Chapter III

Gujarat and Disaster Management

3.1 Gujarat: Multi-hazard Disaster History

The state of Gujarat has been facing the most overwhelming natural disasters in the last decade. These natural disasters have not just caused colossal destruction but have also paused a stop to various development programmes. The unique geo-physical setting of the state makes this region highly vulnerable to natural disasters like droughts, floods, cyclones, earthquakes, etc. In last decade either the whole state or a large part of it has witnessed extreme climatic conditions or drastic natural events.

The state has suffered from the severe droughts and acute scarcity situations, desertification of swathes of the state where economic ravages continuously the fragile ecologies and environmental degradation. Moreover, drought, epidemics, floods, cyclones, earthquakes and other human-made disasters dominated the last decade. In the year 1994 Surat suffered heavily due to pneumonic plague. Drought years followed by heavy rains caused floods in the state. In 1997, 12 districts of Gujarat were flooded, especially in North Gujarat, in 1998 South Gujarat and particularly Surat city was flooded and a cyclone struck Kandla port and other coastal areas causing colossal destruction. The next year was again a cyclone and scarcity year, and in year 2000 the economic capital Ahmedabad was flooded, causing economic losses in thousand crores. The year 2001 witnessed the most devastating earthquake and the next year 2002 communal riots. These disasters have not just resulted temporary economic losses and casualities, but have put a brake on the development process in the state since resources earmarked for development are diverted to meet the needs of disaster and its aftermath.
During the last 40 years from Gujarat’s inception, 23 years have been drought years. Starting from 1850, 24 cyclones struck the state and 9 earthquakes out of which three has been highly devastating. South Gujarat and the central part continue experiencing the demon of floods. Gujarat is having concentration of chemical industries, particularly, in a stretch of 400 kilometers from Ahmedabad to Vapi, known as the ‘Golden Corridor’. Ankleswar in Bharuch district is Asia’s largest chemical zone. The State being highly industrialized and looking at its multi-hazard industries, it is quite evident that these have the potential of causing multiplier ruinous effects. The state has a large number of chemical and pharmaceutical industries, petroleum industry, and major ports, which have, added to the state’s vulnerability to catastrophes. All through the recorded history, the state has endured natural disasters increasingly claiming more lives and causing disabling injuries and tremendous economic losses. In spite of improvements in prediction techniques, advances in telecommunications and better efficiency in emergency relief and rehabilitation, natural disasters seem to be occurring frequently.

This study is an endeavour to address the plethora of natural disasters in Gujarat, their colossal devastating impact, and the kind of response they have received. The study encompasses issues of preparedness and the transformations needed to mitigate the disaster consequences and future possibilities with regard to government response mechanism, policy initiatives, and promoting a culture of strategic and preventive planning and of preparedness and mitigation to scale down the disaster consequences with the help of application of management information system in natural disaster management.

3.2 Geographical Situation of Gujarat State

With a population of 1027 million (5% of the country’s population) in 2001 and an area of 1.96 lakh sq. km, Gujarat ranks tenth in respect of population and seventh in respect of area in India. With the proportion of urban population at 34.5 per cent compared to 25.7 per cent for the country, it is fourth amongst the
state in the country in respect of urbanization. It has the longest coastline of 1600 km along the western part of India extending from Lakhpat in the north to Valsad in the south. (Map A: Location)

While the Aravalli ranges run along the northern fringe, the Western Ghats cover a small portion of the south. Major rivers like Mahi, Sabarmati, Narmada, and Tapi coming from the neighbouring state enter through the eastern fringes.

Geologically the basic complexion of the state consists of volcanic rocks except the alluvial plains of North Gujarat and the western borders of the Saurashtra peninsula. Soils in the southern region are deep black; central and northern parts of the state have old alluvium, and the Saurashtra region has medium black soils. All along the coast saline alluvium is found.

### 3.2.1 Physiography

Gujarat can be divided into five major physiographical zones:

1) Alluvial plains extend form Banaskantha in North Gujarat to Bulsar in the south. The alluvial plain also extends westwards to the little Rann and Bunny area of Kutch.

2) The Eastern hilly tract lying between 300-1400 meters above mean sea level form a major divide. Most of the rivers in Gujarat originate from the hills in the east and flow towards south and south-westwards except Narmada and Tapi, which cut across the hilly tract along the faulted zones.

3) Uplands of Kutch-Saurashtra comprising sandstone, shale, basalt rocks with elevation of about 150-500 meters above mean sea level and slope radial towards the coastal tracts. Mount Girnar is an isolated mountain (117 meters above mean sea level) in the Saurashtra region.

4) The low-lying coastal tract ranging in elevation from 3-25 meters above mean sea level makes the coastal areas of Saurashtra and Kutch. These low lying areas extend from Rann of kutch through the Little Rann of kutch and the low lying delta region of Bhadar, Bhogavo, Sabarmati, Mahi, Dhadar, Narmada and Tapi rivers.
5) Marshy to saline desert of Rann of Kutch and Little Rann of Kutch extending to the saline tracts around the Gulf of Kutch. This vast expanse of salts mixed with clay is devoid of any vegetation or habitation. The general elevation of this tract varies between 1 and 4 meters above mean sea level.

3.2.2 Drainage

Drainage of all five physiographical regions of Gujarat State is distinct with the prevailing topographical and physical characteristics of the rock formation. Except Tapi, Narmada and Mahi, all rivers of the state originate from the eastern part. The rivers flow with highly meandering courses in a westerly direction and cut across the alluvial plains. The rivers Narmada and Tapi flow along structural troughs in a western direction. The rivers in Saurashtra originate from the central uplands and represent a radial drainage pattern.

3.2.3 Climate

Gujarat has humid, sub-humid and semi-arid to arid type of climatic conditions with the highest rainfall of about 2000 mm in the south, which gradually decreases to about 300 mm in Kutch. The rainfall pattern of Gujarat State has conspicuous impact on its economy. Droughts are frequent in north Gujarat, Kutch and Saurashtra regions due to poor and erratic rainfall.

3.2.4 Agriculture

The net area sown in 1995-96 and 1996-97 was about 9.6 million hectares, forming 49% of the total area of 19.6 million hectares and the gross cropped area was 11 million hectares. On the basis of weighted average, 49.8% of the area is under foodgrains, out of which 15 per cent is under bajra, 9.7 per cent under wheat and 7.3 per cent under rice. The balance of 50.2 per cent is under non-food crops, of which 21.1 per cent is accounted for by groundnut and 23.7 per cent by cotton. Gujarat is a major producer of groundnut and cotton, as in 1997-98, which was a good year, it accounted for 33.4 per cent of the country’s production of groundnut and 28.5 per cent of the country’s production of cotton.
Production of rice, wheat and bajra was 10.10 lakh tonnes, 17.03 lakh tones and 12.81 lakh tonnes respectively during the year 1998-99, as against 10.42 lakh tonnes, 16.47 lakh tones and 14.95 lakh tonnes during the year 1997-98. Production of groundnut in 1998-99 was 25.78 lakh tones as against 26.16 lakh tonnes for the year 1997-98.

During the preceding year (1999-2000) due to the deficient monsoon in Saurashtra, Kutch and northern districts of Gujarat, the estimated decline in the kharif foodgrain was to the extent of 29 to 31 per cent. The estimated figures of production showed a decline of 45 per cent in bajra, 83 per cent in jowar, 72 per cent in groundnut and 41 per cent in moong. It is estimated that Gujarat sustained a whopping loss of Rs.4500 crore because of failure of crops.

3.2.5 Water Resources

The availability of irrigation facilities is a key factor in increasing agriculture production. The ultimate irrigation potential through surface water as per the latest estimate is 39.40 lakh hectares, which includes 17.92 lakh hectares to be irrigated through the Sardar Sarovar (Narmada) Project. Groundwater resources are relatively limited and have been over-exploited in many parts of the state. There is an urgent need to curb the over-exploitation of groundwater and the only alternative left is augmentation of water resources through surface water. The overall position regarding water resources in the state can be seen from following table:

<table>
<thead>
<tr>
<th>Item</th>
<th>Ultimate Irrigation Potential</th>
<th>Irrigation Potential Created up to June 1999 (Likely)</th>
<th>Maximum Utilization up to June 1999 (Likely)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Surface Water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Major &amp; Medium Schemes</td>
<td>18.00</td>
<td>13.82</td>
<td>12.31</td>
</tr>
<tr>
<td>1.2 Sardar Sarovar Project</td>
<td>17.92</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>(With conjunctive use)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3 Minor Irrigation</td>
<td>3.48</td>
<td>2.40</td>
<td>1.45</td>
</tr>
<tr>
<td>Total – (1)</td>
<td>39.40</td>
<td>16.22</td>
<td>13.76</td>
</tr>
<tr>
<td>2. Ground Water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(With Private Resources)</td>
<td>25.48</td>
<td>20.21</td>
<td>17.19</td>
</tr>
<tr>
<td>Total – (1+2)</td>
<td>64.88</td>
<td>36.43</td>
<td>30.95</td>
</tr>
</tbody>
</table>
It indicates total irrigation potential created up to June, 1999 and maximum utilization at present comes to 47.70 per cent of the ultimate potential.

The latest available figures of actual irrigation are for the year 1994-95 and the net irrigated area is 30 lakh hectares, forming 30% of the net area sown

As indicated in the table above, a major part of the groundwater resources already stands exploited. Out of the existing 183 talukas 31 fall in the over-exploited category, 8 in “dark” category and 42 taluka in “grey” category11. In north Gujarat, particularly in Mehsana and Banaskantha, water is being extracted from a depth of 1000 and 1500 feet, heavily depleting the entire underground water reservoir.

3.2.6 State and other States at a Glance

Gujarat is the only and leading state to have a set up like Director, Non Government organisations co-ordination. It was set up with the objective of strengthening the network of NGOs in the state for supplementary activities in various government schemes and projects. The Director, NGO Co-ordination, has to create a database of NGOs in the state. The set-up can provide a supportive role in Disaster Management activities also.

Most of the states in the country have control rooms at state level. Some of states like Maharashtra and Andhra Pradesh have state of art level control rooms. Some of them are on developing stage. The control room of Gujarat state is state of art level in terms of hardware but still there is room for development in terms of software.

The existing administrative structure to deal with the ravages of the earthquake were not found satisfactory and hence the Gujarat Government constituted the Gujarat State Disaster Management Authority on 8 February, 2001 with the chief minister as chairperson and ten members. In a similar fashion, immediately after the Orissa cyclone the Orissa government constituted the Orissa state disaster management authority, on 29 October, 1999. In spite of being two years junior GSDMA is performing well by all means over and above the rehabilitation of the 2001 earthquake affected people.
3.3 **Vulnerability Profile of Gujarat:**

On account of its geographical position, climatic and geological setting, Gujarat has had a fair share of disasters of varying magnitudes from times immemorial. Non-availability of moisture during the greater duration of the year and majority of the region being arid and semi-arid makes the state's landmass vulnerable to drought; on the other hand, heavy concentration of rainfall within a span of a few rainy days in large parts of the state causes heavy run-off, leading to high floods and water-logging problems. The tectonic movements of the plates of the Indian subcontinent make the state vulnerable to severe seismic disturbances and the cyclones rising from the Arabian Sea frequently attack the 1600 km coastline of the Saurashtra peninsula and Kutch. Refer Table 3.2, 3.3

<table>
<thead>
<tr>
<th>Components of Vulnerability</th>
<th>Variables involved</th>
<th>Socio-economic and Technical Determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Well-being</td>
<td>Nutrition; physical and mental health; Morale/faith; Capacity for self-reliance</td>
<td>Class Position; Gender; Ethnicity; Age; State and Civil Society</td>
</tr>
<tr>
<td>Livelihood resilience</td>
<td>Income opportunities; Livelihood type; Qualifications; Assets and savings</td>
<td>The above plus shifts in power relations and effects on livelihood after hazard impact</td>
</tr>
<tr>
<td>Self Protection</td>
<td>Building quality; Hazard protection; Location of home and livelihood;</td>
<td>Socio-Economic: as above plus: Technical ability and knowledge of and availability of protective measures;</td>
</tr>
<tr>
<td>Societal Protection</td>
<td>Type of protection, its cost and feasibility; return period; Duration; Intensity; Magnitude</td>
<td>As above plus, Building, regulations Technical interventions by higher levels; Level of scientific knowledge Characteristics of technical practices (elitist?) Quality and robustness of insurance systems; Type of science and engineering used by state and dominant groups</td>
</tr>
<tr>
<td>Social Capital</td>
<td>Social cohesion; Rivalries; Number and strength of potentially conflicting groups;</td>
<td>As above, plus, type of state power; capacity for civil society to develop and enable positive networks and interactions;</td>
</tr>
</tbody>
</table>

80
Table 3.3 Vulnerability Matrix- Components of Vulnerability and Variables affecting them

<table>
<thead>
<tr>
<th>Variable Component</th>
<th>Income Group</th>
<th>Gender</th>
<th>Ethnicity</th>
<th>Type of State</th>
<th>Civil Society</th>
<th>Science &amp; Technology distribution and type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial well-being</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livelihood</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Resilience</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Self Protection</td>
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<td></td>
<td></td>
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<tr>
<td>Societal Protection</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social capital</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

3.3.1 Vulnerability Atlas and Hazard Mapping

This study has put maps and information and data regarding hazards and risk from the Vulnerability Atlas of India. In relation to the Yokohama Strategy for Safer World in 1994, the Ministry of Urban Development and Poverty Alleviation, Government of India (1994) had constituted an expert group to study the following issues related to impact of natural hazards particularly with respect to housing and infrastructure:

- Need to identify vulnerable areas with reference to natural hazards such as earthquakes, cyclones, floods, etc., having a potential of damaging housing stock and related infrastructure.
- Preparation of a vulnerability atlas showing areas vulnerable to natural disasters and determination of risk levels of houses.
- Formulation of a strategy for setting up techno-legal regimes for enforcing disaster resistant construction and planning practices in natural hazard prone human settlements.

The result of this was in three parts:

Part-I Techno Legal Measures
Part-II The Vulnerability Atlas of India
Part-III Technical Guidelines
The Vulnerability Atlas of India is an appreciative initiative taken by the Government of India in the direction of long-term disaster mitigation; however, it certainly has limitations, which one can overcome by detailed hazard mapping studies at local levels with more accuracy. The Vulnerability Atlas has been prepared with following regulations and information, and that has imparted certain limitations to the Atlas:

- Earthquake Hazard Maps are based on the Seismic Zoning Map of India given in IS; 1893 1984. Seismo-tectonic features are marked as per ONGC maps. However, the seismic zoning map of India has not been upgraded since 1960. In these last four decades, ground movements capable of changing the existing fault lines and/or developing new faults must have taken place. There have been no recent attempts to produce new hazard maps using satellite imagery in lineament mapping, along with geo-dynamic measurements of strain accumulation. (Map: B Earthquake Prone Zone)

- The Cyclone and Wind Hazard maps are based on wind speed maps given in IS 875 1987 (part III). Along with design wind speed, the numbers of cyclones, which have crossed each latitude of the seacoast in the past, are also marked. The built structures' vulnerability is derived from the Census of India (1991). The supporting base information is not upgraded, which may to improper final results. (Map: C Cyclone Hazard Map)

- The Flood Hazard Maps based on the Flood Atlas of India prepared by the Central Water Commission. Maps show unprotected areas close to the rivers liable to flooding, as well as areas that have been protected using bunds, but other low lying areas outside river flood plains (which are also flooded during heavy rains due to choked drainage path) are not plotted because of lack of data, which has to be collected by each state/local administration. (Map: D Flood Hazard Map)
3.3.2 Physical Vulnerability

Physical vulnerability relates to 14:

- Physical location of people (flood plains, low-lying areas, cyclone paths, fault zones)
- Human settlement’s proximity to the hazard zone (this can be proximity to hazardous industry also apart from the natural hazard zone)
- Resistance offered to hazards by the shelter (technical capacity of the building)
- Standards of safety maintained to counter the effects
- Dependency on natural resources and environmental degradation (especially in droughts)

For example people are only vulnerable to floods because they live in a flood prone area, physical vulnerability also relates to the technical capacity of buildings and structures to resist the forces acting upon them during a hazard event. It is apparent by now that the Gujarat is vulnerable to multiple hazards having multiplier effect. Out of the total 25 districts, the districts of Ahmedabad, Bharuch, Surat and Valsad are prone to all four hazards indicated in the Table 2. Other districts except Rajkot are prone to three hazards. Thus, more or less the entire state is prone to various kinds of natural hazards and more people are now vulnerable than ever before. It has also become apparent that, on the one hand, particular communities are periodically exposed to the same hazards, on the other hand, hazards are striking areas where they are not expected and also in higher magnitude.

The industrialized part as well as the coastal area having major ports and gigantic industries hold enormous potential of devastation owing to the multiplier effect of natural phenomena that can strike on these units/areas. The Kandla port was affected very badly during the cyclone of 1998. The port handles chemicals that may prove to be extremely hazardous if any calamity strikes. While looking at the cyclone hazard map, it is apparent that starting with Ahmedabad district to Kutch, starting from the shore to some kilometers towards land, the whole of the coastline is in very high damage risk zone B (50m/sec wind speed)
Areas from Kheda district to Valsad, Silvassa and Dadra and Nagar Haveli, fall in the moderate risk zone (47m/sec wind speed). Thus, all the ports and industries falling in this belt are highly vulnerable to severe damages. The Earthquake Hazard Maps and the Flood Hazard Maps by BMTPC also indicate the state’s physical vulnerability. The Earthquake Hazard map has indicated the underlying principle deep-seated faults, and major and minor faults. Though, the Flood Hazard Map has not indicated the low lying areas, it can be very useful with locally available data of low lying areas and other geographical characteristics are used for any further planning.

From the earthquake hazard map of Gujarat, it is seen that almost whole of the State lies in seismic zones of probable Intensity IX (severest) to VII (moderate) on M.S.K. Intensity Scale. The Kutch district, which has 80.3 per cent of its areas in intensity IX Zone, has been subjected to earthquakes in India. Kutch has a long-standing history of earthquakes. Gujarat is located in the Himalayan collision zone where the Indo Australian tectonic plate slides under the more northern Eurasian plate in a predominantly northern direction at a rate of 2 centimeters per year. This process compresses the region and the crust is being forced into folds of young deposits. This process causes active fault lines below the surface of the ground known as “blind thrust faults”. These faults do not rupture the surface, but create rolling hills. There is evidence of at least four of these hill patterns in Gujarat.16

Most of the coastal areas of the state fall in the 50m/s (180km/h) wind velocity zone, other areas fall into 47m/s, 44m/s and 39m/s velocity zones. The state has experienced 24 cyclone crossings from 1850 to 2000 out of which 11 have been severe cyclonic storms. The probable maximum surge height that can be expected to strike the coast is as much as 5m above concurrent tide level. During the cyclone of 1998 there have been incidences of this height being 8 meters. A large proportion of the buildings in the state run the risk of moderate (M) to very high (VH) risk from high velocity winds. The nine districts that fall in the high-risk zone with cyclones partly or fully are Junagadh, Rajkot, Jamnagar, Amreli, Bhavnagar, Kheda, Surat, Bharuch and Kutch17
Table 3.4 Multi-hazard Prone Districts in Gujarat.

<table>
<thead>
<tr>
<th>District Name</th>
<th>Percent area under EQ intensity, M.S.K.</th>
<th>Percent area under wind zone</th>
<th>Max. Probable storm surge ht.</th>
<th>Percent area flood prone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IX or more</td>
<td>VIII</td>
<td>VII</td>
<td>Speed m/s</td>
</tr>
<tr>
<td>Ahmedabad*</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Amreli</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Banaskantha</td>
<td>0</td>
<td>0</td>
<td>61.1</td>
<td>47</td>
</tr>
<tr>
<td>Bharuch*</td>
<td>0</td>
<td>0</td>
<td>16.1</td>
<td>44</td>
</tr>
<tr>
<td>Bhavnagar*</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Dang</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>44</td>
</tr>
<tr>
<td>Gandhinagar</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>44</td>
</tr>
<tr>
<td>Jamnagar*</td>
<td>0</td>
<td>0</td>
<td>58.4</td>
<td>50</td>
</tr>
<tr>
<td>Junagadh*</td>
<td>0</td>
<td>41.6</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Kutch*</td>
<td>80.3</td>
<td>19</td>
<td>0.7</td>
<td>50</td>
</tr>
<tr>
<td>Kheda</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>44</td>
</tr>
<tr>
<td>Mehsana</td>
<td>0</td>
<td>17.1</td>
<td>82.9</td>
<td>47</td>
</tr>
<tr>
<td>Panchmahals</td>
<td>0</td>
<td>0</td>
<td>78.1</td>
<td>44</td>
</tr>
<tr>
<td>Rajkot*</td>
<td>0</td>
<td>15.9</td>
<td>84.1</td>
<td>50</td>
</tr>
<tr>
<td>Surat*</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>44</td>
</tr>
<tr>
<td>Vadodara</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>44</td>
</tr>
<tr>
<td>Valsad*</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>44</td>
</tr>
</tbody>
</table>

Source: Vulnerability Atlas of India: Gujarat (*Districts prone to cyclone including storm surge)

Gujarat is moderately prone to the floods hazard. The Flood Hazard Map shows that the flood prone areas are mainly along the principal rivers in the state. The problems associated with these rivers are mainly inundation of areas due to spilling of riverbanks and inadequate drainage at places and erosion of banks. The Narmada, Sabarmati and Mahi basin frequently experiences river floods due to heavy rains in the upstream, and the Saurashtra region experiences floods due to excessive rainfall as in the years 1982, 1983 and 1988.

While referring to relative importance of different ecological disasters for Gujarat, Earthquake, though envisaged once in 50 years, can create the most ruinous effects. Cyclones and floods with comparatively less vulnerability of the State can be dealt effectively. Earthquake with no warning and with most of the State’s area under Zone-V to Zone-III, the risk involved is much higher.
Moreover, the Golden Corridor of Gujarat, though lying in the Moderate Damage Risk Zone (MSK VII) has the potential of great economic losses even with lower intensity earthquakes.

Major Parts, the Golden Corridor and the Silver Corridor of Gujarat can prove to be ruinous if their potential of multiplier hazard is overlooked while planning out long-term mitigation and preparedness measures. The increase in damages due to disasters is being brought about by concentration of people in disaster-prone areas. Why this is occurring can be the topic of a volume all on its own. However, in terms of disasters, what it translates into is the understanding of increasing and changing vulnerability.

3.4 State Level Disaster Response

In the context of the federal structure of the country, the responsibility to cope with natural disasters is essentially that of the state government. The role of the Central Government is supportive in terms of supplementation of physical and financial resources. Only two entries in the State list that are remotely related to the subject of disaster management are entry 14, which deals with agriculture, including protection against pests and plant diseases, and entry 17, which deals with water, including water supply, drainage and embankments. This is grossly inadequate, and disaster management needs to be included in the Seventh Schedule of the Constitution.

3.4.1 Set up at State level

The nodal department for formulating, controlling, monitoring and directing measures for disaster preparedness and for organizing rescue and relief operations with necessary co-operation among all the departments of the state government. The chief secretary is in overall charge of the relief operations in the state and the Relief Commissioner and the Additional Relief Commissioner function under his direction and control. The State Relief Commissioner, is in charge of the relief and rehabilitation measures in the wake of natural disasters in
the State. In many states, the department of revenue is also in-charge of relief. The state government has framed the state contingency plan and relief manuals and the districts have their contingency plans that are updated from time to time.

In case of a disaster, the state government invites NGOs and other national and international relief organizations to join in the efforts to reach out to the victims. GSDMA is a nodal agency formulated after Earthquake 2001 under and the chief minister chairs this authority. There have been many changes after the recent earthquake. Particularly for earthquake rehabilitation, there have been many committees formed at various levels. It is still not clear whether the committees would be functional after the rehabilitation stage.

State High Power Standing Committee:

- Chief Secretary Chairperson
- ACS, Finance Member
- PS, Revenue Member
- ACS, Agriculture Member
- ACS, Home Member
- Secretary, Civil Supplies Member
- Secretary, Health Member
- Secretary, Forest and Environment Member
- PS, Roads and Buildings Member
- Secretary, NWR and WR Member
- Secretary, Ports and Fisheries Member
- Director General of Police Member
- PCC Forest Member
- Relief Commissioner Member Secretary

3.4.2 High Power Standing Committee

A State level High Power Standing Committee chaired by the Chief Secretary functions with members from various departments to deal with all matters and situations arising out of natural calamities including disaster preparedness.
Figure: 3.1 Response and Interaction in Gujarat State on Occurrence of Disaster

GOI
Environment & Forest,
Defence Telecom Civil
Defence, Railways, Fire
Advisor
Meteorology, Police,
Industries, Fire Brigade,
Health, Irrigation &
District Authorities

Dept's of GOG
Revenue, Home,
Health, Finance,
Transport, Urban
Dev., Irrigation,
Industries, Roads &
Building,
Agriculture, Food &
Civil Supply, Labour
& Employment,
Ports, Information

Legends:
- - - - Information
- - - - Instructions
- - - - Feedback
- - - - Tech. Asst., Resource Mobilisation
- - - - Tech. Asst., Resource Mobilisation, Coordination
- - - - Coordination & Feedback
During the occurrence and continuance of a natural calamity, the above committee of secretaries headed by the chief secretary functions to monitors the day-to-day situation and issues necessary directions to deal with the situation.

3.4.3 Sub-Committee

Another sub-committee is chaired by Additional Chief Secretary/Principal Secretary Revenue and / or Commissioner of Relief which co-ordinates activities of all agencies, officials and non-officials engaged in relief operations. Liaison officers of all the departments are members of this sub-committee and the Director of Relief is member secretary of this committee and is responsible for coordinating with district authorities.

3.4.4 Commissioner of Relief

A full time officer designated as Commissioner of Relief is the overall in charge of preparedness exercise, rescue, relief and rehabilitation operation in the state.

3.4.5 Gujarat State Disaster Management Authority (GSDMA)

The existing administrative structure to deal with the ravages of the earthquake were not found satisfactorily and hence the Gujarat government constituted ‘the Gujarat State Disaster Management Authority’ on 8 February 2001 with the chief minister as chairperson and ten other members. The Resolution spoke of the need for a permanent arrangement to handle a calamity. It is therefore evident that the existing disaster management system at the state level was found inadequate.

The objectives of the Gujarat State Disaster Management Authority are the following:

- To undertake rehabilitation and reconstruction as also social and economic activities for restoration of the situation.
- To make efforts to minimize the impact of natural disasters.
- To make the best use of funds, grants, donations, assistance etc received from the government of India and other foreign countries or any other
institution/persons for prevention of such natural calamities or handling the aftereffects.

The jurisdiction of this authority will be the entire state and will work as an autonomous body. It has been registered as a society under the Societies Registration Act, 1860. The government of Gujarat has also created a separate Rehabilitation and Reconstruction Division under the General Administration Department of the State Government and the work of the Gujarat State Disaster Management Authority has been transferred to the General Administration Department. Further, the State Government constituted a taskforce to suggest effective measures for preparation of a long-term Disaster Management Plan, headed by the Chief Executive Officer of the Gujarat State Disaster Management Authority.

The Gujarat State Disaster Management Authority constituted on the pattern of a similar authority formed in Orissa earlier has a CEO and two Additional CEOs. It has six Directors and a chief Engineer who look after different aspects of work relating to Disaster Management. The Chief Minister is the Chairperson of GSDMA and meets at least once a month. It has the powers of the state cabinet.

Besides this, two committees have been constituted for redressal of grievances - one at the district level, which is headed by the Minister in charge of the concerned district and the other at the village level headed by an officer not below the rank of the deputy collector or Mamlatdar.

GSDMA is also looking forward for long-term mitigation in the state. The path drawn abruptly today seems quite appropriate, although how much of it is put in practice, their approach and process will determine the future of the state with respect of disasters. GSDMA’s plan ahead drawn in series of meetings by task force and in various workshops. It is yet to be given concrete shape; presently it is simply listing of all possible measures, suggested by various subject experts/representatives. While putting this points in a future strategy, what remains and what is left is not clear. (Refer Figure : 3.2)
Figure: 3.2

Gujarat State Disaster Management Authority
General Administration Department, Government of Gujarat

Chief Minister
Chairperson

Advisory Committee

Chief Executive Officer

Additional CEO

Director
Director-Disaster Management
Director Housing & Emergency Communication
Director Finance
Chief Engineer (Procurement)
Controller of Accounts

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3.4.6 State and District level Contingency Plans

The State level contingency plan is the consolidated plan (from district contingency plans) to be put in action on occurrence of a calamity. These contingency plans lay down specific action points, key personnel and contact points in relation to all aspects. However, these plans are not comprehensive in nature and are only response plans and do not take into account any mitigation or reduction measures. Action is initiated on the receipt of warning only. These plans require regular updating and further development into manuals and SOPs for guidance. Contingency plan at district level is prepared by the collector and approved by the state government. It is prepared in coordination with local defense personnel and other departments of Government.

3.4.7 State and District Control Rooms

There is also provision of a well-equipped state of art control room. Presently, the State Control Room has hotlines with the District Control Room and coordinates relief activity and receives information from various districts. District Control Rooms do not function annually; Collectors start operating it generally before onset of monsoon, i.e. from June and so and operates till September and November. Staff from contro’ room are seconded from other departments.

The control room is responsible for:

- Transmitting to the Relief Commissioner information as to the development of crisis situation.
- Receiving information and communicating to appropriate agencies for immediate action
- Collection and submission of information relating to implementation of relief measures to the Relief Commissioner
- Keeping the state level authorities apprised of the developments on a continuing basis.
3.5 District level Disaster Response

The district collector is the focal point at the district level for directing, supervising and monitoring relief measures for disaster and for preparation of the district level plans. The collector jointly with the DDO exercises coordinating and supervisory powers over functionaries of all the departments at the district level. The actual day-to-day work of administering relief or implementing contingency plans and coordinating and supervisory powers over functionaries of all the departments at district level are the responsibility of the district collector. During actual operations for disaster mitigation or relief, the powers of the collector are considerably enhanced. In emergency, the state administration informally permits the collector to exercise higher powers and the competent authority later ratifies decisions. When a disaster is apprehended, the entire machinery of the district, including officers of technical and other departments, swings into action and maintains almost continuous contact with each village in the disaster threatened area. The role of sub-district administration is also crucial here.

3.6 Panchayati Raj Institutions and Local Self Governance

It is a surprising fact that though the panchayati raj institutions in Gujarat have very good hold at local level, they do not have any active role to play during emergencies. Each layer of the system has some specific functions to perform during an emergency, which is well defined in the Panchayati Raj Act of 1993. But there are not given any financial assistance to perform any of such duties. This keeps their role limited and most of the time passive, though their close attachment to the public and good knowledge of crisis and resources can prove them as very good managers at such critical periods of time.

Section 99 of the Gujarat Panchayat Act 1993 covers 106 different activities of the panchayats. The community development activities include the following two responsibilities during emergencies:

- Assistance to disabled, poor and sick people
- Assistance to all victims during occurrence of any natural calamity
Section 130 of the act mentions 86 responsibilities of the taluka panchayats. About emergency relief it says, “...shall provide assistance during flood, fire, epidemic and any other such natural calamities.”

Districts panchayats are assigned a major role in emergencies. Section 154 mentions 73 tasks of the district panchayats and one of them is “Establishing and managing relief camps during natural calamities like drought and famine, fire and earthquake”.

In a nutshell, emergency relief is part of the responsibilities of the panchayati raj institutions but they are not given any assistance to carry on such activities. They have no other role to play except providing all necessary data of damage and loss. Same is the case with municipalities and corporations.
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