urban reconstruction is itself a complex task, and along with the task of new town planning it also needs public participation. Government of Gujarat is rebuilding the towns as the model towns of 21<sup>st</sup> century. Rome was not built in day, and the same applies to Bhuj, Anjar and other municipal towns of Kutch. The urban reconstruction is surely progressing slowly but steadily to make a complete transformation of the lives of people in these towns.



Cross drainage work

## Highlights

- Town planning completed for the four major towns of Bhuj, Bhachau, Anjar and Rapar in the Kutch District
- More than 180 public consultations held with different stakeholders within a record time of 8 months for the preparation of the town plans
- For scientific planning of these towns, 19 studies and analysis, such as base map preparation, total station survey, land use, contour mapping, geological, seismicity studies, assessment of relocation needs, urban design etc were taken up
- Town planning schemes prepared for the three towns of Bhuj, Bhachau and Anjar
- Plot allotments to the beneficiaries in the three towns of Bhuj, Bhachau and Anjar under progress
- Technical Advisory Cell consisting of trained architects and structural engineers were also created in these four towns to help residents in preparation of designs which are technically sound and legally acceptable



New overhead tank at Limbdi

- Building permissions are being granted for the new constructions in the four towns of Kutch
- A large number of infrastructure projects covering transportation, water supply and sewerage systems, solid waste management and municipal buildings are being taken in the four towns at an estimated cost of Rs 414 crore and for other 10 towns at an estimated cost of Rs 125 crore
- Modern infrastructure facilities for these four urban towns
- Outer ring roads, middle ring roads, radials, and grid roads are well planned in these towns on 'Equipment Based Technology' and will provide easy access to the people and facilitate rescue and evacuation in case of hazards
- Widening and resurfacing of the existing 'gamtal' roads taken up
- New water supply and sewerage system for the four towns of Kutch. The water supply network



**Road works at Mandvi under progress**

designed keeping in view the population growth upto year 2021

- National building code for structural and fire safety made mandatory along with the use of new ductile code for all public utility buildings. All works to be done using "multi-hazard resistant technology" and building designs as per BIS codes



**Middle ring roads and radials under progress.**

## Let the people decide

If one walks into the earthquake affected areas one can hardly believe that one is walking in the area which was totally devastated in the earthquake only two years ago. What is responsible for this change? What has made the Gujarat earthquake reconstruction program a success? Yes. Availability of funds, commitment of the government, and resilience of people contributed but the most important factor which made this program a success is the participation of people at all stages. The participation of the community was ensured in identification of the problem, arriving at a solution, and implementation of the program. The whole reconstruction and rehabilitation program has been designed and is being implemented as a community participation support program.

The decision to relocate or build *in-situ* was taken by the communities themselves in the gram-sabha meetings. Government chose the hard option of owner driven construction to help communities build long term disaster management capacity in the form of knowledge and technology transfer to the communities for multi-hazard resistant construction and retrofitting.

Communities are involved not only in housing reconstruction but also in repair and reconstruction

of school rooms. More than 180 public consultations were held in the four municipal towns of Kutch for town planning and infrastructure reconstruction.

Grievance redressal committees in the village and district levels have been constituted with local leaders, elected members and NGOs so that communities are involved not only in implementation of the program, but also in redressal of grievances, if any.

Through information campaigns, advertisements, video shows and booklets all the stakeholders were informed about the various assistance packages declared by government and the procedures for availing the assistance. Various communication activities including video shows, demonstration experiments, audio-visuals, banners, posters, booklets etc were used to create awareness about multi-hazard resistant construction. Independent third party social impact assessment and benefit monitoring has been launched to continuously assess the needs and aspirations of the communities and to provide feedback to the policy-makers on a continuous basis.

A pilot program of forming counter disaster brigades has been launched in 484 villages in the five worst affected districts. Construction of a model building and



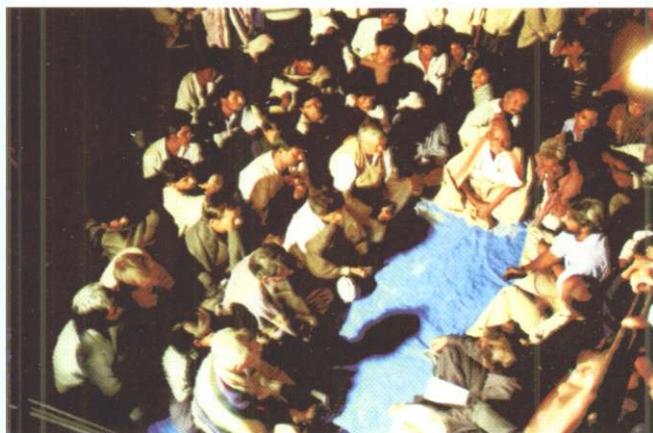
retrofitting of the existing buildings has been taken up as part of the pilot program to impart practical training to the masons and also to create awareness in the communities. After the completion of the building the same will be handed over to the counter disaster brigades formed, which will be used as the community disaster management center.

As part of the long term disaster preparedness a special program to reduce the economic vulnerability has been launched through the Department of Women and Child Development. The approach is to form self-help groups

## Highlights

- Over one million pamphlets on safe housing repair and reconstruction distributed in earthquake-affected areas. Publication and distribution of Nirdeshika I and II to guide people for construction and repair
- Four shake-table demonstrations conducted for awareness generation and confidence building, with the assistance of UNCRD
- Two technical cassettes on construction and retrofitting houses shown in 2500 villages
- One cassette on safe construction using the medium

## — Preparedness at the grassroots ...



**Disaster management was discussed as a principal agenda in all the 18,000 gram-sabhas in Jan '03.**

which will be trained for an income generating activity through NGOs with assured linkages.

The importance of communities as the first responders has been recognized and the roles and responsibilities of communities with upward integration with taluka, district and state in disaster management has been emphasized in the disaster management policy declared by the government.

Disaster management has been included as one of the permanent agendas in the gram-sabha meetings. In the recent gram-sabha meetings which took place from 12<sup>th</sup> Jan '03 to 24<sup>th</sup> Jan '03 in 18000 villages of the state, do's and don'ts in earthquake, the need for community preparedness and multi-hazard construction and retrofitting were discussed in detail. Various community groups for early warning, rescue, first aid etc are being formed in the villages.

of folk art Bhavai was prepared and screened in 2500 villages

- Audio cassettes in the form of *Lok Diro* by Biku Dhan Gadvi and jokes by Shahabuddin Rathod were prepared giving messages on multi-hazard resistant construction and played in community gatherings and meetings etc
- Display of messages on the need for multi-hazard resistant construction on 600 state transport buses in the earthquake-affected areas, and through hoardings
- Disaster management taken as principle agenda in all the 18000 Gram Sabhas conducted in a period from 12<sup>th</sup> Jan '03 to 24<sup>th</sup> Jan '03
- A Disaster Risk Management programme launched in 11 most hazard prone districts of the state with support of UNDP for strengthening community, local self governments and state administration

# Preparedness as a way of Life

The Chinese word for crisis consists of two characters which also means danger as well as opportunity. The crisis which struck Gujarat has also provided us with an opportunity to take initiative towards disaster prevention and mitigation.

Gujarat State Disaster Management Authority was created with a short term objective of coordinating the reconstruction and rehabilitation program and a long term objective of disaster management capacity building. GSDMA without waiting for the reconstruction

activities like training, sharing of international experiences, publishing of technical guidelines for multi-hazard resistant buildings, technology transfer, documentation of the lessons learnt, communications activities, and mutual exchange programs.

A disaster management policy for the state was prepared by GSDMA and approved by the government in October 2002. Gujarat has become the first state in the country to have passed a Disaster Management Bill that provides legal frame work to a range of issues related with disasters.

*I am prepared. Are you? ...*



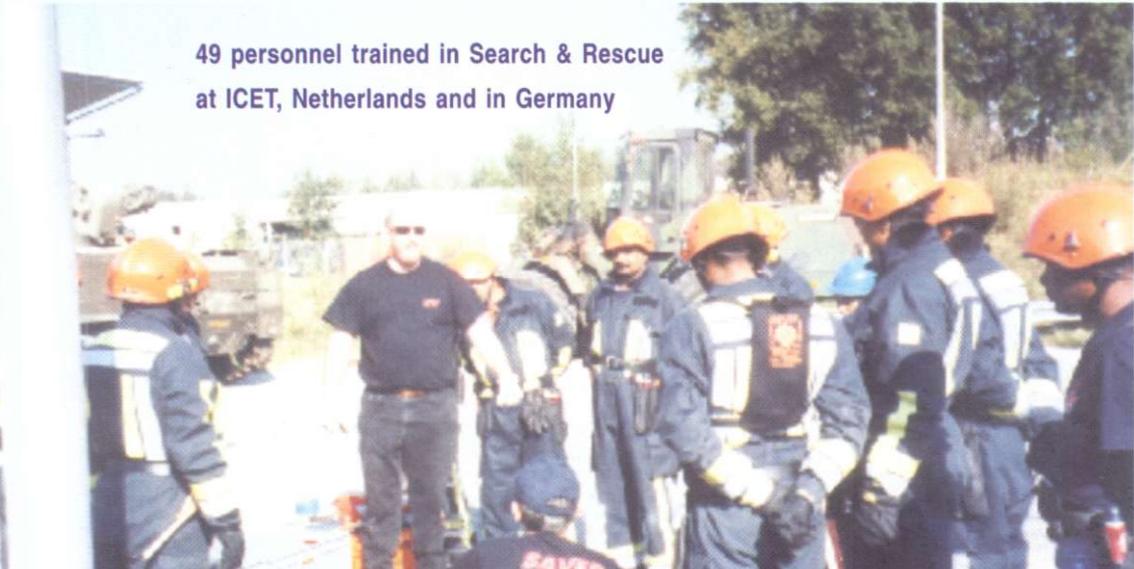
**More and more people are acquiring preparedness information because they have started looking at disaster preparedness as a way of life. Now an ever increasing number of people know what to do before, during and after a disaster.**

process to get over simultaneously launched a program for disaster management capacity building of all the stake holders.

The Authority has been successfully undertaking

Ten studies on various aspects of disaster prevention and mitigation like vulnerability and risk analysis, preparation of a vulnerability atlas, damage and loss assessment methodologies, early warning and emergency communication, review of building codes, writing of

**49 personnel trained in Search & Rescue at ICET, Netherlands and in Germany**



GDCR, streamlining of issue of building permissions, risk insurance and risk transfer mechanisms have been initiated. GSDMA is also setting up an Institute for Disaster Management as the first of its kind in Asia to impart training and for research on disaster management.

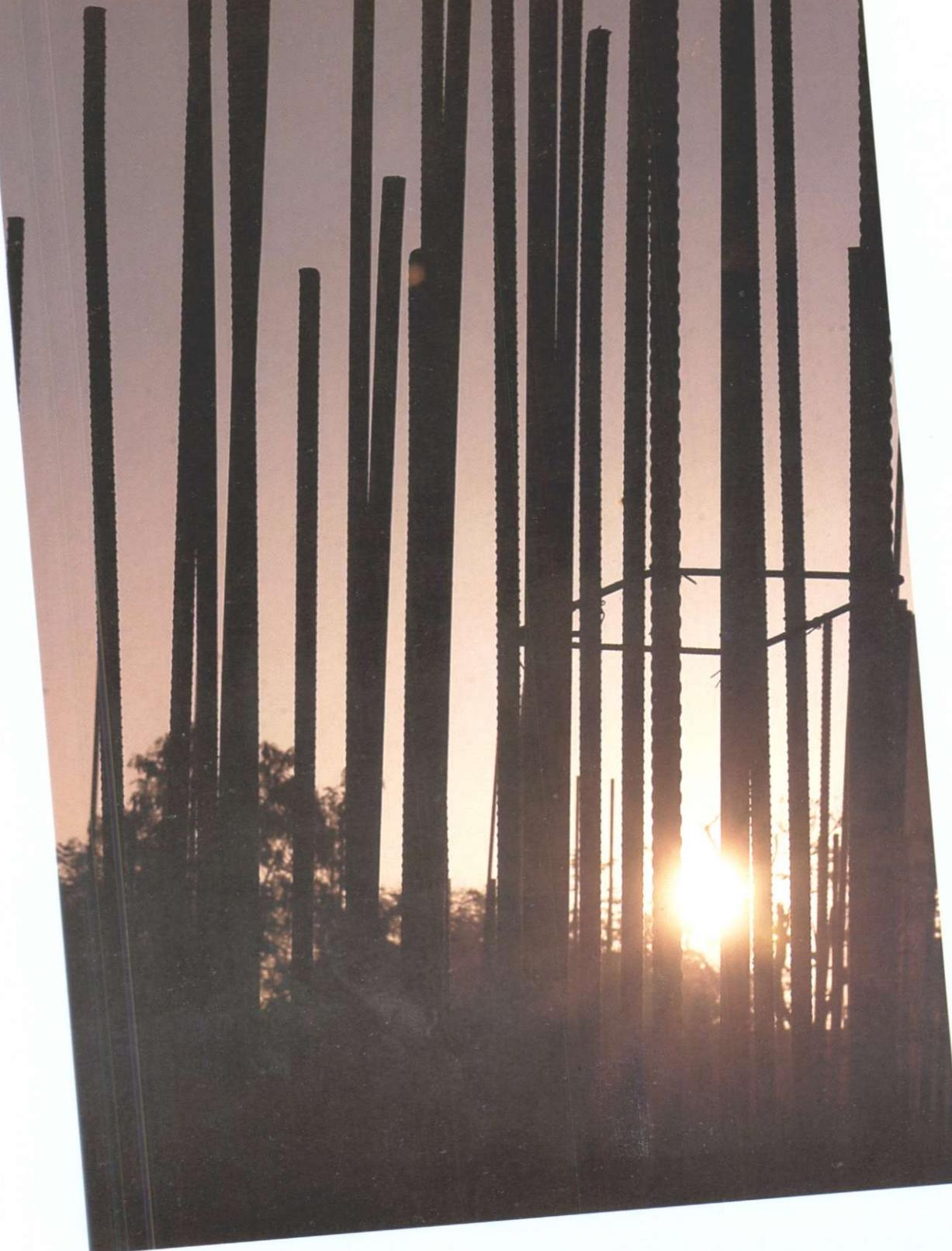
## Highlights

- Disaster Management Policy of the Government of Gujarat has been declared. The policy highlights include focus on pre-disaster prevention, mitigation and preparedness
- Synchronizing the efforts of different agencies in the state for better management of disasters
- Disaster Management Capacity building through education, information, training and research
- Mitigation through linking disaster management activities to development planning
- Disaster Management Bill passed in legislative assembly
- State level response plan for Chemical, Industrial and Nuclear Hazards has been prepared
- District level Disaster Management Plans prepared for all 25 districts containing contingency plans, evacuation plans, exhaustive database of resources etc
- Three multi-disciplinary teams imparted with advance training in Search and Rescue at ICET, Netherlands & Germany
- Emergency Response Centers to be established in Ahmedabad, Surat, Rajkot, Vadodara and Bhuj. The response centre of Vadodara will be a special center to tackle chemical disasters
- Emergency equipment being provided to the Ahmedabad, Surat and Rajkot Municipal Corporations
- One hundred municipalities to be provided with the emergency rescue equipments
- A network of 16 seismological Observatories and 40 strong Motion Accelerographs to be established/ upgraded at different locations across the state
- Ten studies being conducted covering various issues related to disaster management like, IT in Disaster Management, Seismic Microzonation, Vulnerability Analysis etc
- More than 25 workshops/seminars/training programs conducted for administrators, engineers, masons, architects and other stakeholders



**Early Warning & Emergency Equipment**

*With the strength of steel,  
confidence for a safer tomorrow soars*

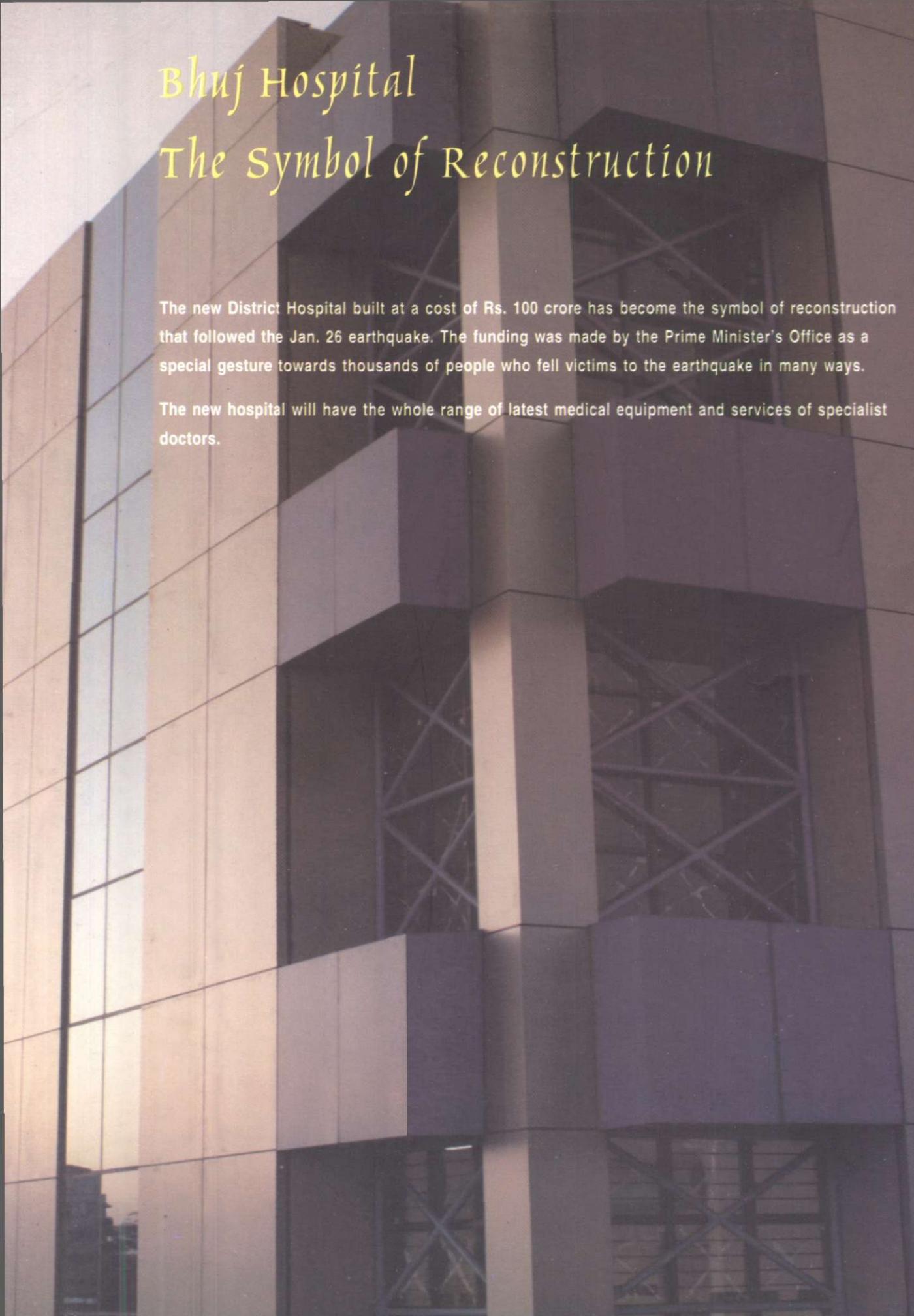




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# *Bhuj Hospital*

## *The Symbol of Reconstruction*

The new District Hospital built at a cost of Rs. 100 crore has become the symbol of reconstruction that followed the Jan. 26 earthquake. The funding was made by the Prime Minister's Office as a special gesture towards thousands of people who fell victims to the earthquake in many ways.

The new hospital will have the whole range of latest medical equipment and services of specialist doctors.