WHAT HAS CHANGED

AFTER

GUJARAT EARTHQUAKE 2001?

Presented by

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HAVOC AND DEVASTATION

26 January 2001: The Terrible Human Tragedy

Earthquake of magnitude 6.9 on Richter scale; 7.7 Mw (USGS)

- Reported lives lost 13,805
- 167,000 persons suffered injury
- Over 10 million people affected by the calamity
- Over 300 hospitals destroyed
- Over 10,000 small and medium industrial units went out of production
- 50,000 artisans lost their livelihood
- Around 5 million people needed to be given immediate relief
- 7,633 villages adversely affected, 450 villages flattened totally

One of the worst earthquakes in the last 180 years

....that too in the wake of two consecutive years of drought.
IMPACT: LARGER PICTURE

- **Direct losses**
  - Human lives
  - Livestock, other animals
  - Private property
  - Municipal infrastructure
  - Power/telecommunications infrastructure
  - Health/education assets

- **Indirect losses**
  - Export/import
  - Agricultural output
  - Industry/services output
  - Remittance income
  - Fall in earning potential (due to disability, trauma etc.)
  - Unemployment
  - Health hazards

- **Tertiary losses**
  - Long-term development
  - Overall investment climate
  - Funds reallocation
  - Community migration/relocation

- Gujarat earthquake estimate:
  - US$ 2097 Million

- US$ 635 Million

- Gujarat earthquake estimate:
  - US$ 3189 Million
APPROACH TO RECONSTRUCTION AND REHABILITATION.....
PROJECT SCOPE & OBJECTIVES

- Promoting sustainable recovery in the disaster-affected areas, and

- Laying the foundation for sustainable disaster management capacity in Gujarat.
PROJECT OUTCOME

- Sustainable rehabilitation and reconstruction

- Reduced vulnerability and subsequent saving of lives and property in future disasters through building houses and infrastructure to hazard-resistant standards;

- Increased community risk awareness and preparedness for natural hazards through access to enhanced knowledge of hazards and disaster reduction techniques; and

- Enhanced emergency preparedness and response capacity of responsible units (such as fire & rescue brigades) leading to safety of lives and property.
RECONSTRUCTION & REHABILITATION

To co-ordinate the massive effort, a nodal agency was created – Gujarat State Disaster Management Authority

- Mitigation
- Planning, Monitoring, Implementing
- Emergency response
- Reconstruction Planning and Program Management
- Guidance & Monitoring

... which effectively co-ordinates with all the entities associated with disaster management
The reconstruction program has been designed to address the needs of beneficiaries comprehensively...
Rehabilitation Policy

Short and Medium term Rehabilitation Policy...

28
Reconstruction and Rehabilitation packages

- Housing
- Rehabilitation of orphans and women

Packages for rural artisans
Packages for capacity building
Packages for handicraft artisans
Packages for agriculture
Package for tourism
Packages for industry, trade and services
Packages for agriculture

Supported by

- Revival of Livelihood and Economy
- Trade and Enterprise Resurgence
- Renewal of Social Capital
- Reinforcement of Critical Infrastructure
TOTAL ESTIMATED RECONSTRUCTION COST

Total Cost Rs. 7936 Cr.

- Housing: 339
- Education: 25
- Dams & Irrigation: 246
- Rural Water Supply: 1034
- Public Buildings: 743
- Urban Infrastructure: 591
- Transportation: 533
- Agriculture: 385
- Disaster Management: 307
- Rural & Cottage Industry: 642
- Project Management: 36
- Community Participation: 80
- Others: 2496

Total Cost: Rs. 7936 Cr.
TASK AHEAD

- Repair of 9,17,158 houses
- Repair of 9,001 public buildings
- Repair of 42,678 school rooms
- Reconstruction of 2,22,035 houses
- Reconstruction of 3,377 public buildings
- Reconstruction of 12,750 school rooms
- Strengthening of 8,903 km of transmission and distribution lines
- Repair/Reconstruction of 4,973 km of state highways and rural roads
- Laying of 3975 km of water supply pipelines
- Livelihood restoration of 200,000 families and much more
What has changed? Task Accomplished

- Over 9,08,710 (99%) houses repaired and 1,97,091 houses (89%) reconstructed
- 42,678 schoolrooms repaired (100%)
- 12,442 Schoolrooms reconstructed
- 3,391 public building repaired
- 1,245 public buildings reconstructed and work in 562 buildings in progress
- 5,223 km of transmission and distribution lines has been strengthened
- Repair/reconstruction of 640 km of state highways & 3,061 km of rural roads completed
- Laying of 2,750 km of water supply pipelines including drilling of 222 deep tube wells
- Restored the livelihood of 2,00,000 families
Benefit Monitoring Consultant has been appointed with the objective

- To develop a benefit monitoring framework to record changes and developments taking place as a result of GEERP interventions
- Provide a real time feedback on project implementation and effect mid-course correction where possible

Benefit to be monitored across 16 sectors

- Housing, agriculture, health, education, women’s livelihood, urban infrastructure, cottage and rural industries, roads and bridges, social rehabilitation, dams and irrigation, rural water supply, public buildings, power, industries and tourism, community participation, capacity building
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Before the Earthquake</th>
<th>After the Earthquake</th>
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<tbody>
<tr>
<td>* Number of Pucca houses</td>
<td>66%</td>
<td>100%</td>
</tr>
<tr>
<td>* Beneficiaries living in homes with separate toilets</td>
<td>32%</td>
<td>53%</td>
</tr>
<tr>
<td>* Insurance of reconstructed houses</td>
<td>6%</td>
<td>49%</td>
</tr>
<tr>
<td>* People knowing what to do before, during and after a disaster</td>
<td>0%</td>
<td>80%</td>
</tr>
<tr>
<td>* Employment level among women</td>
<td>42%</td>
<td>92%</td>
</tr>
<tr>
<td>* Water supply through pipelines at home</td>
<td>30%</td>
<td>34%</td>
</tr>
<tr>
<td>* Quality of life index</td>
<td>1.00%</td>
<td>1.143%</td>
</tr>
</tbody>
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Sample Size: 4000          Villages: 65                Urban Locations : 14

What has changed? Benefit Monitoring findings
What has changed? Benefit Monitoring findings

- 39% beneficiaries in the four towns (Bhuj, Bhacau, Anjar and Rapar) are living in larger houses today as compared to 15% in other towns.
- The proportion of beneficiaries surveyed receiving sweet water has increased by 10% in Kutch District.
- All G5 beneficiaries surveyed live in pucca houses.
- 23% more BPL families live in pucca houses as compared to 14% more APL families.
- More than 90% students who dropped out in both primary and secondary schools have rejoined.
- 72% women surveyed have more income now compared to pre-earthquake levels.
DISASTER MANAGEMENT - A PARADIGM SHIFT

- The Gujarat earthquake resulted in a paradigm shift in the policy from relief and humanitarian assistance oriented post-disaster intervention to a pro-active prevention, mitigation and pre-disaster preparedness.

- The Gujarat State Disaster Management Authority (GSDMA) was created on 8th February 2001 to act as a nodal agency for earthquake reconstruction after Gujarat Earthquake, 2001.

- Comprehensive Gujarat State Disaster Management Policy (GSDMP) was declared in November, 2002.

- For legal and regulatory requirement Gujarat State Disaster Management Act was enacted in March, 2003.
GSDMA POLICY

- The policy resulted in a shift of focus from relief oriented approach to proactive disaster mitigation and risk reduction.

- The policy identified hazard mitigation, vulnerability reduction, capacity building, integration of development planning with disaster management and emergency preparedness as the key activities to be undertaken as part of the long term strategy.

- Defined roles and responsibilities of all stakeholders in various phases of disaster management.
Enacted in the year 2003 by Gujarat Assembly

GSDMA act provides a legal and regulatory framework for disaster management in the state

Act spells out clearly the duties of the various departments of the government of Gujarat, GSDMA, local self governments and community in pre and post earthquake disaster phases

declaration of disasters, and provision of enhanced powers for the district and state government for effective rescue and relief in the aftermath of a disaster

State Relief Commissioner and District Collectors have been empowered for emergency response

Integrating development with disasters
More than 1,80,000 houses constructed through owner driven reconstruction

Government extended financial, technical and material help

All newly reconstructed houses are Multi-Hazard resistant

Owner driven reconstruction in Gujarat is one of the largest capacity building program for communities

All newly reconstructed houses insured against 14 types of perils including earthquake

29,679 masons and master masons trained to construct houses that are earthquake resistant

6,500 engineers trained in earthquake engineering and seismic design codes
WHAT GSDMA HAS DONE

- Formulation of Policies
- Preparation of DM Plans
- Preparedness Initiatives
- Capacity Building
- Mitigation Measures
- Community Preparedness
DISASTER MANAGEMENT PLANS

- District level Multi Hazard DM Plan prepared for all 25 districts in Gujarat State
- Prepared state level response plan for chemical, nuclear hazards, cyclone and flood
- Guidelines for cyclone contingency plan prepared and sent to districts
- State level earthquake management plan prepared
- On site/offsite plan for chemical disasters in all districts of the state prepared
Three teams of total 49 people from Fire brigade, Medicine and Traffic police successfully completed trainings at Netherlands and Germany.

The trained persons have in turn trained 190 first responders in the state.

Training in fire rescue for 130 employees of public sector units.

445 firemen/fire officers/home guards/police trained in Flood Rescue.

Familiarization training of 330 firemen/employees from 100 municipalities.

One Disaster Response Unit has been set-up under Ahmedabad Fire Brigade, with the help of Netherlands based NGO, CORDAID.

Emergency equipments and van provided to municipal corporations.

Search and rescue equipment to be provided to municipal corporations in the state.

Rescue kits such as life jackets, rings given to all districts prone to...
CAPACITY BUILDING

- Revised syllabus of all Engineering colleges to include seismic engineering.
- Training programs for the teachers of Engineering Colleges on the revised curricula.
- Syllabus of school has being revised by experts to include the basics of DM.
- Introduced a chapter on Disaster Management in the First Year of PTC syllabus.
- Gujarat School Safety Initiative launched to train school communities in 150 schools of cities such as Ahmedabad, Jamnagar and Vadodara.
- Massive program for training of teachers in all districts launched.
- Training of Trainers in Disaster Risk Reduction Program launched to train 100 Trainers of trainers, 1,625 teachers and 7,500 students and also to prepare school based DMP in one model school selected from each district of the state.
CAPACITY BUILDING

Cont.d

- Competency based certification of masons program has been launched for the first time in India and 62 masons have been certified by Gujarat Council for Vocational Training.
- Draft bill for licensing of engineers has been prepared.
- Provincial fire services to be set up.
- Gender sensitisation training program for disaster management launched to train government officials, elected representatives and community leaders.
MITIGATION MEASURES - GUIDELINES

- For all types of construction like masonry, RCC structures, compressed mud earthen wall structures etc.
- Guidelines for multi hazards resistant construction has been provided.
- Guidelines provided for using local materials in hazard-resistant construction.
- Guidelines specifically for low cost reconstruction and retrofitting.
- General Development Control Regulation has been revised.
- ‘Revision of Building Codes’ is being taken up as a separate study that will enquire into the suitability of the existing building codes w.r.t. specific requirement of the region of Gujarat.
STUDIES COMMISSIONED

- Seismic Microzonation
- Review Of Building Codes
- Early Warning and Communication System
- Hazard Risk and Vulnerability Assessment
- Damage & Loss Assessment
- Establishment of Emergency Response Centres
- Review of GSDMA – Its institutional set up, arrangements and future
INSTITUTIONAL MECHANISM

- Institute of Seismological Research (ISR)
- Gujarat Institute for Disaster Management
- 3 regional centres for Emergency Response planned in the cities of Ahmedabad, Surat & Rajkot of Gujarat
- 22 Observatories and 40 SMAs to be established upgraded
- A seismic pavilion named “Planet We Live In” at Gujarat Science City
- Revision of State Relief Manual
DM Shifted to home Ministry in Government of India from Agriculture Ministry

Based on Gujarat Experience, a National level disaster management authority on the lines of GSDMA is being worked out at the central government level

The planning commission has recommended for utilizing 10% of the plan funds for pre-disaster mitigation and planning activities

Draft bill on National Disaster Management has been prepared

Gujarat Experience resulted in a major change in the way reconstruction programs are being done in India and the neighboring countries.
GUJARAT EXPERIENCE-A MODEL

Gujarat Earthquake Reconstruction Experience have been looked at as a role model for reconstruction by

- Earthquake reconstruction program in Bam, Iran
- Tsunami reconstruction programs in Srilanka and Indonesia
- Tsunami rehabilitation and reconstruction programs of India
VISION
Imagine a Gujarat where.....

Disaster strikes;
- Risk assessment
- Information monitoring

Communities react with sense of urgency but in a planned way
- Awareness
- Training
- Drills
- Contingency plans

Only a few structures are damaged
- Planned development
- Policies, guidelines

... with a limited death toll
- Contingency plans
- Rapid response mechanisms

... and a limited impact on the state exchequer
- Risk transfer mechanisms
- Effective program management

Communities react with sense of urgency but in a planned way

Disaster strikes;

Imagine a Gujarat where....
INTERNATIONAL RECOGNITIONS

- GSDMA was awarded the UN Sasakawa Award for Disaster Reduction for the year 2003
- GSDMA awarded CAPAM award for Innovations in Governance
- GEERP awarded Green Award by World Bank for successfully integrating environmental concerns in the emergency reconstruction program.